# APPENDIX NOI-1

## ENVIRONMENTAL NOSIE AND VIBRATION REPORT

Environmental Noise & Vibration Assessment

# Upper Westside Specific Plan

Sacramento County, California

BAC Job # 2021-097

Prepared For:

**Upper West Side, LLC**

Mr. Bob Thomas, authorized representative
455 Capitol Mall, Suite 801
Sacramento, CA 95814

Prepared By:

**Bollard Acoustical Consultants, Inc.**

Paul Bollard, President

December 1, 2022

BOLLARD
Acoustical Consultants

# Table of Contents

# Introduction

The Upper Westside Specific Plan (Project) area encompasses approximately 2,066 acres adjacent to and directly west of the communities of North and South Natomas in Sacramento County, California. The Project area is bounded by Interstate 80 (I-80) to the south and east, Witter Canal and Fisherman's Lake/Slough to the northeast, and Garden Highway to the west. The Project area is currently zoned primarily for agricultural uses. The project consists of the rezoning and development of a mixed-use community containing residential uses of various densities, commercial, commercial/residential mixed-use, school, park, agricultural and open space uses. The project area location and preliminary project land use plan are shown on Figures 1 and 2, respectively.

Bollard Acoustical Consultants, Inc. (BAC) was retained by the project applicant to prepare this noise and vibration evaluation for the project. The specific objectives of this evaluation are provided in the following section.

# Objectives of This Analysis

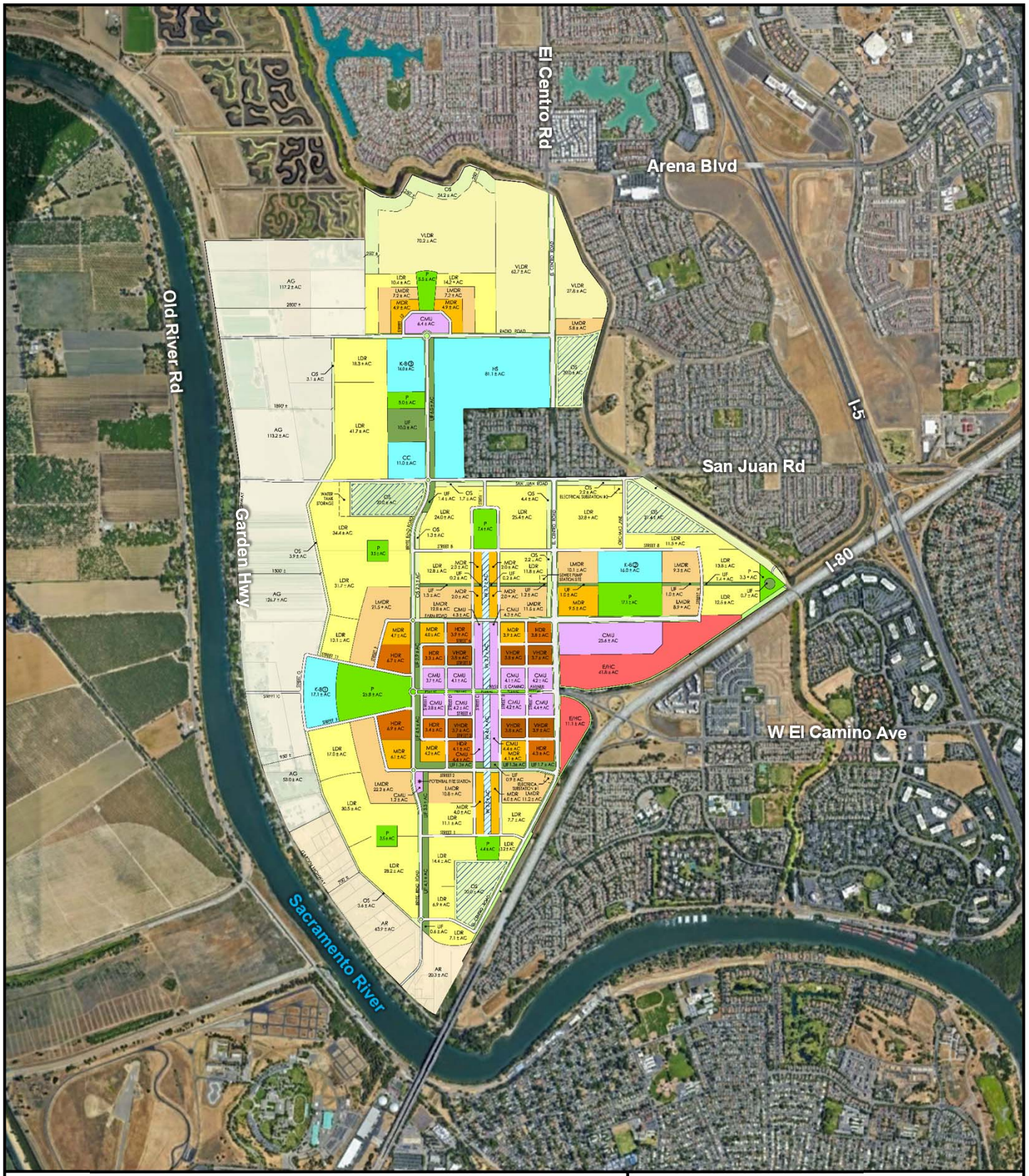
The objectives of this analysis are as follows:

- To provide background information pertaining to the effects of noise & vibration.
- To identify existing sensitive land uses in the project area vicinity.
- To quantify existing ambient noise levels and identify ambient sources of vibration at those nearest noise-sensitive land uses.
- To identify the Sacramento County noise & vibration standards which would be most applicable to this project.
- To predict project-related noise & vibration levels at off-site sensitive areas, and to compare those levels against the applicable noise & vibration standards per California Environmental Quality Act (CEQA) guidelines.
- To evaluate consistency of the sensitive land proposed uses within the project area with Sacramento County General Plan noise and vibration standards.
- To recommend mitigation, as necessary, to ensure compliance with the applicable project noise & vibration standards.
- To summarize the results of this analysis into a report for eventual use in the development of the project environmental documents.

Figure 1
Upper Westside Project Location
Sacramento County, California


BOLLARD
Acoustical Consultants

N
Scale: miles
0 2 4




**Legend**

| | | | |
|---|---|---|---|
| VLDR | VERY LOW DENSITY RESIDENTIAL | OS | OPEN SPACE (BUFFERS & BASINS) (4) |
| LDR | LOW DENSITY RESIDENTIAL | AG | AG-CROPLAND (4) |
| LMDR | LOW/MEDIUM DENSITY RESIDENTIAL | AR | AG-RESIDENTIAL (4) |
| MDR | MEDIUM DENSITY RESIDENTIAL | UF | URBAN FARM/ GREEN BELT |
| HDR | HIGH DENSITY RESIDENTIAL | P | PARK |
| VHDR | VERY HIGH DENSITY RESIDENTIAL | W | WATER (CANAL) |
| CMU | COMMERCIAL MIXED USE | LC | LANDSCAPE CORRIDOR |
| E/HC | EMPLOYMENT/HIGHWAY COMMERCIAL | | MAJOR ROADS A |
| S | PUBLIC/QUASI-PUBLIC | | MAJOR ROADS B (WITHIN AG-BUFFER) (4) |

N

Scale (Feet)

0 750 1,500

Upper Westside Specific Plan
Sacramento County, California

# Specific Plan Area

Figure 2

BOLLARD Acoustical Consultants

# Noise Fundamentals & Terminology

## General

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are designated as sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or Hertz (Hz). Definitions of acoustical terminology are provided in Appendix A.

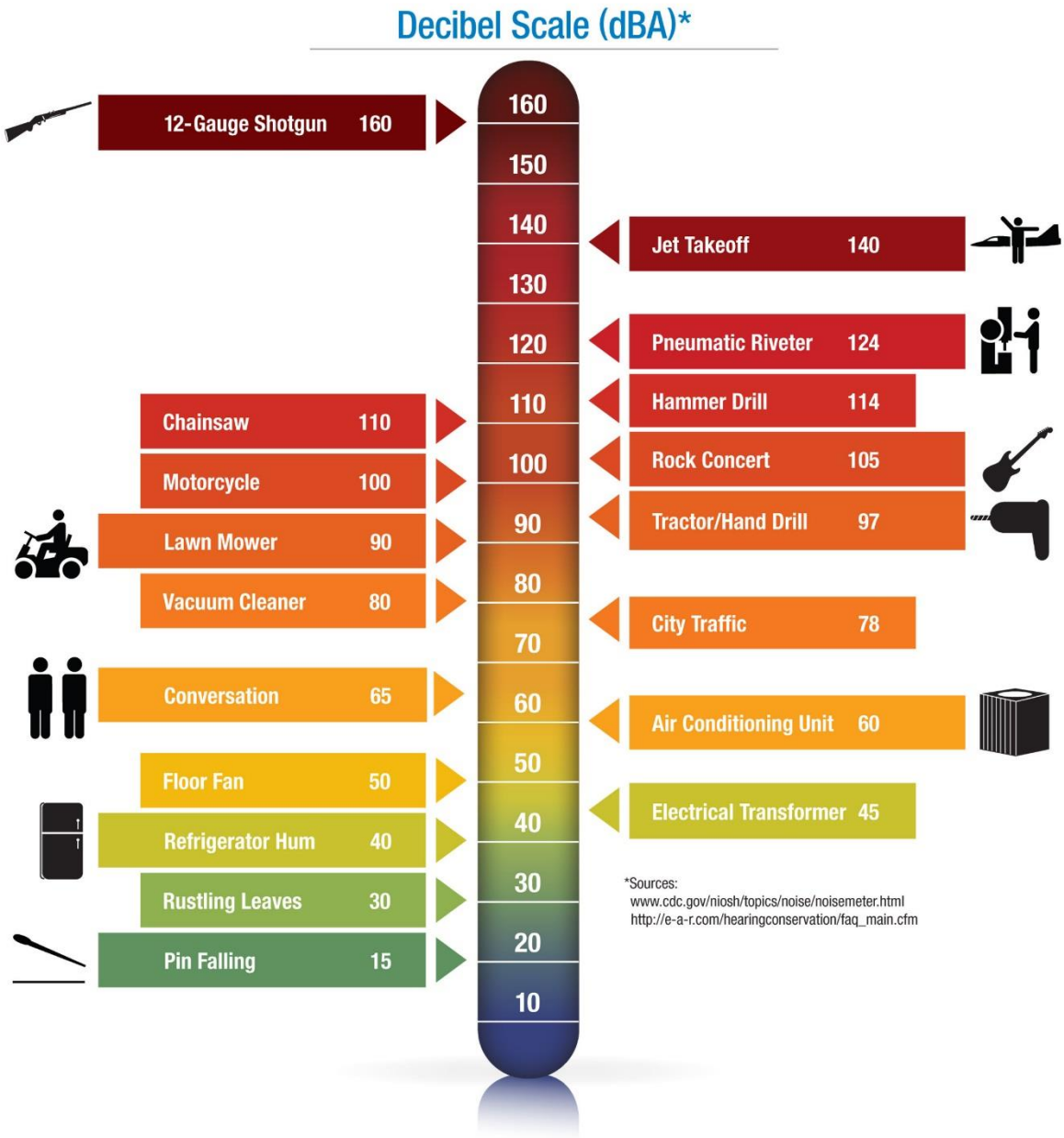
Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure) as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness. Noise levels associated with common noise sources are provided in Figure 3.

## A-Weighting and Noise Metrics

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by filtering the frequency response of a sound level meter by means of the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level ($L_{eq}$). The $L_{eq}$ is the foundation of the day-night average noise descriptor, DNL (or $L_{dn}$), and shows very good correlation with community response to noise. DNL is based on the average noise level over a 24-hour day, with a +10-decibel weighting applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours. The nighttime penalty is based on the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because DNL represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

**Figure 3**
**Noise Levels Associated with Common Noise Sources**




The Sacramento County General Plan utilizes DNL for the assessment of noise generated by traffic and railroad noise sources. For aircraft, the County General Plan utilizes the Community Noise Equivalent Level (CNEL), to describe noise exposure. For non-transportation noise sources, the County General Plan utilizes both median (L50) and single-event maximum ($L_{max}$) metrics.

In addition to applying the applicable County noise standards to this Project, the California Environmental Quality Act (CEQA) requires that noise impacts be assessed relative to ambient noise levels that are present without the project. As a result, ambient noise surveys were conducted, and comparisons of Project to No-Project noise levels were used to assess noise

impacts. Specifically, in additional to evaluating changes in traffic noise levels in terms of $L_{dn}$, single-event maximum ($L_{max}$) noise levels and hourly median ($L_{50}$) noise levels were compared for non-transportation noise sources, both with and without the project.

It should be noted that audibility is not a test of significance according to CEQA. If this were the case, any project which added any audible amount of noise to the environment would be considered unacceptable according to CEQA. Because every physical process creates noise, whether by the addition of a single vehicle on a roadway, or by a tractor in an agricultural field, the use of audibility alone as significance criteria would be unworkable. Under CEQA, a significant impact may occur when there is a substantial increase in noise levels, not simply an audible change. The discussion of what constitutes a substantial change in noise environments, both existing and cumulative, is provided in the Regulatory Setting section of this report.

## Effects of Noise on People

The effects of noise on people can be divided into three categories:

1. Subjective effects of annoyance, nuisance, dissatisfaction;
2. Interference with activities such as speech, sleep, and learning; and
3. Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the third category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Generally, most noise is generated by transportation systems, primarily motor vehicles, aircraft, and railroads. Prominent sources of indoor noise are office equipment, factory machinery, appliances, power tools, lighting hum, and audio entertainment systems. An important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment (or ambient noise) to which one has adapted. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise levels, the following relationships occur (Caltrans, 2013):

- Under controlled conditions in an acoustics laboratory, the trained healthy human ear is able to discern changes in sound levels of 1 dBA;

- Outside such controlled conditions, the trained ear can detect changes of 2 dBA in normal environmental noise;

- It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dBA;

### Noise Attenuation over Distance

Stationary "point" sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of approximately 6+ dBA per doubling of distance from the source, depending upon environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative or manufactured, etc.). Widely distributed noises, such as a large industrial facility, spread over many acres or a street with moving vehicles (a "line" or "moving point" source), would typically attenuate at a lower rate, approximately 4 to 6 dBA per doubling distance from the source (also dependent upon environmental conditions) (Caltrans, 2013). Noise from large construction sites (with heavy equipment moving dirt and trucks entering and exiting the site daily) would have characteristics of both "point" and "line" sources, so attenuation would generally range between 4.5 and 7.5 dBA per doubling of distance. Atmospheric absorption of sound varies depending on temperature and relative humidity, as well as the frequency content of the noise source. In general, "average day" atmospheric conditions result in attenuation at a rate of approximately 1.5 dB per thousand feet of distance (SAE ARP 866A, 1975).

## Vibration Fundamentals & Terminology

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of velocity in inches per second peak particle velocity (IPS, PPV) or root-mean-square (VdB, RMS). Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity as well as RMS velocities. In terms of RMS velocities, vibration levels below approximately 65 VdB are typically considered to be below the threshold of perception.

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance.

According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans, April 2020), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic, rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.

# Existing Ambient Noise Environment

## Land Uses in the Project Vicinity

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the primary intended use of the land. Places where people live, sleep, recreate, worship, and study are generally considered to be sensitive to noise because intrusive noise can be disruptive to these activities.

The nearest sensitive receptors to the project area consist primarily of residential uses to the north, east and south. However, with the exception of the existing residential development located at the intersection of San Juan and El Centro Roads, the project area is generally insulated from those areas by agricultural setbacks, Interstate 80, canals/waterways, and open space. Figure 2 illustrates the relationship of the project area to existing residential developments.

With the exception of seasonal agricultural activities, noise-generating uses located within the Plan area consist primarily of the 49er Travel Center (truck stop) at the intersection of West El Camino Avenue and El Centro Road, and heavy equipment storage yards to the immediate north of the 49er Travel Center. Other uses located within the project area consist of a hotel, fast-food restaurants, and a mini-storage facility. These uses are all located in the immediate vicinity of the intersection of West El Camino Avenue and El Centro Road.

## Noise Sources Affecting the Project Vicinity

Due to the large size of the project area the ambient noise environment in the immediate project vicinity varies considerably. Near the southern boundary of the Plan area the ambient noise environment is dominated by Interstate 80 traffic noise. The central and northern portions of the project area are affected by local surface traffic on El Centro and San Juan Roads. Aircraft operations associated with Sacramento International Airport also contribute to the ambient noise environment within the project area, but on a more intermittent basis than the more continuous traffic noise environment. Noise generated at the 49er Travel Center also contributes to the ambient noise environment in the immediate vicinity of that use, but has little effect on the majority of the project area. Finally, the project area is not appreciably affected by railroad noise. Evaluations of each of the major noise sources affecting the project vicinity and the overall ambient noise environment within the project vicinity from all sources are evaluated below.

## Existing Overall Ambient Noise Environment within the Plan area Vicinity

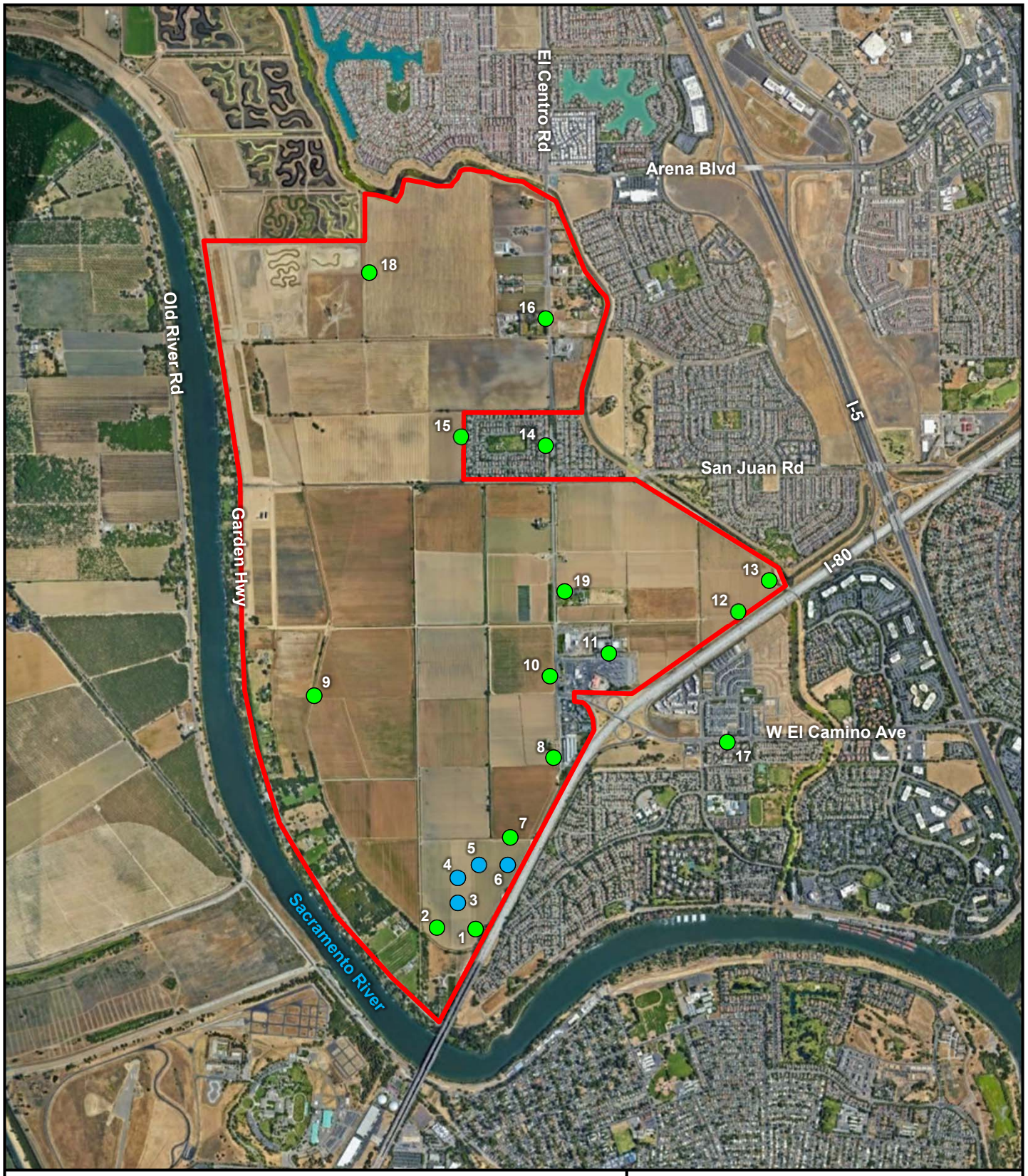
To quantify existing ambient noise environment within the Plan area and project vicinity, BAC conducted long-term (continuous) ambient noise level measurements at fifteen (15) locations between September 21-23 and September 28-30, 2021 for a 5-day monitoring period of Monday-Friday at each location. The long-term noise survey sites are shown on Figure 4. Photographs of the noise survey locations are provided in Appendix B.

Larson Davis Laboratories (LDL) Model 820 and LxT precision integrating sound level meters were used to complete the noise level measurements. The meters were calibrated immediately before and after use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all specifications of the American National Standards Institute requirements for Type 1 sound level meters (ANSI S1.4).

The results of the long-term ambient noise survey are shown graphically in Appendix C and are summarized in Table 1.

Upon analysis of the long-term ambient measurement data, it was determined that measured noise levels were anomalously high at some sites during a portion of the monitoring period due to local agricultural activities occurring in very close proximity to the sound level meters. As a result, the periods of time containing the anomalously elevated data were omitted from the summaries provided in Table 1. Nonetheless, ongoing agricultural operations in the Project vicinity will continue to affect the ambient noise environment on an intermittent basis.

After exclusion of the anomalous ambient noise level data as described above, the Table 1 data indicate that measured day-night average noise levels (DNL) did not vary appreciably from day to day at each site, but did vary by location within the Plan area as expected. The Table 1 data also indicate that measured day-night average noise levels were highest at sites 12 and 13, which was due to those sites having the closest proximity to I-80.




***Legend***

- Specific Plan Area Boundary (Approximate)
- Long-Term Ambient Noise Measurement Sites
- Short-Term Ambient Noise Measurement Sites
- Short-Term Ambient Vibration Measurement Sites

N

Scale (Feet)

0 750 1,500

Upper Westside Specific Plan
Sacramento County, California

Ambient Noise Monitoring Sites

Figure 4

BOLLARD Acoustical Consultants

**Table 1**
**Summary of Long-Term Ambient Noise Level Measurement Results[1]**

| Site[2] | Date | DNL | Average Measured Hourly Noise Levels (dBA) | | | |
|---|---|---|---|---|---|---|
| | | | Daytime[3] | | Nighttime[4] | |
| | | | $L_{50}$ | $L_{max}$ | $L_{50}$ | $L_{max}$ |
| 1 | Tuesday, September 21, 2021 | 69 | 63 | 73 | 61 | 70 |
| | Wednesday, September 22, 2021 | 70 | 63 | 74 | 61 | 71 |
| | Thursday, September 23, 2021 | 68 | 61 | 71 | 60 | 69 |
| 2 | Tuesday, September 21, 2021 | 64 | 55 | 66 | 57 | 66 |
| | Wednesday, September 22, 2021 | 64 | 56 | 67 | 56 | 65 |
| | Thursday, September 23, 2021 | 62 | 51 | 63 | 54 | 62 |
| 7 | Tuesday, September 21, 2021 | 70 | 60 | 70 | 63 | 72 |
| | Wednesday, September 22, 2021 | 71 | 62 | 71 | 62 | 72 |
| | Thursday, September 23, 2021 | 70 | 57 | 66 | 62 | 72 |
| 8 | Tuesday, September 21, 2021 | 71 | 61 | 72 | 63 | 75 |
| | Wednesday, September 22, 2021 | 72 | 65 | 80 | 63 | 72 |
| | Thursday, September 23, 2021 | 70 | 56 | 68 | 62 | 72 |
| 9 | Tuesday, September 28, 2021 | 55 | 50 | 66 | 40 | 57 |
| | Wednesday, September 29, 2021 | 60 | 48 | 72 | 40 | 56 |
| | Thursday, September 30, 2021 | 68 | 47 | 74 | 45 | 57 |
| 10 | Tuesday, September 21, 2021 | 67 | 59 | 76 | 58 | 73 |
| | Wednesday, September 22, 2021 | 66 | 59 | 78 | 57 | 73 |
| | Thursday, September 23, 2021 | 66 | 59 | 78 | 56 | 72 |
| 11 | Tuesday, September 21, 2021 | 68 | 62 | 77 | 61 | 70 |
| | Wednesday, September 22, 2021 | 67 | 61 | 75 | 60 | 68 |
| | Thursday, September 23, 2021 | 67 | 61 | 74 | 59 | 68 |
| 12 | Tuesday, September 21, 2021 | 76 | 69 | 80 | 67 | 80 |
| | Wednesday, September 22, 2021 | 76 | 71 | 83 | 67 | 79 |
| | Thursday, September 23, 2021 | 75 | 65 | 79 | 67 | 78 |
| 13 | Tuesday, September 21, 2021 | 74 | 67 | 76 | 66 | 77 |
| | Wednesday, September 22, 2021 | 74 | 68 | 79 | 65 | 76 |
| | Thursday, September 23, 2021 | 74 | 65 | 78 | 65 | 76 |
| 14 | Tuesday, September 21, 2021 | 70 | 63 | 86 | 48 | 81 |
| | Wednesday, September 22, 2021 | 69 | 62 | 82 | 47 | 82 |
| | Thursday, September 23, 2021 | 66 | 57 | 79 | 51 | 77 |
| 15 | Tuesday, September 28, 2021 | 55 | 50 | 64 | 42 | 56 |
| | Wednesday, September 29, 2021 | 50 | 44 | 58 | 40 | 54 |
| | Thursday, September 30, 2021 | 53 | 41 | 61 | 43 | 56 |
| 16 | Tuesday, September 28, 2021 | 71 | 62 | 86 | 44 | 82 |
| | Wednesday, September 29, 2021 | 70 | 61 | 84 | 45 | 82 |
| | Thursday, September 30, 2021 | 71 | 60 | 86 | 46 | 82 |
| 17 | Tuesday, September 28, 2021 | 69 | 63 | 84 | 58 | 80 |
| | Wednesday, September 29, 2021 | 70 | 62 | 85 | 58 | 84 |
| | Thursday, September 30, 2021 | 69 | 62 | 85 | 56 | 79 |
| 18 | Wednesday, September 29, 2021 | 57 | 50 | 71 | 39 | 52 |
| | Thursday, September 30, 2021 | 52 | 37 | 63 | 40 | 57 |
| 19 | Tuesday, September 28, 2021 | 68 | 64 | 79 | 50 | 77 |
| | Wednesday, September 29, 2021 | 67 | 63 | 78 | 50 | 73 |
| | Thursday, September 30, 2021 | 68 | 63 | 79 | 54 | 75 |

[1] Detailed summaries of the noise monitoring results are provided in graphically in Appendix C.
[2] Long-term ambient noise monitoring locations are identified on Figure 4.
[3] Daytime hours: 7:00 AM to 10:00 PM
[4] Nighttime hours: 10:00 PM to 7:00 AM
*Source: Bollard Acoustical Consultants, Inc. (2021)*

## Existing Traffic Noise Levels along Plan area Roadway Network

To predict traffic noise levels along existing roadway networks with multiple segments, modelling is commonly used rather than monitoring. Because 45 roadway segments were evaluated in this assessment, conducting noise monitoring along each segment would be impractical. In addition, because future traffic noise levels must be modelled to predict the increases in off-site traffic noise levels which result from a project, the modelling of existing levels allows a more accurate comparison to project levels.

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify existing traffic noise levels at the existing sensitive land uses nearest to the project area roadway network. The Model was also used to quantify the distances to the 60, 65 and 70 dB DNL traffic noise contours for these roadways. The FHWA Model predicts hourly $L_{eq}$ values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from $L_{eq}$ values.

Traffic data in the form of average daily traffic volumes (ADT) were obtained from the project transportation impact study prepared by Fehr & Peers. Other inputs were obtained from published Caltrans traffic counts, SACOG, and BAC observations and file data. The existing traffic noise levels at the distances representing the nearest sensitive land uses to the project area roadways and distances from the centerlines of selected roadways to the 60 dB, 65 dB and 70 dB DNL contours are summarized in Table 2. Appendix F contains the FHWA Model inputs for existing conditions.

In most cases, the actual distances to noise level contours may vary from the distances predicted by the FHWA Model. Factors such as roadway elevation, curvature, grade, and shielding from local topography or structures, or elevated receivers may affect actual sound propagation. Along roadways segments where existing noise barriers are present, the degree of shielding provided by those barriers was estimated and included in the Table 2 results.

**Table 2**
**Existing Traffic Noise Levels at Nearest Receptors and Distances to DNL Contours**

| # | Roadway | From | To | DNL at Nearest Sensitive Receptor | Distance to Contour (ft) | | |
|---|---|---|---|---|---|---|---|
| | | | | | 70 dB DNL | 65 dB DNL | 60 dB DNL |
| 1 | Arena Blvd | El Centro Rd | Stemmler Dr | 64 | 34 | 73 | 157 |
| 2 | Arena Blvd | Stemmler Dr | Duckhorn Dr | 66 | 43 | 92 | 197 |
| 3 | Arena Blvd | Duckhorn Dr | Interstate 5 | 68 | 79 | 169 | 365 |
| 4 | Arena Blvd | Interstate 5 | E Commerce Way | 68 | 73 | 158 | 341 |
| 5 | Arena Blvd | E Commerce Way | Truxel Rd | 69 | 66 | 143 | 307 |
| 6 | Azevedo Dr | West El Camino | San Juan Rd | 66 | 39 | 85 | 183 |
| 7 | Del Paso Rd | Power Line Rd | Hovnanian Dr | 58 | 11 | 24 | 52 |
| 8 | Del Paso Rd | Hovnanian Dr | Natomas Central Dr | 61 | 17 | 37 | 80 |
| 9 | Del Paso Rd | Natomas Central Dr | El Centro Rd | 67 | 42 | 90 | 195 |
| 10 | Del Paso Rd | El Centro Rd | Interstate 5 | 63 | 33 | 70 | 152 |
| 11 | Del Paso Rd | Interstate 5 | E Commerce Way | 68 | 108 | 232 | 500 |
| 12 | Del Paso Rd | E Commerce Way | Truxel Rd | 70 | 91 | 196 | 421 |
| 13 | El Centro Rd | Del Paso Rd | Duckhorn Dr | 65 | 44 | 96 | 206 |
| 14 | El Centro Rd | Duckhorn Dr | Manera Rica Dr | 58 | 17 | 36 | 78 |
| 15 | El Centro Rd | Manera Rica Dr | Arena Blvd | 62 | 20 | 42 | 91 |
| 16 | El Centro Rd | Arena Blvd | San Juan Rd | 61 | 19 | 41 | 89 |
| 17 | El Centro Rd | San Juan Rd | W El Camino Ave | 68 | 69 | 149 | 321 |
| 18 | El Centro Rd | West El Camino | South Terminus | 59 | 19 | 42 | 90 |
| 19 | Garden Highway | Truxel Road | Natomas Park Dr | 60 | 58 | 125 | 270 |
| 20 | Garden Highway | Natomas Park Dr | Interstate 5 | 65 | 66 | 143 | 308 |
| 21 | Garden Highway | Interstate 5 | Gateway Oaks Dr | 62 | 56 | 121 | 261 |
| 22 | Garden Highway | Gateway Oaks Dr | Orchard Lane | 63 | 20 | 42 | 92 |
| 23 | Garden Highway | Orchard Ln | Interstate 80 | 57 | 16 | 34 | 74 |
| 24 | Garden Highway | Interstate 80 | San Juan Rd | 61 | 15 | 33 | 72 |
| 25 | Garden Highway | San Juan Rd | Powerline Road | 62 | 18 | 39 | 84 |
| 26 | Natomas Central | Del Paso Rd | El Centro Rd | 61 | 14 | 31 | 67 |
| 27 | Power Line Rd | Garden Hwy | Del Paso Rd | 61 | 26 | 56 | 122 |
| 28 | Power Line Rd | Del Paso Rd | Interstate 5 | 62 | 29 | 62 | 134 |
| 29 | San Juan Rd | Garden Hwy | El Centro Rd | 64 | 25 | 53 | 115 |
| 30 | San Juan Rd | El Centro Rd | 80/5 Interchange | 64 | 31 | 66 | 143 |
| 31 | San Juan Rd | 80/5 Interchange | Truxel Rd | 69 | 59 | 127 | 273 |
| 32 | W El Camino Ave | El Centro Rd | Interstate 80 | 65 | 75 | 162 | 350 |
| 33 | W El Camino Ave | Interstate 80 | Orchard Lane | 67 | 66 | 143 | 308 |
| 34 | W El Camino Ave | Orchard Ln | Gateway Oaks Dr | 68 | 61 | 132 | 285 |
| 35 | W El Camino Ave | Gateway Oaks Dr | Interstate 5 | 67 | 67 | 144 | 310 |
| 36 | W El Camino Ave | Interstate 5 | Azevedo Dr | 68 | 76 | 165 | 355 |
| 37 | W El Camino Ave | Azevedo Dr | Truxel Rd | 66 | 51 | 110 | 236 |
| 38 | I-80 | Yolo County | W El Camino Ave | 67 | 88 | 190 | 410 |
| 39 | I-80 | West El Camino | I-5 | 65 | 85 | 184 | 396 |
| 40 | I-5 | I-80 | Arena Boulevard | 74 | 581 | 1,251 | 2,695 |
| 41 | I-5 | Arena Blvd | Del Paso | 73 | 538 | 1,158 | 2,496 |
| 42 | I-5 | Del Paso | Hwy 99 | 70 | 229 | 494 | 1,065 |
| 43 | I-5 | Hwy 99 | Airport Blvd | 69 | 164 | 353 | 761 |

*Source: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix F contains FHWA model inputs.*

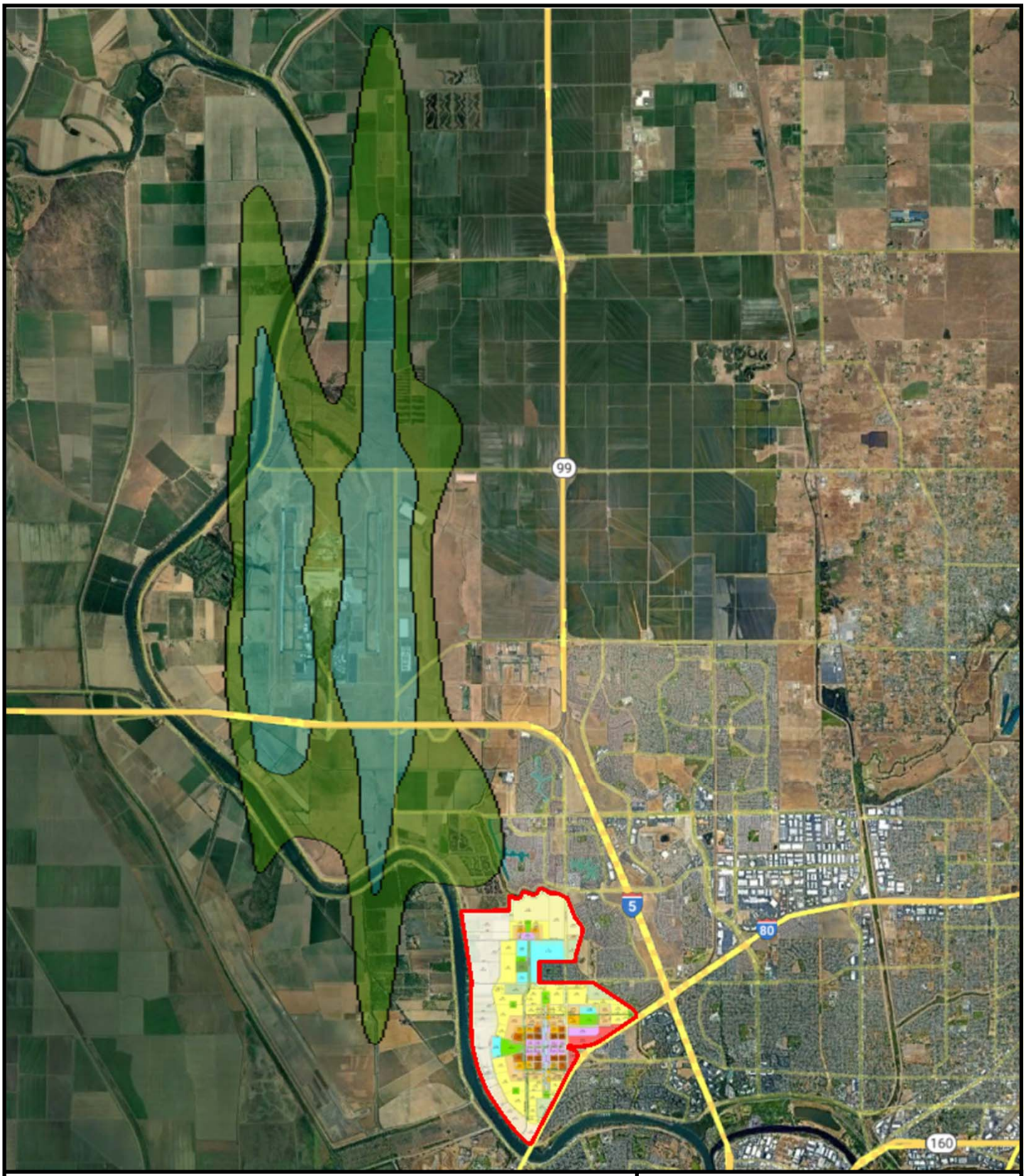
## Existing Aircraft Noise Environment

Sacramento International Airport is located approximately 2.5 miles northwest of the project area near I-5 and the Sacramento River. The airport is mostly surrounded by agricultural uses, but development of the Metro Air Center is underway to the immediate east of the airport, as is development of commercial and residential uses in the North and South Natomas areas. According to the County's General Plan the airport has about 160 scheduled daily flights at current passenger levels, serving about 20,000 passengers per day. Although the majority of the flights occur during daytime hours (7 am – 10 pm), nighttime flights do occur.

Aircraft departure heading (north or south), is primarily dependent on wind speed and direction. During south departure conditions, many aircraft either directly overfly the Plan area or occur in reasonably close proximity to the Plan area.

Ambient noise monitoring Site 18 (see Figure 4 for location) was positioned near the northern portion of the Plan area with the closest proximity to Sacramento International Airport. As indicated in Table 1, measured ambient noise levels at this location ranged from 52-57 dB DNL with maximum noise levels averaging 63-71 dB $L_{max}$ during daytime hours.

Figure 5 shows the noise contours for Sacramento International Airport. Figure 5 indicates that the Plan area is located outside of the Sacramento International Airport 60 dB CNEL noise contours, meaning that aircraft noise exposure within the Plan area is below 60 dB CNEL. This is consistent with the ambient noise monitoring results from monitoring Site 18 which also indicate aircraft noise exposure at that location as below 60 dB $L_{dn}$ ($L_{dn}$ and CNEL are essentially equivalent).




***Legend***

65 dB Ldn Noise Contour (Approximate)

60 dB Ldn Noise Contour (Approximate)

Specific Plan Area Boundary (Approximate)

N

Scale (Feet)

0 5000 10000

Upper Westside Specific Plan
Sacramento County, California

Sacramento International Airport
Noise Contours

Figure 5

BOLLARD
Acoustical Consultants

# Existing Ambient Vibration Environment

During multiple site visits conducted by BAC staff, vibration levels within the Plan area were subjectively evaluated as being below the threshold of perception. Nonetheless, to generally quantify existing vibration levels at representative locations within the project site, BAC conducted short-term (10-minute) vibration measurements at six (6) locations within the Plan area. The locations are Sites 1, 9, 10, 12, 18 and 19 shown on Figure 4. Photographs of the vibration survey locations are provided in Appendix E.

A Larson-Davis Laboratories Model LxT precision integrating sound level meter equipped with a vibration transducer was used to complete the measurements. The system was calibrated in the field prior to use to ensure the accuracy of the measurements. The ambient vibration monitoring results are summarized in Table 3.

**Table 3**
**Summary of Ambient Vibration Monitoring Results – November 29, 2021**

| Site[1] | Time | Average Measured Vibration Level, VdB ()[1] |
|---|---|---|
| 1 | 12:44 PM | 49 |
| 9 | 1:17 PM | 35 |
| 10 | 2:52 PM | 49 |
| 12 | 2:03 PM | 52 |
| 18 | 2:28 PM | 32 |
| 19 | 1:41 PM | 54 |

[1]Vibration measurement sites are the same sites used for the ambient noise surveys shown in Figure 4.
*Source: Bollard Acoustical Consultants, Inc. (2021)*

The Table 3 data indicate that measured average vibration levels at the project area were below the 65 VdB threshold of perception, which is consistent with the BAC staff observations.

# Criteria for Acceptable Noise and Vibration Exposure

## Federal

There are no federal noise or vibration criteria which would be directly applicable to this project. However, because the Sacramento County General Plan does not currently have a policy for assessing noise impacts associated with increases in ambient noise levels from project-generated noise sources, recommendations made by the Federal Interagency Commission on Noise (FICON) are provided.

Federal Interagency Commission on Noise (FICON)

FICON has developed a graduated scale for use in the assessment of project-related noise level increases. The criteria shown in Table 4 was developed by FICON as a means of developing thresholds for impact identification for project-related noise level increases. The FICON standards have been used extensively in recent years in the preparation of the noise sections of Environmental Impact Reports that have been certified in many California cities and counties.

The use of the FICON standards is considered conservative relative to thresholds used by other agencies in the State of California. For example, the California Department of Transportation (Caltrans) requires a project-related traffic noise level increase of 12 dB for a finding of significance, and the California Energy Commission (CEC) considers project-related noise level increases between 5 to 10 dB significant, depending on local factors. Therefore, the use of the FICON standards, which set the threshold for finding of significant noise impacts as low as 1.5 dB, provides a very conservative approach to impact assessment for this project.

**Table 4**
**Significance of Changes in Cumulative Noise Exposure**

| Ambient Noise Level Without Project (DNL) | Change in Ambient Noise Level Due to Project |
|---|---|
| <60 dB | +5.0 dB or more |
| 60 to 65 dB | +3.0 dB or more |
| >65 dB | +1.5 dB or more[1] |

*Source: Federal Interagency Committee on Noise (FICON)*

1. It should be noted that FICONs Federal Agency Review of Selected Airport Noise Analysis Issues (1992) report does not identify a 1.5 dBA increase as a threshold of significance, but rather, an increase that warrants further analysis. However, for purposes of this analysis, a 1.5 dB threshold is utilized to assess the significance of project-related noise increases at sensitive locations currently exposed to ambient noise environments exceeding 65 dB DNL.

Based on the FICON research, as shown in Table 4, a 5 dB increase in noise levels due to a project is required for a finding of significant noise impact where ambient noise levels without the project are less than 60 dB DNL. Where pre-project ambient conditions are between 60 and 65 dB DNL, a 3 dB increase is applied as the standard of significance. Finally, in areas already exposed to higher noise levels, specifically pre-project noise levels in excess of 65 dB DNL, a 1.5 dB increase is conservatively used as the threshold of significance. It should be noted that the use of these thresholds is consistent with Sacramento County General Plan Noise Element Policy NO-9, which applies to capacity enhancing roadway improvement projects.

Federal Transit Administration

Sacramento County does not currently have adopted standards for groundborne vibration. As a result, the vibration impact criteria developed by the Federal Transit Administration (FTA) were applied to the project. The FTA criteria applicable to damage and annoyance from vibration typically associated with construction activities are presented in Tables 5 and 6.

**Table 5**
**FTA Criteria for Assessing Vibration Damage to Structures**

| Building Category | Level, VdB[1] |
|---|---|
| I. Reinforced-concrete, steel or timber (no plaster) | 102 |
| II. Engineered concrete and masonry (no plaster) | 98 |
| III. Non-engineered timber and masonry buildings | 94 |
| IV. Buildings extremely susceptible to vibration damage | 90 |

[1.] RMS velocity in decibels (VdB) re 1 micro-inch/second

*Source: Federal Transit Administration (FTA) Noise and Vibration Manual, Table 12-3*

**Table 6**
**Groundborne Vibration Impact Criteria for General Assessment**

| Land Use Category | Impact Levels (VdB) | | |
|---|---|---|---|
| | Frequent Events[a] | Occasional Events[b] | Infrequent Events[c] |
| Category 1: Buildings where vibration would interfere with interior ops. | 65[d] | 65[d] | 65[d] |
| Category 2: Residences and buildings where people normally sleep | 72 | 75 | 80 |
| Category 3: Institutional land uses with primarily daytime uses | 75 | 78 | 83 |

Vibration levels are measured in or near the vibration-sensitive use.

**a.** "Frequent Events" is defined as more than 70 vibration events of the same source per day.
**b.** "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.
**c.** "Infrequent Events" is defined as fewer than 30 vibration events of the same source per day.
**d.** This criterion limit is based on levels that are acceptable for most moderately-sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels.

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

## State of California

California Environmental Quality Act (CEQA)

The State of California has established regulatory criteria that are applicable to this assessment. Specifically, Appendix G of the State of California Environmental Quality Act (CEQA) Guidelines are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. According to Appendix G of the CEQA guidelines, a significant noise or vibration impact may occur if the Project results in:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies.

B. Generation of excessive groundborne vibration or groundborne noise levels.

C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

It should be noted that audibility is not a test of significance according to CEQA. If this were the case, any project which added any audible amount of noise to the environment would be considered significant according to CEQA. Because every physical process creates noise, the use of audibility alone as significance criteria would be unworkable. Under CEQA, a significant impact may occur when there is a substantial increase in noise levels, not simply an audible change.

## Local

Sacramento County General Plan

The Noise Element of the Sacramento County General Plan contains the County's noise-related policies. The specific policies which are generally applicable to this project are reproduced below:

**Traffic and Railroad Noise**

**Policy NO-1** The noise level standards for noise-sensitive areas of new uses affected by traffic or railroad noise sources in Sacramento County are shown in Table 7. Where the noise level standards of Table 7 are predicted to be exceeded at new uses proposed within Sacramento County which are affected by traffic or railroad noise, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 7 standards.

**Aircraft Noise**

**Policy NO-2** Proposals for new development within Sacramento County which may be affected by aircraft noise shall be evaluated relative to General Plan Noise Element Table 4 (*Land Use Compatibility for Aircraft Noise)* except in the following case. Development proposals which may be affected by aircraft noise from Sacramento International Airport shall be evaluated relative to the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013.

**Policy NO-3** New residential development within the 60 CNEL noise contours adopted by the County for land use planning purposes at any airport or Helipad within

Sacramento County shall be prohibited. This policy is not applicable to Executive Airport.

**Policy NO-4** New residential development within adopted Airport Policy Area boundaries, but outside the 60 CNEL, shall be subject to the following conditions:

A. Provide minimum noise insulation to 45 dB CNEL within new residential dwellings, including detached single family dwellings, with windows closed in any habitable room.

B. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within an Airport Policy Area.

C. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento, recorded with the Sacramento County Recorder, and filed with Department of Airports. Such Avigation Easement shall acknowledge the property location within an Airport Planning Policy Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of the subject Airport.

Exceptions: New accessory residential dwellings on parcels zoned Agricultural, Agricultural Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural and between the 60 and 65 CNEL contours, shall be permitted within adopted Airport Policy Area boundaries, but would be subject to the conditions listed above.

**Non-Transportation Noise**

**Policy NO-5** The interior and exterior noise level standards for noise-sensitive areas of new uses affected by existing non-transportation noise sources in Sacramento County are shown by Table 8. Where the noise level standards of Table 8 are predicted to be exceeded at a proposed noise-sensitive area due to existing non-transportation noise sources, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 8 standards within sensitive areas.

**Policy NO-6** Where a project would consist of or include non-transportation noise sources, the noise generation of those sources shall be mitigated so as not exceed the interior and exterior noise level standards of Table 8 at existing noise-sensitive areas in the project vicinity.

**Policy NO-7** The "last use there" shall be responsible for noise mitigation. However, if a noise generating use is proposed adjacent to lands zoned for uses which may have sensitivity to noise, then the noise generating use shall be responsible for mitigating its noise generation to a state of compliance with the Table 8

standards at the property line of the generating use in anticipation of the future neighboring development.

**Construction Noise**

**Policy NO-8** Noise associated with construction activities shall adhere to the County Code requirements. Specifically, Section 6.68.090(e) addresses construction noise within the County.

**Other General Plan Noise Policies**

**Policy NO-12** All noise analyses prepared to determine compliance with the noise level standards contained within this Noise Element shall be prepared in accordance with Table 9.

**Policy NO-13** Where noise mitigation measures are required to satisfy the noise level standards of this Noise Element, emphasis shall be placed on the use of setbacks and site design to the extent feasible, prior to consideration of the use of noise barriers.

**Policy NO-14** Noise analyses prepared for multi-family residential projects, town homes, mixed-use, condominiums, or other residential projects where floor ceiling assemblies or party-walls shall be common to different owners/occupants, shall be consistent with the State of California Noise Insulation standards.

**Policy NO-15** The County shall have the flexibility to consider the application of 5 dB less restrictive exterior noise standards than those prescribed in Tables 7 and 8 in cases where it is impractical or infeasible to reduce exterior noise levels within infill projects to a state of compliance with the Table 7 or 8 standards. In such cases, the rational for such consideration shall be clearly presented and disclosure statements and noise easements shall be included as conditions of project approval. The interior noise level standards of Tables 7 and 8 would still apply. The maximum allowable long-term noise exposure permissible for non-industrial uses is 75 dB.

**Exemptions**

**Policy NO-16** The following sources of noise shall be exempt from the provisions of this Noise Element:

A. Emergency warning devices and equipment operated in conjunction with emergency situations, such as sirens and generators which are activated during power outages. The routine testing of such warning devices and equipment shall also be exempt provided such testing occurs during daytime hours.

B. Activities associated with events for which a permit has been obtained from the County.

**Table 7**
**Noise Standards for New Uses Affected by Traffic and Railroad Noise**

| Receiving Land Use | Outdoor Areas[a] dBA (DNL/CNEL) | Interior Areas[b] dBA (DNL/CNEL) | Notes |
|---|---|---|---|
| Residential | 65 | 45 | 5 |
| Transient lodging | 65 | 45 | 3, 5 |
| Hospitals, nursing homes | 65 | 45 | 3, 4, 5 |
| Theaters & auditoriums | -- | 35 | 3 |
| Churches, schools, libraries | 65 | 40 | 3 |
| Office buildings | 65 | 45 | 3 |
| Commercial buildings | -- | 50 | 3 |
| Playgrounds, parks | 70 | -- | |
| Industry | 65 | 50 | 3 |

[1] Sensitive areas are defined in acoustic terminology section.
[2] Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
[3] Where there are no sensitive exterior spaces proposed for these uses, only the interior noise level standard shall apply.
[4] Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
[5] If this use is affected by railroad noise, a maximum ($L_{max}$) noise level standard of 70 dB shall be applied to all sleeping rooms to reduce the potential for sleep disturbance during nighttime train passages.

*Source: Sacramento County General Plan, Noise Element, Table 1 (2011)*

**Table 8**
**Non-Transportation Noise Standards – Median ($L_{50}$) / Maximum ($L_{max}$)[1]**

| Receiving Land Use | Outdoor Area | | Interior[2] | Notes |
|---|---|---|---|---|
| | Daytime (7am-10pm) | Nighttime (10pm to 7am) | Day & Night | |
| Residential | 55 / 75 | 50 / 70 | 35 / 55 | -- |
| Transient lodging | 55 / 75 | -- | 35 / 55 | 3 |
| Hospitals, nursing homes | 55 / 75 | -- | 35 / 55 | 4,5 |
| Theaters & auditoriums | -- | -- | 30 / 50 | 5 |
| Churches, schools, libraries | 55 / 75 | -- | 35 / 60 | 5 |
| Office buildings | 60 / 75 | -- | 45 / 65 | 5 |
| Commercial buildings | -- | -- | 45 / 65 | 5 |
| Playgrounds, parks | 65 / 75 | -- | -- | 5 |
| Industry | 60 / 80 | -- | 50 / 70 | 5 |

[1] The Table 8 standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards of Table 8, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.

[2] Interior noise level standards are applied within noise-sensitive areas with windows and doors in the closed positions.

[3] Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.

[4] Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.

[5] The outdoor activity areas of these uses (if any) are not typically utilized during nighttime hours.

-Where median (L50) noise level data is not available for a particular noise source, average (Leq) values may be substituted for the standards of this table provided the noise source in question operates for at least 30 minutes of an hour. If the source in question operates less than 30 minutes per hour, then the maximum noise level standards shown would apply.

*Source: Sacramento County General Plan, Noise Element, Table 2 (2011)*

**Table 9**
**Requirements for Acoustical Analyses Prepared in Sacramento County**

An acoustical analysis prepared pursuant to the Noise Element shall:

1. Be the responsibility of the applicant.
2. Be prepared by qualified persons experienced in the fields of environmental noise assessment and architectural acoustics.
3. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.
4. Estimate projected future (20 year) noise levels in terms of the Standards of Tables 7 and 8 and compare those levels to the adopted policies of the Noise Element.
5. Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element.
6. Estimate interior and exterior noise exposure after the prescribed mitigation measures have been implemented.

*Source: Sacramento County General Plan, Noise Element, Table 3 (2011)*

Sacramento Area Council of Governments (SACOG)

The Upper Westside Specific Plan area is located approximately 3 miles from the Sacramento International Airport. Pursuant to Policy NO-2 of the Sacramento County General Plan Noise Element, proposals for new development within Sacramento County which may be affected by aircraft noise from Sacramento International Airport shall be evaluated relative to the Sacramento International Airport Land Use Compatibility Plan prepared by the Sacramento Area Council of Governments (SACOG) dated December 12, 2013. The Land Use Plan's noise compatibility criteria is reproduced in Table 10.

**Table 10**
**Sacramento International Airport Noise Compatibility**

| Land Use Category[1]<br>› Multiple land use categories and compatibility criteria may apply to a project<br>› Land uses not specifically listed shall be evaluated using criteria for similar uses | Exterior Noise Exposure (CNEL dB) | | | | | Criteria for Conditional Uses<br>› Interior CNEL limits in yellow cells apply in addition to other listed conditions (see Policy 3.2.3)<br>› Acoustical study may be required for noise-sensitive uses proposed in areas exposed to CNEL 60 dB or greater (see Policy 3.2.3(d)) |
|---|---|---|---|---|---|---|
| | ≤ 60 | 60-65 | 65-70 | 70-75 | > 75 | |
| ***Legend*** *(see last page of table for interpretation)* | ***Normally Compatible*** | | | ***Conditional*** | | ***Incompatible*** |
| *Outdoor Uses (limited or no activities in buildings)* | | | | | | |
| Natural Land Areas: woods, brush lands, desert | | | | | | Compatible at levels indicated, but noise disruption of natural quiet will occur |
| Water: flood plains, wetlands, lakes, reservoirs | | | | | | |
| Agriculture (except residences and livestock): crops, orchards, vineyards, pasture, range land | | | | | | |
| Livestock Uses: feed lots, stockyards, breeding, fish hatcheries, horse stables | | | | | | Exercise caution with uses involving noise-sensitive animals [2] |
| Outdoor Major Assembly Facilities (capacity ≥1,000 people): spectator-oriented outdoor stadiums, amphitheaters, fairgrounds, zoos | | | | | | Exercise caution if clear audibility by users is essential |
| Group Recreation (limited spectator stands): athletic fields, water recreation facilities, picnic areas | | | | | | Exercise caution if clear audibility by users is essential |
| Small/Non-Group Recreation: golf courses, tennis courts, shooting ranges | | | | | | Exercise caution if clear audibility by users is essential |
| Local Parks: children-oriented neighborhood parks, playgrounds | | | | | | Exercise caution if clear audibility by users is essential |
| Camping: campgrounds, recreational vehicle/motor home parks | | | | | | |
| Cemeteries (excluding chapels) | | | | | | Compatible at levels indicated, but noise disruption of outdoor activities will occur |
| *Residential and Lodging Uses* | | | | | | |
| Single-Family Residential (<8 d.u./acre): detached dwellings, townhouses, mobile homes, bed & breakfast inns | | * | | | | * Within CNEL 60-65 dB, new dwellings allowed on existing parcels (see Policy 1.4.3) |
| Multi-Family Residential (≥8 d.u./acre): condominiums, apartments, agricultural-related housing | | | | | | |
| Long-Term Lodging (>30 nights): extended-stay hotels, dormitories | | 45 | | | | |
| Short-Term Lodging (≤ 30 nights): hotels, motels, other transient lodging(except conference/assembly facilities) | | 45 | 45 | | | |
| Congregate Care: retirement homes, assisted living, intermediate care facilities | | 45 | | | | |
| *Educational and Institutional Uses* | | | | | | |
| Family day care homes (≤14 children) | | 45 | | | | |
| Children's Schools: K-12, day care centers (>14 children); school libraries | | 45 | | | | New schools incompatible above CNEL 60 dB unless special circumstances exist (see Policies 3.2.2(a) and 4.1.5) |

**Table 10 continued**
**Sacramento International Airport Noise Compatibility**

| Land Use Category[4]<br>› Multiple land use categories and compatibility criteria may apply to a project<br>› Land uses not specifically listed shall be evaluated using criteria for similar uses | Exterior Noise Exposure (CNEL dB) | | | | | Criteria for Conditional Uses<br>› Interior CNEL limits in yellow cells apply in addition to other listed conditions (see Policy 3.2.3)<br>› Acoustical study may be required for noise-sensitive uses proposed in areas exposed to CNEL 60 dB or greater (see Policy 3.2.3(d)) |
|---|---|---|---|---|---|---|
| | ≤ 60 | 60-65 | 65-70 | 70-75 | > 75 | |
| ***Legend*** *(see last page of table for interpretation)* | ***Normally Compatible*** | | ***Conditional*** | | ***Incompatible*** | |
| Adult Education classroom space: adult schools, colleges, universities | | 45 | 45 | | | Applies only to classrooms; offices, laboratory facilities, gymnasiums, outdoor athletic facilities, and other uses to be evaluated as indicated for those land use categories |
| Community Libraries | | 45 | | | | |
| Indoor Major Assembly Facilities (capacity ≥1,000 people): auditoriums, conference centers, concert halls, indoor arenas | | 45 | 45 | | | |
| Indoor Large Assembly Facilities (capacity 300 to 999 people): movie theaters, places of worship, cemetery chapels, mortuaries | | 45 | 45 | | | |
| Indoor Recreation: gymnasiums, club houses, athletic clubs, dance studios | | | 50 | | | |
| In-Patient Medical: hospitals, mental hospitals, nursing homes | | 45 | | | | |
| Out-Patient Medical: health care centers, clinics | | 45 | 45 | 45 | | |
| Penal Institutions: prisons, reformatories | | 45 | 45 | | | |
| Public Safety Facilities: police, fire stations | | | 50 | 50 | | |
| *Commercial, Office, and Service Uses* | | | | | | |
| Major Retail: regional shopping centers, 'big box' retail | | | 50 | 50 | | Outdoor dining or gathering places incompatible above CNEL 70 dB |
| Local Retail: community/neighborhood shopping centers, grocery stores | | | 50 | 50 | | Outdoor dining or gathering places incompatible above CNEL 70 dB |
| Eating/Drinking Establishments: restaurants, fast-food dining, bars | | | 50 | 50 | | Outdoor dining or gathering places incompatible above CNEL 70 dB |
| Limited Retail/Wholesale: furniture, automobiles, heavy equipment, lumber yards, nurseries | | | 50 | 50 | | |
| Offices: professional services, doctors, finance, civic; radio, television & recording studios, office space associated with other listed uses | | | 50 | 50 | | |
| Personal & Miscellaneous Services: barbers, car washes, print shops | | | 50 | 50 | | |
| Vehicle Fueling: gas stations, trucking & transportation terminals | | | | 50 | 50 | |
| *Industrial, Manufacturing, and Storage Uses* | | | | | | |
| Hazardous Materials Production: oil refineries, chemical plants | | | | | | |
| Heavy Industrial | | | | | | |
| Light Industrial, High Intensity: food products preparation, electronic equipment | | | | 50 | 50 | |
| Light Industrial, Low Intensity: machine shops, wood products, auto repair | | | | 50 | 50 | |
| Research & Development | | | 50 | 50 | | |

**Table 10 continued**
**Sacramento International Airport Noise Compatibility**

| Land Use Category[1] | Exterior Noise Exposure (CNEL dB) | | | | | Criteria for Conditional Uses |
|---|---|---|---|---|---|---|
| › Multiple land use categories and compatibility criteria may apply to a project<br>› Land uses not specifically listed shall be evaluated using criteria for similar uses | ≤ 60 | 60-65 | 65-70 | 70-75 | > 75 | › Interior CNEL limits in yellow cells apply in addition to other listed conditions (see Policy 3.2.3)<br>› Acoustical study may be required for noise-sensitive uses proposed in areas exposed to CNEL 60 dB or greater (see Policy 3.2.3(d)) |
| ***Legend*** *(see last page of table for interpretation)* | ***Normally Compatible*** | | | ***Conditional*** | | ***Incompatible*** |
| Indoor Storage: wholesale sales, warehouses, mini/other indoor storage, barns, greenhouses | | | | | | |
| Outdoor Storage: public works yards, automobile dismantling | | | | | | |
| Mining & Extraction | | | | | | |
| *Transportation, Communication, and Utilities* | | | | | | |
| Airport Terminals: airline, general aviation | | | | 50 | 50 | |
| Rail & Bus Stations | | | | 50 | 50 | |
| Transportation Routes: road & rail rights-of-way, bus stops | | | | | | |
| Auto Parking: surface lots, structures | | | | | | |
| Communications Facilities: emergency communications, broadcast & cell towers | | | | | | |
| Power Plants (primary, peaker, alternative energy) | | | | | | |
| Electrical Substations | | | | | | |
| Wastewater Facilities: treatment, disposal | | | | | | |
| Solid Waste Disposal Facilities: landfill, incineration | | | | | | |
| Solid Waste Transfer Facilities, Recycle Centers | | | | | | |

| Land Use Acceptability | | Interpretation/Comments |
|---|---|---|
| | *Normally Compatible* | *Indoor Uses:* Either the activities associated with the land use are inherently noisy or standard construction methods will sufficiently attenuate exterior noise to an acceptable indoor community noise equivalent level (CNEL); for land use types that are compatible because of inherent noise levels, sound attenuation must be provided for associated office, retail, and other noise-sensitive indoor spaces sufficient to reduce exterior noise to an interior maximum of CNEL 50 dB<br>*Outdoor Uses:* Except as noted in the table, activities associated with the land use may be carried out with minimal interference from aircraft noise |
| | *Conditional* | *Indoor Uses:* Building structure must be capable of attenuating exterior noise to the indoor CNEL indicated by the number in the cell (either 45 or 50)<br>*Outdoor Uses:* Caution should be exercised with regard to noise-sensitive outdoor uses; these uses are likely to be disrupted by aircraft noise events; acceptability is dependent upon characteristics of the specific use [1] |
| | *Incompatible* | *Indoor Uses:* Unacceptable noise interference if windows are open; at exposures above CNEL 65 dB, extensive mitigation techniques required to make the indoor environment acceptable for performance of activities associated with the land use<br>*Outdoor Uses:* Severe noise interference makes the outdoor environment unacceptable for performance of activities associated with the land use |

Sacramento County Municipal Code

The provisions of the Sacramento County Municipal Code which would be most applicable to this project are reproduced below. For residential uses affected by non-transportation noise sources, the County Municipal Code standards are effectively identical to the County's General Plan standards shown in Table 8.

**6.68.070 Exterior Noise Standards.**

A. The following noise standards, unless otherwise specifically indicated in this chapter, shall apply to all properties within a designated noise area.

| Noise Area | County Zoning Districts | Time Period | Exterior Noise Standard |
|---|---|---|---|
| 1 | RE-1, RD-1, RE-2, RD-2, RE-3, RED-3, RD-4, R-1-A, RD-5, R-2, RD-10, R-2A, RD-20, R-3, RD-30, RD-40, RM-1, RM-2, A-1-B, AR-1, A-2, AR-2, A-5, AR-5 | 7:00 a.m. to 10:00 p.m. | 55 dBA |
| | | 10:00 p.m. to 7:00 a.m. | 50 dBA |

B. It is unlawful for any person at any location within the County to create any noise which causes the noise levels on an affected property, when measured in the designated noise area, to exceed for the duration of time set forth following, the specified exterior noise standards in any one hour by:

| Cumulative Duration of the Intrusive Sound | Allowance Decibels |
|---|---|
| 1. Cumulative period of 30 minutes per hour | 0 |
| 2. Cumulative period of 15 minutes per hour | +5 |
| 3. Cumulative period of 5 minutes per hour | +10 |
| 4. Cumulative period of 1 minute per hour | +15 |
| 5. Level not to be exceeded for any time per hour | +20 |

C. Each of the noise limits specified in subdivision (B) of this section shall be reduced by five dBA for impulsive or simple tone noises, or for noises consisting of speech or music.

D. If the ambient noise level exceeds that permitted by any of the first four noise limit categories specified in subdivision (B), the allowable noise limit shall be increased in five dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category.

**6.68.090 Exemptions.**

The following activities shall be exempted from the provisions of this chapter:

A. School bands, school athletic and school entertainment events;

B. Outdoor gatherings, public dances, shows and sporting and entertainment events, provided said events are conducted pursuant to a license by a public entity or private school;

C. Activities conducted on parks, public playgrounds and school grounds, provided such parks, playgrounds and school grounds are owned and operated by a public entity or private school;

D. Any mechanical device, apparatus or equipment related to or connected with emergency activities or emergency work;

E. Noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place between the hours of eight p.m. and six p.m. on weekdays and Friday commencing at eight p.m. through and including seven a.m. on Saturday; Saturdays commencing at eight p.m. through and including seven a.m. on the next following Sunday and on each Sunday after the hour of eight p.m. Provided, however, when an unforeseen or unavoidable conditions occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after eight p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner;

F. Noise sources associated with agricultural operations, provided such operations do not take place between the hours of eight p.m. and six a.m.;

G. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of adverse weather conditions or when the use of mobile noise sources is necessary for pest control;

H. Noise sources associated with maintenance of residential area property, provided said activities take place between the hours of six a.m. and eight p.m. on any day except Saturday or Sunday, or between the hours of seven a.m. and eight p.m. on Saturday or Sunday.

**6.68.110 Schools, Hospitals and Churches.**

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church, while the same is in use, to exceed the noise standards specified in Section 6.68.070 or to create any noise which unreasonably interferes with the use of such institution or unreasonably disturbs or annoys patients in the hospital. In any disputed case, interfering noise which is ten dBA or more, greater than the ambient noise level at the building, shall be deemed excessive and unlawful.

**6.68.120 Machinery, Equipment, Fans and Air Conditioning.**

A. It is unlawful for any person to operate any mechanical equipment, pump, fan, air conditioning apparatus, stationary pumps, stationary cooling towers, stationary compressors, similar mechanical devices, or any combination thereof installed after July 1, 1976, in any manner so as to create any noise which would cause the maximum noise level to exceed:

    1. Sixty dBA at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level;

    2. Fifty-five dBA in the center of a neighboring patio three to five feet above ground level;

    3. Fifty-five dBA outside of the neighboring living area window nearest the equipment location. Measurements shall be taken with the microphone not more than three feet from the window opening but at least three feet from any other surface.

B. Equipment installed five years after July 1, 1976, must comply with a maximum limit of fifty-five dBA at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level.

C. Equipment installed before December 17, 1970, must comply with a limit of sixty-five dBA maximum in sound level at any point at least one foot inside the affected property line and three to five feet above ground level by January 1, 1977. Equipment installed between December 16, 1970, and July 1, 1976, must comply with a limit of sixty-five dBA maximum sound level at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level.

# Impacts and Mitigation Measures

## Thresholds of Significance

Appendix G of the CEQA Guidelines asks whether the project would result in any of the following to determine whether a significant noise or vibration impact would occur:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies; or

- Generation of excessive groundborne vibration or groundborne noise levels; or

- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

For the purposes of this assessment, a noise or vibration impact may be considered significant if the project would result in exceedance of the following criteria based on standards established by the Federal Interagency Commission on Noise (FICON), California Department of Transportation (Caltrans), Sacramento Area County of Governments (SACOG), Sacramento County General Plan and Municipal Code:

- A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the Sacramento County General Plan, Municipal Code, or SACOG's Sacramento International Airport Land Use Compatibility Plan.

- A significant impact would be identified if off-site traffic noise exposure or on-site activities generated by the project would substantially increase noise levels at existing sensitive receptors in the vicinity. For operational noise, a substantial increase would be identified relative to the Federal Interagency Commission on Noise (FICON) noise level increase significance criteria presented in Table 4. This criterion is applied because CEQA requires evaluation of noise impacts relative to conditions present without the project (i.e., project-generated noise increases), not just compliance with the adopted, absolute, noise standards. For project construction activities, a substantial increase is considered to occur when project construction would result in a 10 dBA increase over baseline ambient conditions (an approximate doubling of loudness). This higher threshold is applied due to the fact that construction activities are temporary and will be limited to daytime hours to the maximum extent practical.

- A significant impact would be identified if project construction activities or proposed on-site operations would expose noise-sensitive receptors to excessive groundborne vibration levels. Specifically, an impact would be identified if groundborne vibration levels due to these sources would exceed the FTA vibration impact criteria for damage to engineered structures (98 VdB).

## Noise Impacts Associated with Project-Generated Increases in Off-Site Traffic

With development of the project, traffic volumes on the local roadway network will increase. Those increases in daily traffic volumes will result in a corresponding increase in traffic noise levels at existing sensitive uses located along those roadways. The FHWA Model was used with traffic input data from the transportation impact analysis prepared by Fehr & Peers, Inc. to predict project traffic noise level increases relative to Existing (2020) and Cumulative 2040 project and no project conditions.

### Impact 1: Increases in Existing Traffic Noise Levels due to the Project

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify increases in existing traffic noise levels at the existing sensitive land uses nearest to the project area roadway network. The FHWA Model predicts hourly $L_{eq}$ values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from $L_{eq}$ values.

Traffic data in the form of average daily traffic volumes (ADT) were obtained from the project transportation impact study prepared by Fehr & Peers. Other inputs were obtained from published Caltrans traffic counts, SACOG, and BAC observations and file data. The existing and existing plus project traffic noise levels at the distances representing the nearest sensitive land uses to the project area roadways are summarized in Table 11. Table 11 also shows the thresholds for determination of a significant traffic noise increase, whether the roadway segment contains sensitive uses, and whether or not significant noise impacts are identified for each segment. Appendix D contains the FHWA Model inputs for existing and existing plus project conditions.

Factors such as roadway elevation, curvature, grade, and shielding from local topography or structures, or elevated receivers may affect actual traffic noise propagation. Along roadways segments where existing noise barriers are present, the degree of shielding provided by those barriers was estimated and included in the Table 11 results.

**Table 11**
**Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – Existing vs. Existing Plus Project Conditions**

| # | Roadway | From | To | Predicted DNL, dBA | | | Significance Threshold[1] | Threshold Exceeded? | Sensitive Receptors Present?[2] | Significant Impact Identified?[3] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Existing | Existing + Project | Increase | | | | |
| 1 | Arena Blvd | El Centro Rd | Stemmler Dr | 64.4 | 68.0 | 3.6 | 3 | Yes | Yes | Yes |
| 2 | Arena Blvd | Stemmler Dr | Duckhorn Dr | 65.9 | 68.6 | 2.7 | 1.5 | Yes | Yes | Yes |
| 3 | Arena Blvd | Duckhorn Dr | Interstate 5 | 68.4 | 69.6 | 1.2 | 1.5 | No | No | No |
| 4 | Arena Blvd | Interstate 5 | E Commerce Way | 68.0 | 68.2 | 0.2 | 1.5 | No | No | No |
| 5 | Arena Blvd | E Commerce Way | Truxel Rd | 68.8 | 69.1 | 0.3 | 1.5 | No | Yes | No |
| 6 | Azevedo Dr | West El Camino | San Juan Rd | 66.3 | 66.2 | -0.1 | 1.5 | No | Yes | No |
| 7 | Del Paso Rd | Power Line Rd | Hovnanian Dr | 58.0 | 58.0 | 0.0 | 5 | No | Yes | No |
| 8 | Del Paso Rd | Hovnanian Dr | Natomas Central | 61.3 | 61.3 | 0.0 | 3 | No | Yes | No |
| 9 | Del Paso Rd | Natomas Central | El Centro Rd | 67.2 | 67.5 | 0.4 | 1.5 | No | Yes | No |
| 10 | Del Paso Rd | El Centro Rd | Interstate 5 | 63.0 | 64.4 | 1.3 | 3 | No | Yes | No |
| 11 | Del Paso Rd | Interstate 5 | E Commerce Way | 67.8 | 68.2 | 0.4 | 1.5 | No | Yes | No |
| 12 | Del Paso Rd | E Commerce Way | Truxel Rd | 70.4 | 70.7 | 0.3 | 1.5 | No | Yes | No |
| 13 | El Centro Rd | Del Paso Rd | Duckhorn Dr | 65.4 | 67.4 | 2.0 | 1.5 | Yes | No | No |
| 14 | El Centro Rd | Duckhorn Dr | Manera Rica Dr | 58.4 | 61.3 | 2.9 | 5 | No | Yes | No |
| 15 | El Centro Rd | Manera Rica Dr | Arena Blvd | 62.2 | 64.3 | 2.2 | 3 | No | Yes | No |
| 16 | El Centro Rd | Arena Blvd | San Juan Rd | 60.7 | 66.0 | 5.3 | 3 | Yes | Yes | Yes |
| 17 | El Centro Rd | San Juan Rd | W El Camino Ave | 67.6 | 71.5 | 3.9 | 1.5 | Yes | No | No |
| 18 | El Centro Rd | West El Camino | South Terminus | 59.3 | 68.8 | 9.5 | 5 | Yes | No | No |
| 19 | Garden Highway | Truxel Road | Natomas Park Dr | 60.5 | 60.5 | 0.0 | 3 | No | No | No |
| 20 | Garden Highway | Natomas Park Dr | Interstate 5 | 64.7 | 64.8 | 0.1 | 3 | No | Yes | No |
| 21 | Garden Highway | Interstate 5 | Gateway Oaks Dr | 61.7 | 62.5 | 0.7 | 3 | No | Yes | No |
| 22 | Garden Highway | Gateway Oaks Dr | Orchard Lane | 62.8 | 64.9 | 2.2 | 3 | No | Yes | No |
| 23 | Garden Highway | Orchard Ln | Interstate 80 | 56.6 | 60.0 | 3.4 | 5 | No | Yes | No |
| 24 | Garden Highway | Interstate 80 | San Juan Rd | 61.2 | 62.4 | 1.2 | 3 | No | Yes | No |
| 25 | Garden Highway | San Juan Rd | Powerline Road | 62.2 | 64.8 | 2.6 | 3 | No | Yes | No |
| 26 | Natomas Central | Del Paso Rd | El Centro Rd | 60.7 | 61.9 | 1.2 | 3 | No | Yes | No |
| 27 | Power Line Rd | Garden Hwy | Del Paso Rd | 61.3 | 63.7 | 2.5 | 3 | No | No | No |
| 28 | Power Line Rd | Del Paso Rd | Interstate 5 | 61.9 | 64.1 | 2.2 | 3 | No | No | No |
| 29 | San Juan Rd | Garden Hwy | El Centro Rd | 64.2 | 67.3 | 3.1 | 3 | Yes | Yes | Yes |
| 30 | San Juan Rd | El Centro Rd | 80/5 Interchange | 64.2 | 67.6 | 3.4 | 3 | Yes | Yes | Yes |
| 31 | San Juan Rd | 80/5 Interchange | Truxel Rd | 68.9 | 69.7 | 0.8 | 1.5 | No | Yes | No |

**Table 11**
**Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – Existing vs. Existing Plus Project Conditions**

| # | Roadway | From | To | Predicted DNL, dBA | | | Significance Threshold[1] | Threshold Exceeded? | Sensitive Receptors Present?[2] | Significant Impact Identified?[3] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Existing | Existing + Project | Increase | | | | |
| 32 | W El Camino | El Centro Rd | Interstate 80 | 64.9 | 72.6 | 7.7 | 3 | Yes | Yes | Yes |
| 33 | W El Camino | Interstate 80 | Orchard Lane | 67.3 | 70.5 | 3.2 | 1.5 | Yes | No | No |
| 34 | W El Camino | Orchard Ln | Gateway Oaks Dr | 68.3 | 71.5 | 3.3 | 1.5 | Yes | Yes | Yes |
| 35 | W El Camino | Gateway Oaks Dr | Interstate 5 | 67.4 | 70.2 | 2.8 | 1.5 | Yes | Yes | Yes |
| 36 | W El Camino | Interstate 5 | Azevedo Dr | 68.2 | 68.8 | 0.6 | 1.5 | No | Yes | No |
| 37 | W El Camino | Azevedo Dr | Truxel Rd | 66.3 | 67.3 | 1.0 | 1.5 | No | Yes | No |
| 38 | I-80 | Yolo County | W El Camino | 66.6 | 67.4 | 0.9 | 1.5 | No | Yes | No |
| 39 | I-80 | West El Camino | I-5 | 65.3 | 66.3 | 0.9 | 1.5 | No | Yes | No |
| 40 | I-5 | I-80 | Arena Boulevard | 74.3 | 74.7 | 0.4 | 1.5 | No | Yes | No |
| 41 | I-5 | Arena Blvd | Del Paso | 72.8 | 73.1 | 0.3 | 1.5 | No | Yes | No |
| 42 | I-5 | Del Paso | Hwy 99 | 69.8 | 69.8 | 0.0 | 1.5 | No | Yes | No |
| 43 | I-5 | Hwy 99 | Airport Blvd | 69.4 | 69.4 | 0.0 | 1.5 | No | Yes | No |

*Notes:*

1. Significance threshold derived from Table 4.
2. Sensitive receptors were considered to be residences of all densities, schools, & transient lodging facilities.
3. A significant impact is identified only along segments where the project-related traffic noise level increase would exceed the significance threshold AND where sensitive receptors are present along the roadway segment.

*Source: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix D contains FHWA Model inputs.*

The data in Table 11 indicate that project-generated traffic noise level increases would result in significant noise impacts along eight (8) existing roadway segments along which sensitive receptors are currently located.

Based on the analysis presented above, off-site traffic noise impacts related to increases in traffic resulting from the implementation of the project (existing vs. existing plus project conditions) are identified as being ***significant***.

Mitigation for Impact 1:

The mitigation of impacts at existing sensitive receptors resulting from significant project-related traffic noise increases is frequently challenging because of a combination of limited mitigation options, constraints upon implementation of certain options, cost of implementation, and limited effectiveness of some options. Nonetheless, the following specific options for mitigation of off-site traffic noise impacts at existing noise sensitive receptors should be considered to the extent reasonable and feasible:

A. **Reduction in Traffic Volumes:** Because one of the most important factors in traffic noise generation is daily vehicle volume, a reduction in traffic noise levels can be increased by reducing the overall volume of traffic which would be generated by the project. It should be noted, however, that a 3 dB reduction in traffic noise levels would require a 50% reduction in projected traffic volumes. So, this measure would require a substantial decrease in traffic volume to achieve an appreciable decrease in traffic noise levels. As a result, it is unlikely that this measure would be a feasible means of fully mitigating this noise impact.

B. **Reduction in Vehicle Speeds:** Another factor in the generation of traffic noise is vehicle speed. Higher speeds translate to higher traffic noise levels. However, vehicle speed limits are set based on speed surveys, safety considerations, and other factors, and cannot be arbitrarily reduced to achieve lower traffic noise levels. As a result, this measure would not likely be a feasible means of mitigating this noise impact.

C. **Construction of Noise Barriers:** As noted in the discussion of noise mitigation fundamentals in the beginning of this report, appreciable reductions in traffic noise levels can be achieved through the construction of traffic noise barriers. However, at locations where openings or gaps in the barriers would be required for driveway openings or to maintain safe sight distances, the effectiveness of noise barriers is severely compromised. In addition, this measure would typically require construction of noise barriers on the property of the impacted receptor, rather than within a public right-of-way, so there is no guarantee the impacted receptor would agree to the construction of such barriers. Furthermore, the construction of off-site traffic noise barriers could be extremely costly per benefitted receptor, potentially rendering this measure infeasible.

D. **Use of Setbacks:** A 4.5 dB decrease in traffic noise levels can be achieved for each doubling of distance between the roadway centerline and affected residences. However, because the locations of existing residences which would be impacted by project-generated increases in traffic noise are fixed, as are the roadways of concern, this measure is not viable for existing residences.

E. **Noise-Reducing Pavement:** Noise-reducing pavement types, such as rubberized asphalt, have been shown to provide an appreciable noise level reduction relative to other pavement types (approximately 3-4 dB over conventional asphalt overlays). However, because the project-related increase in existing traffic noise levels exceeds 4 dB along two of the roadway segments analyzed in Table 11, the benefits of noise-reducing paving materials, even if feasible, would be insufficient to fully mitigate this impact. Nonetheless, at roadway segments where a 3-4 dB decrease in traffic noise levels would be sufficient to reduce this impact to a less than significant level, this mitigation alternative would be effective, if feasible.

Some of the aforementioned noise mitigation measures may be utilized to provide appreciable traffic noise level decreases. However, because such measures may be infeasible from a cost, engineering or safety standpoint, may not fully mitigate noise impacts, or could require the consent of the impacted receptor, the successful implementation of these measures cannot be guaranteed. As a result, this impact is considered significant and unavoidable.

**Significance of Impact 1 after Mitigation:** ***Significant and Unavoidable***

**Impact 2: Increases in Cumulative Traffic Noise Levels due to the Project**

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify increases in future (cumulative) traffic noise levels at the nearest existing sensitive land uses to the project area roadway network. This analysis first assesses whether a cumulative roadway noise impact would occur by comparing the cumulative with project conditions to existing conditions. If a cumulative roadway noise impact is identified, it is further evaluated to assess whether the proposed project would make a cumulatively considerable contribution to the cumulative impact. This process is completed through a comparison of the roadway noise associated with the cumulative with project scenario against the cumulative no project scenario.

The FHWA Model predicts hourly $L_{eq}$ values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from $L_{eq}$ values. Traffic data in the form of average daily traffic volumes (ADT) were obtained from the project transportation impact study prepared by Fehr & Peers. Other inputs were obtained from published Caltrans traffic counts, SACOG, and BAC observations and file data. The existing and cumulative plus project traffic noise levels at the distances representing the nearest sensitive land uses to the project area roadways are summarized in Table 12. Table 12 also shows the thresholds for determination of a significant traffic noise increase, whether the roadway segment contains sensitive uses, and whether or not a significant cumulative noise impact is identified for each segment.

Table 13 compares the cumulative with project traffic noise levels against the cumulative no project traffic noise levels and includes a determination regarding whether the project's contribution to an identified cumulative noise impact is considerable.

Appendix D contains the FHWA Model inputs for existing, cumulative and cumulative plus project conditions.

Factors such as roadway elevation, curvature, grade, and shielding from local topography or structures, or elevated receivers may affect actual traffic noise propagation. Along roadway segments where existing noise barriers are present, the degree of shielding provided by those barriers was estimated and included in the Table 12 and 13 results.

The data in Table 12 indicate that the increase in traffic noise levels between cumulative with project conditions and existing conditions would be significant along 18 roadway segments containing noise-sensitive uses. Table 13 indicates that the project's contribution to the identified significant cumulative noise impacts would be considerable along 8 roadway segments containing noise-sensitive land uses.

Based on the analysis presented above, off-site traffic noise impacts related to increases in traffic resulting from the implementation of the project (existing vs. cumulative with project conditions) are identified as being ***significant***.

**Table 12**
**Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – Existing vs. Cumulative Plus Project Conditions**

| # | Roadway | From | To | Predicted DNL, dBA | | | Significance Threshold[1] | Threshold Exceeded? | Sensitive Receptors Present?[2] | Significant Cumulative Impact Identified?[3] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Existing | Cumulative + Project | Increase | | | | |
| 1 | Arena Blvd | El Centro Rd | Stemmler Dr | 64.4 | 69.4 | 5.0 | 3 | Yes | Yes | Yes |
| 2 | Arena Blvd | Stemmler Dr | Duckhorn Dr | 65.9 | 69.9 | 4.0 | 1.5 | Yes | Yes | Yes |
| 3 | Arena Blvd | Duckhorn Dr | Interstate 5 | 68.4 | 70.3 | 1.9 | 1.5 | Yes | No | No |
| 4 | Arena Blvd | Interstate 5 | E Commerce Way | 68.0 | 71.4 | 3.4 | 1.5 | Yes | No | No |
| 5 | Arena Blvd | E Commerce Way | Truxel Rd | 68.8 | 71.2 | 2.5 | 1.5 | Yes | Yes | Yes |
| 6 | Azevedo Dr | West El Camino | San Juan Rd | 66.3 | 66.8 | 0.6 | 1.5 | No | Yes | No |
| 7 | Del Paso Rd | Power Line Rd | Hovnanian Dr | 58.0 | 59.9 | 1.9 | 5 | No | Yes | No |
| 8 | Del Paso Rd | Hovnanian Dr | Natomas Central | 61.3 | 61.8 | 0.4 | 3 | No | Yes | No |
| 9 | Del Paso Rd | Natomas Central | El Centro Rd | 67.2 | 67.5 | 0.4 | 1.5 | No | Yes | No |
| 10 | Del Paso Rd | El Centro Rd | Interstate 5 | 63.0 | 64.9 | 1.9 | 3 | No | Yes | No |
| 11 | Del Paso Rd | Interstate 5 | E Commerce Way | 67.8 | 68.9 | 1.1 | 1.5 | No | Yes | No |
| 12 | Del Paso Rd | E Commerce Way | Truxel Rd | 70.4 | 73.3 | 2.9 | 1.5 | Yes | Yes | Yes |
| 13 | El Centro Rd | Del Paso Rd | Duckhorn Dr | 65.4 | 70.1 | 4.7 | 1.5 | Yes | No | No |
| 14 | El Centro Rd | Duckhorn Dr | Manera Rica Dr | 58.4 | 63.9 | 5.5 | 5 | Yes | Yes | Yes |
| 15 | El Centro Rd | Manera Rica Dr | Arena Blvd | 62.2 | 68.1 | 5.9 | 3 | Yes | Yes | Yes |
| 16 | El Centro Rd | Arena Blvd | San Juan Rd | 60.7 | 67.3 | 6.6 | 3 | Yes | Yes | Yes |
| 17 | El Centro Rd | San Juan Rd | W El Camino Ave | 67.6 | 72.9 | 5.3 | 1.5 | Yes | No | No |
| 18 | El Centro Rd | West El Camino | South Terminus | 59.3 | 68.6 | 9.3 | 5 | Yes | No | No |
| 19 | Garden Highway | Truxel Road | Natomas Park Dr | 60.5 | 61.2 | 0.7 | 3 | No | No | No |
| 20 | Garden Highway | Natomas Park Dr | Interstate 5 | 64.7 | 65.2 | 0.5 | 3 | No | Yes | No |
| 21 | Garden Highway | Interstate 5 | Gateway Oaks Dr | 61.7 | 63.0 | 1.2 | 3 | No | Yes | No |
| 22 | Garden Highway | Gateway Oaks Dr | Orchard Lane | 62.8 | 65.3 | 2.6 | 3 | No | Yes | No |
| 23 | Garden Highway | Orchard Ln | Interstate 80 | 56.6 | 60.8 | 4.2 | 5 | No | Yes | No |
| 24 | Garden Highway | Interstate 80 | San Juan Rd | 61.2 | 62.4 | 1.2 | 3 | No | Yes | No |
| 25 | Garden Highway | San Juan Rd | Powerline Road | 62.2 | 67.9 | 5.7 | 3 | Yes | Yes | Yes |
| 26 | Natomas Central | Del Paso Rd | El Centro Rd | 60.7 | 61.8 | 1.1 | 3 | No | Yes | No |
| 27 | Power Line Rd | Garden Hwy | Del Paso Rd | 61.3 | 66.3 | 5.1 | 3 | Yes | No | No |
| 28 | Power Line Rd | Del Paso Rd | Interstate 5 | 61.9 | 67.1 | 5.2 | 3 | Yes | No | No |
| 29 | San Juan Rd | Garden Hwy | El Centro Rd | 64.2 | 68.5 | 4.3 | 3 | Yes | Yes | Yes |

**Table 12**
**Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – Existing vs. Cumulative Plus Project Conditions**

| # | Roadway | From | To | Predicted DNL, dBA | | | Significance Threshold[1] | Threshold Exceeded? | Sensitive Receptors Present?[2] | Significant Cumulative Impact Identified?[3] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Existing | Cumulative + Project | Increase | | | | |
| 30 | San Juan Rd | El Centro Rd | 80/5 Interchange | 64.2 | 67.9 | 3.7 | 3 | Yes | Yes | Yes |
| 31 | San Juan Rd | 80/5 Interchange | Truxel Rd | 68.9 | 70.6 | 1.7 | 1.5 | Yes | Yes | Yes |
| 32 | W El Camino | El Centro Rd | Interstate 80 | 64.9 | 72.8 | 8.0 | 3 | Yes | Yes | Yes |
| 33 | W El Camino | Interstate 80 | Orchard Lane | 67.3 | 70.7 | 3.4 | 1.5 | Yes | No | No |
| 34 | W El Camino | Orchard Ln | Gateway Oaks Dr | 68.3 | 71.7 | 3.4 | 1.5 | Yes | Yes | Yes |
| 35 | W El Camino | Gateway Oaks Dr | Interstate 5 | 67.4 | 70.3 | 3.0 | 1.5 | Yes | Yes | Yes |
| 36 | W El Camino | Interstate 5 | Azevedo Dr | 68.2 | 69.4 | 1.1 | 1.5 | No | Yes | No |
| 37 | W El Camino | Azevedo Dr | Truxel Rd | 66.3 | 68.3 | 2.0 | 1.5 | Yes | Yes | Yes |
| 38 | I-80 | Yolo County | W El Camino | 66.6 | 68.9 | 2.4 | 1.5 | Yes | Yes | Yes |
| 39 | I-80 | West El Camino | I-5 | 65.3 | 67.7 | 2.4 | 1.5 | Yes | Yes | Yes |
| 40 | I-5 | I-80 | Arena Boulevard | 74.3 | 76.1 | 1.8 | 1.5 | Yes | Yes | Yes |
| 41 | I-5 | Arena Blvd | Del Paso | 72.8 | 74.2 | 1.4 | 1.5 | No | Yes | No |
| 42 | I-5 | Del Paso | Hwy 99 | 69.8 | 71.2 | 1.4 | 1.5 | No | Yes | No |
| 43 | I-5 | Hwy 99 | Airport Blvd | 69.4 | 70.5 | 1.1 | 1.5 | No | Yes | No |

*Notes:*

1. Significance threshold derived from Table 4.
2. Sensitive receptors were considered to be residences of all densities, schools, & transient lodging facilities.
3. A significant cumulative impact is identified only along segments where the cumulative project-related traffic noise level increase would exceed the significance threshold AND where sensitive receptors are present along the roadway segment.

*Source: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix D contains FHWA Model inputs.*

**Table 13**
**Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – Cumulative vs. Cumulative Plus Project Conditions**

| # | Roadway | From | To | Predicted DNL, dBA | | | Significance Threshold[1] | Threshold Exceeded? | Sensitive Receptors Present?[2] | Project's Contribution to Cumulative Impact Considerable?[3] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Cumulative | Cumulative + Project | Increase | | | | |
| 1 | Arena Blvd | El Centro Rd | Stemmler Dr | 67.1 | 69.4 | 2.3 | 3 | Yes | Yes | Yes |
| 2 | Arena Blvd | Stemmler Dr | Duckhorn Dr | 68.2 | 69.9 | 1.7 | 1.5 | Yes | Yes | Yes |
| 3 | Arena Blvd | Duckhorn Dr | Interstate 5 | 69.7 | 70.3 | 0.7 | 1.5 | No | No | No |
| 4 | Arena Blvd | Interstate 5 | E Commerce Way | 71.0 | 71.4 | 0.3 | 1.5 | No | No | No |
| 5 | Arena Blvd | E Commerce Way | Truxel Rd | 70.8 | 71.2 | 0.4 | 1.5 | No | Yes | No |
| 6 | Azevedo Dr | West El Camino | San Juan Rd | 66.9 | 66.8 | 0.0 | 1.5 | No | Yes | No |
| 7 | Del Paso Rd | Power Line Rd | Hovnanian Dr | 59.8 | 59.9 | 0.1 | 5 | No | Yes | No |
| 8 | Del Paso Rd | Hovnanian Dr | Natomas Central | 61.7 | 61.8 | 0.0 | 3 | No | Yes | No |
| 9 | Del Paso Rd | Natomas Central | El Centro Rd | 67.3 | 67.5 | 0.2 | 1.5 | No | Yes | No |
| 10 | Del Paso Rd | El Centro Rd | Interstate 5 | 64.1 | 64.9 | 0.8 | 3 | No | Yes | No |
| 11 | Del Paso Rd | Interstate 5 | E Commerce Way | 68.7 | 68.9 | 0.2 | 1.5 | No | Yes | No |
| 12 | Del Paso Rd | E Commerce Way | Truxel Rd | 73.0 | 73.3 | 0.3 | 1.5 | No | Yes | No |
| 13 | El Centro Rd | Del Paso Rd | Duckhorn Dr | 68.2 | 70.1 | 1.8 | 1.5 | Yes | No | No |
| 14 | El Centro Rd | Duckhorn Dr | Manera Rica Dr | 61.8 | 63.9 | 2.1 | 1.5 | Yes | Yes | Yes |
| 15 | El Centro Rd | Manera Rica Dr | Arena Blvd | 66.2 | 68.1 | 1.9 | 1.5 | Yes | Yes | Yes |
| 16 | El Centro Rd | Arena Blvd | San Juan Rd | 63.2 | 67.3 | 4.1 | 3 | Yes | Yes | Yes |
| 17 | El Centro Rd | San Juan Rd | W El Camino Ave | 70.1 | 72.9 | 2.8 | 1.5 | Yes | No | No |
| 18 | El Centro Rd | West El Camino | South Terminus | 59.3 | 68.6 | 9.3 | 5 | Yes | No | No |
| 19 | Garden Highway | Truxel Road | Natomas Park Dr | 61.3 | 61.2 | -0.1 | 3 | No | No | No |
| 20 | Garden Highway | Natomas Park Dr | Interstate 5 | 64.8 | 65.2 | 0.4 | 3 | No | Yes | No |
| 21 | Garden Highway | Interstate 5 | Gateway Oaks Dr | 62.0 | 63.0 | 1.0 | 3 | No | Yes | No |
| 22 | Garden Highway | Gateway Oaks Dr | Orchard Lane | 62.2 | 65.3 | 3.1 | 3 | No | Yes | No |
| 23 | Garden Highway | Orchard Ln | Interstate 80 | 56.1 | 60.8 | 4.7 | 1.5 | Yes | Yes | Yes |
| 24 | Garden Highway | Interstate 80 | San Juan Rd | 59.0 | 62.4 | 3.4 | 3 | No | Yes | No |
| 25 | Garden Highway | San Juan Rd | Powerline Road | 64.0 | 67.9 | 3.9 | 1.5 | Yes | Yes | Yes |
| 26 | Natomas Central | Del Paso Rd | El Centro Rd | 61.5 | 61.8 | 0.2 | 3 | No | Yes | No |
| 27 | Power Line Rd | Garden Hwy | Del Paso Rd | 62.3 | 66.3 | 4.0 | 3 | No | No | No |
| 28 | Power Line Rd | Del Paso Rd | Interstate 5 | 64.0 | 67.1 | 3.1 | 3 | No | No | No |
| 29 | San Juan Rd | Garden Hwy | El Centro Rd | 65.7 | 68.5 | 2.9 | 3 | Yes | Yes | Yes |

**Table 13**
**Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – Cumulative vs. Cumulative Plus Project Conditions**

| # | Roadway | From | To | Predicted DNL, dBA | | | Significance Threshold[1] | Threshold Exceeded? | Sensitive Receptors Present?[2] | Project's Contribution to Cumulative Impact Considerable?[3] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Cumulative | Cumulative + Project | Increase | | | | |
| 30 | San Juan Rd | El Centro Rd | 80/5 Interchange | 64.9 | 67.9 | 3.0 | 3 | Yes | Yes | Yes |
| 31 | San Juan Rd | 80/5 Interchange | Truxel Rd | 70.5 | 70.6 | 0.1 | 1.5 | No | Yes | No |
| 32 | W El Camino | El Centro Rd | Interstate 80 | 67.6 | 72.8 | 5.3 | 3 | Yes | Yes | Yes |
| 33 | W El Camino | Interstate 80 | Orchard Lane | 68.0 | 70.7 | 2.7 | 1.5 | Yes | No | No |
| 34 | W El Camino | Orchard Ln | Gateway Oaks Dr | 68.8 | 71.7 | 2.9 | 1.5 | Yes | Yes | Yes |
| 35 | W El Camino | Gateway Oaks Dr | Interstate 5 | 68.0 | 70.3 | 2.4 | 1.5 | Yes | Yes | Yes |
| 36 | W El Camino | Interstate 5 | Azevedo Dr | 68.8 | 69.4 | 0.6 | 1.5 | No | Yes | No |
| 37 | W El Camino | Azevedo Dr | Truxel Rd | 67.2 | 68.3 | 1.0 | 1.5 | No | Yes | No |
| 38 | I-80 | Yolo County | W El Camino | 68.3 | 68.9 | 0.6 | 1.5 | No | Yes | No |
| 39 | I-80 | West El Camino | I-5 | 67.1 | 67.7 | 0.6 | 1.5 | No | Yes | No |
| 40 | I-5 | I-80 | Arena Boulevard | 75.8 | 76.1 | 0.3 | 1.5 | No | Yes | No |
| 41 | I-5 | Arena Blvd | Del Paso | 73.9 | 74.2 | 0.2 | 1.5 | No | Yes | No |
| 42 | I-5 | Del Paso | Hwy 99 | 71.0 | 71.2 | 0.2 | 1.5 | No | Yes | No |
| 43 | I-5 | Hwy 99 | Airport Blvd | 70.3 | 70.5 | 0.2 | 1.5 | No | Yes | No |

*Notes:*

1. If the cumulative increase is greater than 3 dBA (from Table 12), then a 1.5 dBA threshold is applied to represent a cumulatively considerable contribution from the project.
2. Sensitive receptors were considered to be residences of all densities, schools, & transient lodging facilities.
3. A significant impact is identified only along segments where the project-related traffic noise level increase would exceed the significance threshold AND where sensitive receptors are present along the roadway segment.

*Source: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix D contains FHWA Model inputs.*

Mitigation for Impact 2:

The mitigation of impacts at existing sensitive receptors resulting from significant project-related traffic noise increases is frequently challenging because of a combination of limited mitigation options, constraints upon implementation of certain options, cost of implementation, and limited effectiveness of some options. Nonetheless, the following specific options for mitigation of off-site traffic noise impacts at existing noise sensitive receptors should be considered to the extent reasonable and feasible:

A. **Reduction in Traffic Volumes:** Because one of the most important factors in traffic noise generation is daily vehicle volume, a reduction in traffic noise levels can be increased by reducing the overall volume of traffic which would be generated by the project. It should be noted, however, that a 3 dB reduction in traffic noise levels would require a 50% reduction in projected traffic volumes. So, this measure would require a substantial decrease in traffic volume to achieve an appreciable decrease in traffic noise levels. As a result, it is unlikely that this measure would be a feasible means of fully mitigating this noise impact.

B. **Reduction in Vehicle Speeds:** Another factor in the generation of traffic noise is vehicle speed. Higher speeds translate to higher traffic noise levels. However, vehicle speed limits are set based on speed surveys, safety considerations, and other factors, and cannot be arbitrarily reduced to achieve lower traffic noise levels. As a result, this measure would not likely be a feasible means of mitigating this noise impact.

C. **Construction of Noise Barriers:** As noted in the discussion of noise mitigation fundamentals in the beginning of this report, appreciable reductions in traffic noise levels can be achieved through the construction of traffic noise barriers. However, at locations where openings or gaps in the barriers would be required for driveway openings or to maintain safe sight distances, the effectiveness of noise barriers is severely compromised. In addition, this measure would typically require construction of noise barriers on the property of the impacted receptor, rather than within a public right-of-way, so there is no guarantee the impacted receptor would agree to the construction of such barriers. Furthermore, the construction of off-site traffic noise barriers could be extremely costly per benefitted receptor, potentially rendering this measure infeasible.

D. **Use of Setbacks:** A 4.5 dB decrease in traffic noise levels can be achieved for each doubling of distance between the roadway centerline and affected residences. However, because the locations of existing residences which would be impacted by project-generated increases in traffic noise are fixed, as are the roadways of concern, this measure is not viable for existing residences.

E. **Noise-Reducing Pavement:** Noise-reducing pavement types, such as rubberized asphalt, have been shown to provide an appreciable noise level reduction relative to other pavement types (approximately 3-4 dB over conventional asphalt overlays). However, because the project-related increase in existing traffic noise levels exceeds

4 dB along two of the roadway segments analyzed in Table 11, the benefits of noise-reducing paving materials, even if feasible, would be insufficient to fully mitigate this impact. Nonetheless, at roadway segments where a 3-4 dB decrease in traffic noise levels would be sufficient to reduce this impact to a less than significant level, this mitigation alternative would be effective, if feasible.

Some of the aforementioned noise mitigation measures may be utilized to provide appreciable traffic noise level decreases. However, because such measures may be infeasible from a cost, engineering or safety standpoint, may not fully mitigate noise impacts, or could require the consent of the impacted receptor, the successful implementation of these measures cannot be guaranteed. As a result, this impact is considered significant and unavoidable.

**Significance of Impact 2 after Mitigation: *Significant and Unavoidable***

## Noise Impacts from Proposed Plan area Components at Existing Sensitive Uses

According to the land use plan, the Plan area will contain new residential (various densities), commercial, commercial mixed-use, school, park and open space uses. However, the specific uses to be developed within those areas have yet to be determined. It should be noted that the Plan area will also contain existing agricultural uses, but agricultural uses are not proposed. The locations of the proposed and existing uses with the Plan area are shown on Figure 2.

Commercial Mixed-Use Operations

The Commercial Mixed-Use components of the Plan area will provide a mix of residential and commercial uses. In a vertically integrated situation within the urban town center and adjacent to the West El Camino Avenue, this could allow four-story apartments or offices over ground floor commercial. In a horizontally integrated situation, away from West El Camino Avenue, a one-story restaurant might be located adjacent to a five-story hotel, office building or apartment building. Primary noise sources associated with the non-residential uses of commercial mixed-use components typically consist of parking lot movements (cars arriving and departing, engines starting, car doors closing, etc.), commercial deliveries (vans, medium/heavy duty trucks), and mechanical equipment (rooftop heating, ventilating and air conditioning systems).

Employment/Highway Commercial Operations

The Employment/Highway Commercial components of the Plan area will focus on uses such as four or five-story office buildings, but could allow hotels, restaurants and retail uses. Primary noise sources associated with the commercial uses identified above typically consist of parking lot movements (cars arriving and departing, engines starting, car doors closing, etc.), commercial deliveries (vans, medium/heavy duty trucks), mechanical equipment (rooftop heating, ventilating and air conditioning systems), and drive-through speakers and vehicles. Although not specifically proposed, if a gas station were to be proposed within the Employment/Highway Commercial areas, noise sources associated with such uses would consist primarily of intermittent heavy truck fuel deliveries and smaller retail deliveries. Many gas stations include car washes which, if

developed in the Employment/Highway Commercial areas, would also introduce noise associated with car wash dryers and vacuums.

School Activities

The School components of the Plan area will consist of three K-8 schools, one high-school, and a community college. Primary noise sources associated with school uses typically consist of parking lot movements (cars arriving and departing, engines starting, car doors closing, etc.), children playing on play structures, participants and spectators at outdoor sport playing fields and facilities, and outdoor public address (PA) systems associated with playing fields/stadiums.

Section 6.68.090(a) of the Sacramento County Municipal Code provides an exemption for noise from school bands, school athletic and school entertainment events. In addition, Section 6.68.090(c) exempts noise from activities conducted on school grounds provided the grounds are owned and operated by a public entity or private school. For the purposes of this assessment, it is reasonably assumed that future school uses within the Plan area would be owned and operated by a public entity or private school. As a result, an impact discussion for project-generated school activity noise at existing noise-sensitive uses relative to the Sacramento County Municipal Code noise level criteria is not included in this assessment. Rather, this assessment provides an analysis of school activity noise at existing off-site uses relative to the applicable Sacramento County General Plan noise level limits. For the purposes of this analysis, it is reasonable to assume that school activities within the Plan area would likely be restricted to daytime hours (7:00 a.m. to 10:00 p.m.).

Park Activities

The Park components of the Plan area are distributed throughout the Plan area and have been sized to meet local neighborhood and larger community-wide needs. Primary noise sources associated with park uses typically consist of children playing on play structures, and participants and spectators at outdoor sport playing fields and facilities.

Section 6.68.090(c) of the Sacramento County Municipal Code exempts noise from activities conducted on parks and public playgrounds provided the uses are owned and operated by a public entity. For the purposes of this assessment, it is reasonably assumed that future park uses within the Plan area would be owned and operated by a public entity. As a result, an impact discussion for project-generated park activity noise at existing noise-sensitive uses relative to the Sacramento County Municipal Code noise level criteria is not included in this assessment. Rather, this assessment provides an analysis of park activity noise at existing off-site uses relative to the applicable Sacramento County General Plan noise level limits. For the purposes of this analysis, it is reasonable to assume that park activities within the Plan area would likely be restricted to daytime hours (7:00 a.m. to 10:00 p.m.).

Applicable Noise Level Criteria

As noted in the Regulatory Setting section of this report, the Sacramento County General Plan establishes exterior noise level standards of 55 dB $L_{50}$ / 75 dB $L_{max}$ (daytime) and 50 dB $L_{50}$ / 70

dB $L_{max}$ (nighttime) for residential uses. In addition, the General Plan establishes interior noise level standards of 35 dB $L_{50}$ / 55 dB $L_{max}$ (daytime and nighttime) for residential uses. The Sacramento County Municipal Code also establishes acceptable exterior noise level limits for residential uses. However, the relevant Municipal Code noise level criteria are consistent with that established in the General Plan. As a result, compliance with the General Plan's exterior noise level criteria identified above would ensure for satisfaction of the Municipal Code's exterior noise level limits.

Finally, although the preliminary land use plan contains the general locations of the planned land use components within the Plan area (Figure 2), detailed plans illustrating locations of specific uses within those components have not yet been developed. It is expected that detailed development plans for all land use components within the Plan area will be reviewed at a future date as part of the County's project approval process. As a result, the following section provides generalized analyses of land use operations noise exposure at existing noise-sensitive uses.

**Impact 3: Commercial Mixed-Use Parking Noise at Existing Sensitive Uses**

As a means of determining potential noise exposure due to Commercial Mixed-Use parking lot activities, Bollard Acoustical Consultants, Inc. (BAC) utilized specific parking lot noise level measurements conducted by BAC. Specifically, a series of individual noise measurements were conducted of multiple vehicle types arriving and departing a parking area, including engines starting and stopping, car doors opening and closing, and persons conversing as they entered and exited the vehicles. The results of those measurements revealed that individual parking lot movements generated mean noise levels of 65 dB SEL at a reference distance of 50 feet.

For a conservative assessment of Commercial Mixed-Use parking area noise generation, it was assumed that individual parking areas (of which there could be more) could accommodate up to 300 vehicles. This estimate of vehicle capacity was based on review of the preliminary land use plan shown in Figure 2 and the use types envisioned within the commercial mixed-use areas. It was also assumed that a parking area could fill or empty during any given peak hour of business operations. However, during hours of operation, it is likely that parking area activity would be more spread out. Parking area noise exposure was determined using the following equation:

$$Peak\ Hour\ L_{eq} = 65+10*log\ (N) - 35.6$$

Where 65 is the SEL for a single automobile parking operation at a reference distance of 50 feet, N is the number of parking area operations in a peak hour, and 35.6 is 10 times the logarithm of the number of seconds in an hour. Using BAC parking lot noise measurement data and the equation provided above, noise exposure from an individual parking area having 300 vehicle stalls computes to approximately 49 dB $L_{50}$ and 65 dB $L_{max}$ at a distance of 50 feet from the effective noise center of the area.

The nearest identified existing noise-sensitive uses to proposed Commercial Mixed-Use components have been identified as residential receivers located on the south side of I-80, which maintain a separation of approximately 800 feet. When projected to a distance of 800 feet, parking noise exposure from a Commercial Mixed-Use component is calculated to be

approximately 25 dB $L_{50}$ and 41 dB $L_{max}$. The predicted noise levels exclude consideration of shielding that would be provided by existing 12-foot-tall solid traffic noise barriers constructed along I-80, which are estimated to provide a minimum of 12 dB of noise level reduction. Thus, it is expected that Commercial Mixed-Use parking lot noise levels will satisfy the Sacramento County General Plan daytime and nighttime exterior and interior noise level limits at the nearest existing noise-sensitive (residential) uses. It is further expected that Commercial Mixed-Use parking area noise levels would be well below ambient noise level conditions at the nearest existing residential uses. As a result, this impact is identified as being ***less than significant.***

**Impact 4: Commercial Mixed-Use Delivery Truck Noise at Existing Sensitive Uses**

It is expected that portions of the businesses proposed within the Commercial Mixed-Use areas will receive deliveries of product from heavy and/or medium-duty trucks. It is further expected that those uses will typically generate light semi-trailer truck activity once initial store stocking has been completed. BAC file data for commercial uses such as those envisioned within the Commercial Mixed-Use areas can have up to three (3) regular weekly heavy truck deliveries of product to the businesses. These deliveries would occur on different days and times throughout the week. Depending on the design of the use, truck unloading could occur at loading dock areas or in front of the retail use. In addition to occasional heavy truck deliveries, medium-duty vendor trucks and side-step vans could also deliver products to the other commercial businesses of the parcel, which would typically occur at the storefronts.

For the purposes of this analysis, it was assumed that 1 heavy truck and 3 medium duty truck deliveries could occur within a Commercial Mixed-Use parcel / area during a busy hour. Truck deliveries are expected to be relatively brief in duration. BAC file data indicate that heavy truck deliveries produce an average Sound Exposure Level (SEL) of approximately 85 dB at a distance of 100 feet, with medium duty trucks (including sidestep vans), producing a SEL of approximately 76 dB. Based on these levels, and 1 semi-trailer delivery and 3 medium duty truck deliveries during any given hour, the resulting noise levels are calculated to be 46 dB $L_{50}$ and 74 dB $L_{max}$ at a distance of 100 feet.

The nearest identified existing noise-sensitive uses to proposed Commercial Mixed-Use components have been identified as residential receivers located on the south side of I-80, which maintain a separation of approximately 800 feet. When projected to a distance of 800 feet, delivery truck activity noise exposure from a Commercial Mixed-Use component is calculated to be approximately 28 dB $L_{50}$ and 56 dB $L_{max}$. The predicted noise levels exclude consideration of shielding that would be provided by existing 12-foot-tall solid traffic noise barriers constructed along I-80, which are estimated to provide a minimum of 12 dB of noise level reduction. Thus, it is expected that Commercial Mixed-Use truck delivery noise levels will satisfy the Sacramento County General Plan daytime and nighttime exterior and interior noise level limits at the nearest existing noise-sensitive (residential) uses. It is further expected that Commercial Mixed-Use truck delivery noise levels would be well below ambient noise level conditions at the nearest existing residential uses. As a result, this impact is identified as being ***less than significant.***

**Impact 5: Commercial Mixed-Use HVAC Equipment Noise at Existing Sensitive Uses**

The HVAC systems within future buildings in the Commercial Mixed-Use areas will likely consist of packaged rooftop air conditioning systems. Such HVAC units, which typically stand about 4-5 feet tall, would be shielded from view of nearby sensitive uses by the building parapets. The noise generation of packaged rooftop HVAC units is related to the cooling capacity of the system. A typical 10-ton packaged rooftop system generates an A-weighted sound power level of approximately 93 dBA (Noise Control for Buildings and Manufacturing Plants, Hoover & Keith, equation 7-10). At a distance of 100 feet, the noise generation of the packaged rooftop system would be approximately 53 dBA. After considering the noise attenuation provided by the building and building parapet (estimated to be approximately 10 dBA), the resulting noise level would be approximately 45 dB $L_{eq}/L_{50}$ at a reference distance of 100 feet from the building facade.

The nearest identified existing noise-sensitive uses to proposed Commercial Mixed-Use components have been identified as residential receivers located on the south side of I-80, which maintain a separation of approximately 800 feet. When projected to a distance of 800 feet, HVAC equipment noise exposure from a Commercial Mixed-Use component is calculated to be approximately 27 dB $L_{50}$. The predicted noise level excludes consideration of shielding that would be provided by existing 12-foot-tall solid traffic noise barriers constructed along I-80, which are estimated to provide a minimum of 12 dB of noise level reduction. Thus, it is expected that Commercial Mixed-Use HVAC equipment noise levels will satisfy the Sacramento County General Plan and Municipal Code (Section 6.68.120) daytime and nighttime exterior and interior noise level limits at the nearest existing noise-sensitive (residential) uses. It is further expected that Commercial Mixed-Use HVAC equipment noise levels would be well below ambient noise level conditions at the nearest existing residential uses. As a result, this impact is identified as being ***less than significant.***

**Impact 6: Employment/Highway Commercial Use Parking Noise at Existing Sensitive Uses**

An analysis of commercial parking area noise exposure was presented in **Impact 3**. The results from that analysis indicate that noise exposure from an individual parking area having 300 vehicle stalls computes to approximately 49 dB $L_{50}$ and 65 dB $L_{max}$ at a distance of 50 feet from the effective noise center of the area.

The nearest identified existing noise-sensitive uses to proposed Employment/Highway Commercial components have been identified as residential receivers located on the south side of I-80, which maintain a separation of approximately 400 feet. When projected to a distance of 400 feet, parking lot noise levels are calculated to be approximately 31 dB $L_{50}$ and 47 dB $L_{max}$. The predicted noise levels exclude consideration of shielding that would be provided by existing 12-foot-tall solid traffic noise barriers constructed along I-80, which are estimated to provide a minimum of 12 dB of noise level reduction. Thus, it is expected that Employment/Highway Commercial parking area noise levels will satisfy the Sacramento County General Plan daytime and nighttime exterior and interior noise level limits at the nearest existing noise-sensitive (residential) uses. It is further expected that Employment/Highway Commercial parking area

noise levels would be well below ambient noise level conditions at the nearest existing residential uses. As a result, this impact is identified as being ***less than significant.***

**Impact 7: Employment/Highway Commercial Use Delivery Truck Noise at Existing Sensitive Uses**

An analysis of commercial delivery truck activity noise exposure was presented in **Impact 4**. The results from that analysis indicate that noise exposure from commercial delivery truck activities was calculated to be 46 dB $L_{50}$ and 74 dB $L_{max}$ at a distance of 100 feet.

The nearest identified existing noise-sensitive uses to proposed Employment/Highway Commercial components have been identified as residential receivers located on the south side of I-80, which maintain a separation of approximately 400 feet. When projected to a distance of 400 feet, delivery truck activity noise levels are calculated to be approximately 34 dB $L_{50}$ and 62 dB $L_{max}$. The predicted noise levels exclude consideration of shielding that would be provided by existing 12-foot-tall solid traffic noise barriers constructed along I-80, which are estimated to provide a minimum of 12 dB of noise level reduction. Thus, it is expected that Employment/Highway Commercial delivery truck activity noise levels will satisfy the Sacramento County General Plan daytime and nighttime exterior and interior noise level limits at the nearest existing noise-sensitive (residential) uses. It is further expected that Employment/Highway Commercial delivery truck activity noise levels would be well below ambient noise level conditions at the nearest existing residential uses. As a result, this impact is identified as being ***less than significant.***

**Impact 8: Employment/Highway Commercial Use HVAC Equipment Noise at Existing Sensitive Uses**

An analysis of commercial HVAC equipment noise exposure was presented in **Impact 5.** The results from that analysis indicate that noise exposure from commercial HVAC equipment was calculated to be 45 dB $L_{50}$ at a distance of 100 feet.

The nearest identified existing noise-sensitive uses to proposed Employment/Highway Commercial components have been identified as residential receivers located on the south side of I-80, which maintain a separation of approximately 400 feet. When projected to a distance of 400 feet, HVAC equipment noise level exposure is calculated to be approximately 33 dB $L_{50}$. The predicted noise level excludes consideration of shielding that would be provided by existing 12-foot-tall solid traffic noise barriers constructed along I-80, which are estimated to provide a minimum of 12 dB of noise level reduction. Thus, it is expected that Employment/Highway Commercial HVAC equipment noise levels will satisfy the Sacramento County General Plan and Municipal Code (Section 6.68.120) daytime and nighttime exterior and interior noise level limits at the nearest existing noise-sensitive (residential) uses. It is further expected that Employment/Highway Commercial HVAC equipment noise levels would be well below ambient noise level conditions at the nearest existing residential uses. As a result, this impact is identified as being ***less than significant.***

**Impact 9: Employment/Highway Commercial Use Drive-Through Restaurant Noise at Existing Sensitive Uses**

As mentioned previously, specific uses within the land use components have not yet been determined. However, it is possible that the Employment/Highway Commercial components could contain drive-through restaurant businesses.

To quantify the noise emissions of a restaurant drive-through speaker and vehicle passages, BAC utilized noise measurement data collected for drive-through operations in the greater Sacramento area in recent years. According to BAC file data, drive-through menu speaker boards have measured noise levels of approximately 63 dB L50 and 67 dB $L_{max}$ at a distance of 10 feet. BAC file data further indicates that vehicle passbys in drive-throughs have measured levels of approximately 60 dB L50 and 70 dB $L_{max}$ at 5 feet.

The nearest identified existing noise-sensitive uses to proposed Employment/Highway Commercial components have been identified as residential receivers located on the south side of I-80, which maintain a separation of approximately 400 feet. When projected to a distance of 400 feet, combined drive-through operations noise level exposure is calculated to be approximately 31 dB $L_{50}$ and 37 dB $L_{max}$. The predicted noise levels exclude consideration of shielding that would be provided by existing 12-foot-tall solid traffic noise barriers constructed along I-80, which are estimated to provide a minimum of 12 dB of noise level reduction. Thus, it is expected that Employment/Highway Commercial drive-through operations noise levels will satisfy the Sacramento County General Plan daytime and nighttime exterior and interior noise level limits at the nearest existing noise-sensitive (residential) uses. It is further expected that Employment/Highway Commercial drive-through operations noise levels would be well below ambient noise level conditions at the nearest existing residential uses. As a result, this impact is identified as being ***less than significant.***

**Impact 10: Employment/Highway Commercial Use Car Wash Operations Noise at Existing Sensitive Uses**

As mentioned previously, specific uses within the land use components have not yet been determined. However, it is possible that the Employment/Highway Commercial components within the Plan area could contain gas station uses with car wash operations.

Based on the experience of Bollard Acoustical Consultants, noise levels generated by car washes are primarily due to the drying portion of the operation. To quantify the noise levels from car wash drying assemblies, BAC utilized file data for equipment commonly used in gas station/car wash tunnel combination uses. Specifically, noise level data for a Ryko 3-Fan Slimline Drying System was used in this analysis. In addition, it is the experience of BAC that many gas station/ car wash combination uses also have vehicle vacuum systems. To quantify the noise generation from vacuum systems, BAC utilized file data for equipment commonly used in gas station/car wash tunnel combination uses. Specifically, noise level data for a JE Adams Super Vac (2-motor) Model 9200 series vacuum system was used in this analysis.

The nearest identified existing noise-sensitive uses to proposed Employment/Highway Commercial components have been identified as residential receivers located on the south side of I-80, which maintain a separation of approximately 400 feet. When projected to a distance of 400 feet, car wash drying assembly noise level exposure is calculated to be approximately 52 dB $L_{50}$. In addition, vacuum system noise level exposure is calculated to be approximately 48 dB $L_{50}$ at a distance of 400 feet. The predicted noise level excludes consideration of shielding that would be provided by existing 12-foot-tall solid traffic noise barriers constructed along I-80, which are estimated to provide a minimum of 12 dB of noise level reduction. Thus, it is expected that Employment/Highway Commercial car wash operations noise levels will satisfy the Sacramento County General Plan daytime and nighttime exterior and interior noise level limits at the nearest existing noise-sensitive (residential) uses. It is further expected that Employment/Highway Commercial car wash operations noise levels would be well below ambient noise level conditions at the nearest existing residential uses. As a result, this impact is identified as being ***less than significant.***

**Impact 11: School Use Parking Noise at Existing Sensitive Uses**

An analysis of commercial parking area noise exposure was presented in **Impact 3**. The results from that analysis indicate that noise exposure from an individual parking area having 300 vehicle stalls computes to approximately 49 dB $L_{50}$ and 65 dB $L_{max}$ at a distance of 50 feet from the effective noise center of the area.

The nearest identified existing noise-sensitive uses to a proposed School use have been identified as residential receivers located adjacent to the proposed high school within the Plan area, which maintain a separation of approximately 50 feet. However, due to typical spatial requirements of typical parking areas, it is not likely that a 300-stall parking area would have an effective noise center 50 feet from its edge. When conservatively projected to a distance of 200 feet, parking lot noise levels are calculated to be approximately 37 dB $L_{50}$ and 53 dB $L_{max}$. Nonetheless, because future configurations of parking lots within the School use areas are currently not known, and based on the proximity to nearby sensitive uses, it is possible that parking area noise exposure could exceed the General Plan's exterior and interior daytime noise level standards at nearby existing residential uses. Further, noise levels from School parking areas could potentially exceed existing ambient conditions at nearby residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 11:

To satisfy applicable Sacramento County General Plan exterior and interior noise level standards at nearby existing noise-sensitive uses, the following noise mitigation measure should be implemented:

**MM-11:** A site specific noise impact study that addresses School use parking area activities shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of School use parking noise exposure at the nearest existing noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as

appropriate) to reduce school-related parking lot noise levels to a state of compliance with the County Code standards of 55 dBA $L_{50}$ and 75 dBA $L_{max}$ at nearby existing sensitive receptors. Specific mitigation measures could include, but are not limited to, increasing setbacks between parking areas and nearby sensitive receptors (6 dBA decrease per doubling of distance), and the construction of solid noise barriers (5-10 dBA reduction depending on barrier height and geometry).

**Significance of Impact 11 after Mitigation: *Less than Significant***

**Impact 12: Elementary School Use Playground and Playing Field Noise at Existing Sensitive Uses**

For the assessment of playground noise impacts, noise level data collected by BAC staff at various outdoor play areas in recent years was utilized. The primary noise source associated with play area use is shouting children. BAC file data indicate that noise levels of outdoor play areas containing approximately 50 children are measured to be 55 dB $L_{eq}$ and 75 dB $L_{max}$ at a distance of 50 feet from the focal point of the play area during school recess.

Because activities within School components of the Plan area would consist of human speech (i.e., shouting children), noise associated with school playground and playing field activities would be subject to the Sacramento County General Plan's more restrictive daytime and nighttime noise level standards (the criteria contain a 5 dB penalty for noise consisting primarily of speech). However, it is reasonable to assume that activities occurring on school grounds within the Plan area would likely be restricted to daytime hours (7:00 a.m. to 10:00 p.m.). As a result, the General Plan noise level standards applicable to school playground activities would be exterior daytime noise level standards of 50 dB $L_{50}$/70 dB $L_{max}$ and interior noise level limits of 30 dB $L_{50}$/50 dB $L_{max}$ (anytime) for residential uses.

The distance between the nearest identified existing noise-sensitive use (residence) and proposed Elementary School (K-8) has been identified as being approximately 800 feet. When projected to a distance of 800 feet, school playground noise exposure is calculated to be approximately 31 dB $L_{50}$ and 51 dB $L_{max}$. The predicted noise levels exclude consideration of shielding that would be provided by proposed intervening structures (e.g., residences, sound walls, etc.) which would further reduce those levels. Based on the information above, it is expected that Elementary School use playground activity noise levels will satisfy the Sacramento County General Plan daytime exterior and interior noise level limits at the nearest existing noise-sensitive (residential) uses. It is further expected that Elementary School use playground noise levels would be well below ambient noise level conditions at the nearest existing residential uses. As a result, noise impacts associated with Elementary School playgrounds and playing fields affecting existing noise-sensitive land uses are identified as being ***less than significant.***

**Impact 13: High School Use Sports Fields and Stadium Noise at Existing Sensitive Uses**

The most significant noise sources associated with High School outdoor sports fields and stadiums consist of public address (PA) system usage and crowd noise. BAC used a combination

of BAC file data for similar noise sources and published acoustical literatures to predict the noise generation associated with an outdoor sports stadium within the Plan area. Specifically, BAC utilized noise level measurements conducted by BAC staff during football games and playing fields held at outdoor facilities in the Sacramento area in recent years (which included crowd noise and PA system usage), and published noise level data for crowd noise, to assess the noise generation of Plan area sports stadium noise. From this data, BAC developed reference noise levels which were utilized in this analysis. Specifically, reference noise levels of 70 dB $L_{50}$ and 85 dB $L_{max}$ at 100 feet were used for PA system noise during a stadium event. Additionally, reference noise levels of 75 dB $L_{50}$ and 90 dB $L_{max}$ at 100 feet were used for crowd noise in bleachers during a stadium event. For less intensive (non stadium) activities on the High School playing fields with no public address system usage, BAC file data indicate that noise levels would typically be 55 dB $L_{eq}$ and 75 dB $L_{max}$ at a distance of 50 feet from the focal point of the playing field areas.

The nearest identified existing noise-sensitive uses to the proposed High School use have been identified as residences located in the northwest quadrant of San Juan Road and El Centro Road, immediately adjacent to the proposed High School Site. Depending upon the High School site design, intervening shielding, locations of playing fields and stadium, and PA system configuration, noise exposure associated with High School activities could exceed the General Plan's daytime exterior and interior noise level standards at nearby existing residential uses. Further, noise levels from stadium sporting events could potentially exceed existing ambient conditions at nearby residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 13:

To satisfy applicable Sacramento County General Plan exterior and interior noise level standards at nearby existing noise-sensitive uses, the following noise mitigation measure should be implemented:

**MM-13:** A noise impact study that addresses School sports stadium noise shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of stadium noise exposure at the nearest existing noise-sensitive uses (residential). If stadium-generated noise levels exceed the County Code standards of 55 dBA L50 or 75 dBA $L_{max}$ at nearby sensitive receptors, the analysis shall include associated mitigation measures (as appropriate) to reduce stadium noise levels, including crowd and PA system noise, to a state of compliance with those standards at nearby existing sensitive receptors.

Specific mitigation measures could include but are not limited to the following:

- The construction of solid noise barriers that effectively attenuate sports playing field and/or stadium noise exposure to a state of compliance with the applicable noise limits at existing sensitive receptors. Noise barriers can typically provide

a 5-10 dBA reduction in sound levels depending on barrier height and geometry.

- A site design that integrates intervening shielding, setbacks, and restrictions on equipment configurations and settings. Increased setbacks will provide a decrease in noise at a rate of approximately 6 dBA per each doubling of distance between noise sources and sensitive receptors.

**Significance of Impact 13 after Mitigation: *Less than Significant***

**Impact 14: Park Activity Noise at Existing Sensitive Uses**

Noise generated by parks vary depending on whether the parks are intended for passive or active use. Passive use includes picnic and sitting areas whereas active use incudes playing fields and play structures. Although the preliminary land use plan contains the general locations of the planned Park uses within the Plan area (Figure 2), detailed plans containing park activities (i.e., active or passive use) have not yet been developed. For the purposes of this analysis, it was conservatively assumed that the proposed Park uses would contain active uses. According to BAC file data, parks consisting of active uses (playing fields/playgrounds) have noise levels of approximately 60 dB $L_{50}$ and 70 dB $L_{max}$ at a distance of 50 feet.

Because activities within Park components of the Plan area would likely consist of human speech (i.e., shouting and cheering during activities), noise associated with park activities would be subject to the Sacramento County General Plan's more restrictive daytime and nighttime noise level standards (the criteria contain a 5 dB penalty for noise consisting primarily of speech). However, it is reasonable to assume that park hours within the Plan area would likely be restricted to daytime hours (7:00 a.m. to 10:00 p.m.). As a result, the General Plan noise level standards applicable to park activities would be exterior daytime noise level standards of 50 dB $L_{50}$/70 dB $L_{max}$ and interior noise level limits of 30 dB $L_{50}$/50 dB $L_{max}$ (anytime) for residential uses.

The nearest identified existing noise-sensitive uses to a proposed Park component have been identified as residential receivers located west of the Plan area, which maintain a separation of approximately 700 feet. When projected to a distance of 700 feet, park (active use) noise levels are calculated to be approximately 37 dB $L_{50}$ and 47 dB $L_{max}$. Thus, it is expected that noise levels from activities occurring within Park uses will satisfy the applicable Sacramento County General Plan daytime exterior and interior noise level limits at the nearest existing noise-sensitive (residential) uses. It is further expected that Park use noise levels would be well below ambient noise level conditions at the nearest existing residential uses. As a result, no adverse noise impacts are identified for typical activities that will occur at parks proposed within the Plan area.

It should be noted, however, that the 25.8 acre park proposed in the west-central portion of the Plan area will include an outdoor pavilion area where amplified music events may occur. Although specific designs for this park have yet to be developed, the pavilion area would likely be located approximately ½ mile from the nearest residences to the west along Garden Highway. Given this setback distance, the County's daytime noise standard of 50 dBA $L_{50}$ (after application of the 5 dBA adjustment for sound consisting of music) would not be exceeded provided amplified sound

levels do not exceed 80 dBA $L_{50}$ at a reference distance of 100 feet from the music generation location (i.e., speakers). Because it is possible that amplified music sound levels could exceed 80 dBA at 100 feet from the amplified music sound source, this impact is identified as being ***potentially significant.***

Mitigation for Impact 14:

To satisfy applicable Sacramento County General Plan and Noise Ordinance standards at nearby existing noise-sensitive uses, the following noise mitigation measure should be implemented for events held at the 25.8 acre park which include amplified speech or music:

**MM-14:** If a pavilion for use in hosting events with amplified speech or music components is constructed within the 25.8 acre park proposed in the west-central portion of the Plan area, the following specific measures shall be incorporated into the design and operation of such a pavilion:

- The sound generation area of the pavilion shall be located as close as feasible to the eastern park boundary at Bryte Bend Road, and ideally at least 2,500 feet from the nearest residence to the west.
- All activities held at the pavilion consisting of amplified speech or music shall be limited to daytime hours of 7 am to 10 pm.
- Amplified speech or music levels shall be maintained at or below a median level of 80 dBA $L_{50}$ at a distance of 100 feet from the sound source (i.e., speakers).
- Noise monitoring shall be required during the first year of park usage for events utilizing amplified speech or music to ensure the County Code noise standards of 50 dBA L50 and 70 dBA $L_{max}$ are satisfied at the nearest sensitive receptors. In the event that such measurements reveal that the County Code standards are being exceeded at this location during events with amplified speech or music, implementation of additional noise control measures would be required to achieve compliance. Such measures would include further reducing the output of the sound amplification system or physical modification of speaker locations and orientations.

**Significance of Impact 14 after Mitigation: *Less than Significant***

## Noise Impacts Associated with Project On-Site Construction Activities

### Impact 15: On-Site Construction Noise Levels at Existing Sensitive Uses

During project construction, heavy equipment would be used for grading excavation, paving, and building construction, which would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained.

Noise exposure at any single point outside the project work area would also vary depending on the proximity of equipment activities to that point. The property boundaries of the nearest existing residential uses are located approximately 25 feet away from where construction activities would occur within the Plan area.

Table 14 includes the range of maximum noise levels for equipment commonly used in general construction projects at full-power operation at a distance of 50 feet. Not all of these construction activities would be required of this project. The Table 14 data also include predicted maximum equipment noise levels at the boundary of the nearest sensitive use located approximately 25 feet away, which assume a standard spherical spreading loss of 6 dB per doubling of distance.

**Table 14**
**Construction Equipment Reference Noise Levels and Predicted Noise Levels at 25 Feet**

| Equipment Description | Maximum Noise Level at 50 Feet (dBA) | Predicted Maximum Noise Level at 25 feet (dBA) |
|---|---|---|
| Air compressor | 80 | 86 |
| Backhoe | 80 | 86 |
| Ballast equalizer | 82 | 88 |
| Ballast tamper | 83 | 89 |
| Compactor | 82 | 88 |
| Concrete mixer | 85 | 91 |
| Concrete pump | 82 | 88 |
| Concrete vibrator | 76 | 82 |
| Crane, mobile | 83 | 89 |
| Dozer | 85 | 91 |
| Generator | 82 | 91 |
| Grader | 85 | 88 |
| Impact wrench | 85 | 91 |
| Loader | 80 | 91 |
| Paver | 85 | 86 |
| Pneumatic tool | 85 | 91 |
| Pump | 77 | 91 |
| Saw | 76 | 83 |
| Scarifier | 83 | 82 |
| Scraper | 85 | 89 |
| Shovel | 82 | 91 |
| Spike driver | 77 | 88 |
| Tie cutter | 84 | 83 |
| Tie handler | 80 | 90 |
| Tie inserter | 85 | 86 |
| Truck | 84 | 91 |

*Source: Federal Transit Administration Noise and Vibration Impact Assessment Manual, Table 7-1 (2018)*

Based on the equipment noise levels in Table 14, worst-case on-site project construction equipment maximum noise levels at the nearest existing residential uses located 25 feet away are expected to range from approximately 82 to 91 dB. As indicated in Table 1, baseline maximum ambient noise levels at existing residences represented by noise monitoring Site 15 ranged from 58-64 dBA during the noise survey period. Thus, a portion of the construction equipment used within the Plan area could result in short-term noise level increases in excess of 10 dBA over existing ambient noise levels at the nearest existing sensitive uses. Further, it is possible that those noise levels could exceed the applicable Sacramento County General Plan and Municipal Code noise level limits applicable to construction noise. As a result, this impact is considered **potentially significant**.

**Mitigation for Impact 15**: On-Site Construction Noise Control Measures

Policy NO-8 of the Sacramento County General Plan states that noise associated with construction activities shall adhere to the requirements established in Municipal Code Section 6.68.090(e), which offers an exemption for construction noise provided that the activities occur during specified hours and days of the week. The complete text of Municipal Code Section 6.68.090(e) is provided in the Regulatory Setting of this report. Provided construction

activities within the Plan area occur pursuant to Municipal Code Section 6.68.090(e), project construction activities would be exempt. However, construction activities occurring during these hours would not be exempt from the Municipal Code requirements and noise levels generated by construction activities could exceed applicable General Plan and Municipal Code noise level standards at nearby existing residential uses.

MM-15: The following measures shall be incorporated into the project on-site construction operations:

- Noise-generating construction activities within the Plan area shall occur pursuant to the hours and days outlined in Municipal Code Section 6.68.090(e).
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses.
- Project area and site access road speed limits shall be established and enforced during the construction period.
- Nearby residences shall be notified of construction schedules so that arrangements can be made, if desired, to limit their exposure to short-term increases in ambient noise levels.
- In the event that unusual circumstances or emergencies prevent certain project construction activities from complying with the Municipal Code Section 6.68.090(e) then a noise control plan shall be developed to ensure that sufficient mitigation is implemented during project construction to ensure adverse noise impacts are avoided.

Although the mitigation measures cited above would decrease the potential for adverse public reaction to noise generated during construction activities, it cannot be determined with certainty that these measures would reduce construction-related noise levels to both a state of compliance with County Code requirements and to levels less than 10 dBA above ambient conditions. As a result, this impact is considered **significant and unavoidable**.

**Significance of Impact 15 after Mitigation: *Significant and Unavoidable***

## Vibration Impacts Associated with Project Activities

### Impact 16: Vibration Generated by Project Construction and On-Site Operations

During project construction, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of the construction. The nearest identified existing structures (newer engineered residences which are not highly susceptible to damage by vibration) are located approximately 25 feet from where construction activities would occur within the Plan area.

Table 15 includes the range of vibration levels for equipment commonly used in general construction projects at a distance of 25 feet. The Table 15 data also include predicted equipment vibration levels at a distance of 100 feet from proposed construction activities.

**Table 15**
**Vibration Source Levels for Construction Equipment and Predicted Levels at 50 Feet**

| Equipment | Maximum Vibration Level at 25 feet, VdB (rms) | Predicted Maximum Vibration Level at 100 feet, VdB (rms) |
|---|---|---|
| Vibratory Roller | 94 | 76 |
| Hoe Ram | 87 | 69 |
| Large bulldozer | 87 | 69 |
| Loaded trucks | 86 | 68 |
| Jackhammer | 79 | 61 |
| Small bulldozer | 58 | 40 |

[1] PPV = Peak Particle Velocity

Source: 2018 FTA Transit Noise and Vibration Impact Assessment Manual and BAC calculations

As shown in Table 15, vibration levels generated from on-site construction activities are predicted to be below thresholds for damage to engineered residential structures (98 VdB) at a distance of 25 feet from those activities. In addition, construction-related vibration levels are generally predicted to be below levels considered to be annoying (75 VdB) at a distance of 100 feet from the construction activity.

The project proposes a mixed-use community containing residential, commercial, commercial mixed-use, school, park, agricultural and open space uses. It is the experience of BAC these uses do not typically have equipment that generates appreciable off-site vibration. Because vibration levels due to both project construction and activities related to proposed developments within the Plan area are expected to be satisfactory relative to the applicable vibration criteria for damage to structures and annoyance, this impact is considered to be ***less than significant***.

## Noise Impacts Upon Sensitive Uses Proposed within the Plan area

The California Supreme Court issued an opinion in *California Building Industry Association v. Bay Area Air Quality Management District (2015)* holding that CEQA is primarily concerned with the impacts of a project *on* the environment and generally does not require agencies to analyze the impact of existing of future conditions on a project's future users or residents. Nevertheless, Sacramento County has General Plan policies that address existing/future conditions affecting future uses of the proposed Plan area. As a result, noise and vibration impacts upon the project are evaluated for General Plan consistency in the following sections.

## On-Site Noise Impacts from Traffic

### Impact 17: Future Exterior Traffic Noise Levels at Proposed Sensitive Uses

The project proposes extensive development of residential uses of varying densities throughout the Plan area, including areas located adjacent to major roadways. While the interior spaces of residential uses share the same noise-sensitivity regardless of density, the noise-sensitivity of exterior areas varies according to the type of proposed residential use. For example, in low-density residential developments, the noise-sensitive exterior spaces where the County's exterior noise standards are applied are commonly considered to be backyards. Within higher density residential developments, such as apartments, the County's exterior noise standards are applied at common outdoor usage areas such as pool or park spaces rather than individual patios or balconies. For mixed use developments that include a residential component, it is not unusual for no outdoor use areas to be proposed.

Because specific plans for individual developments were not available as of the time of this study, potential traffic noise impacts are assessed through prediction of distances to future traffic noise contours along the roadways that would potentially affect Plan area development. Where noise contours exceeding the General Plan standards shown in Table 7 (65 dB DNL for residential uses and 70 dB DNL for parks and playgrounds), would extend into areas proposed for such uses, potentially significant noise impacts are identified and consideration of exterior noise mitigation measures would be necessary.

The FHWA Model was used with future plus project traffic data to predict distances to future traffic noise contours for the roadways that would affect development within the Plan area. Detailed FHWA Model inputs for the internal roadways and existing roadways that would affect project development are provided in Appendix F. Ambient noise monitoring results were used to calibrate the FHWA Model for predicting future traffic noise levels within the Plan area. Cross-sections of future roadways proposed within the Plan area were used to determine the distances from the roadway centerlines to the nearest potential outdoor activity areas along each roadway segment.

Table 16 shows the predicted future plus project (cumulative) traffic noise exposure at those locations along each roadway segment, a comparison of those predicted levels against the applicable Sacramento County exterior noise standards, and the distances to the future 65 and 70 dB DNL traffic noise contours. Figure 6 shows a graphical representation of the roadway segments where future traffic noise levels at proposed residential land uses are predicted to exceed 65 dB DNL and, therefore, require mitigation.

**Table 16**
**Predicted Future Traffic Noise Levels along Roadways Affecting Development within the Plan area**
**Upper Westside Specific Plan**

| Segment | Roadway | From | To | Distance[1] | DNL[2] | Level Above 65 DNL?[3] | dBA Above 65 DNL[4] | Contour Distance (ft)[5] | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 65 DNL | 70 DNL |
| 1 | Bryte Bend Rd | Radio Head | San Juan Rd | 100 | 59 | No | 0 | 37 | 17 |
| 2 | Bryte Bend Rd | San Juan Rd | Street 7 | 75 | 62 | No | 0 | 48 | 22 |
| 3 | Bryte Bend Rd | Street 7 | Farm Rd | 70 | 63 | No | 0 | 53 | 24 |
| 4 | Bryte Bend Rd | Farm Rd | Street 10 | 75 | 59 | No | 0 | 29 | 14 |
| 5 | Bryte Bend Rd | Street 10 | W El Camino Ave | 75 | 60 | No | 0 | 36 | 16 |
| 6 | Bryte Bend Rd | West El Camino | Street 8 | 75 | 58 | No | 0 | 27 | 13 |
| 7 | Bryte Bend Rd | Street 8 | Street 2 | 75 | 58 | No | 0 | 24 | 11 |
| 8 | Bryte Bend Rd | Street 2 | Street 1 | 70 | 60 | No | 0 | 30 | 14 |
| 9 | Bryte Bend Rd | Street 1 | Garden Highway | 70 | 58 | No | 0 | 26 | 12 |
| 10 | El Centro Rd | Arena | Radio Head | 100 | 67 | Yes | 2 | 138 | 64 |
| 11 | El Centro Rd | Radio Head | San Juan Rd | 100 | 67 | Yes | 2 | 130 | 60 |
| 12 | El Centro Rd | San Juan Rd | Street 7 | 80 | 69 | Yes | 4 | 153 | 71 |
| 13 | El Centro Rd | Street 7 | Farm Rd | 80 | 70 | Yes | 5 | 162 | 75 |
| 14 | El Centro Rd | Farm Rd | Street 6 | 90 | 71 | Yes | 6 | 228 | 106 |
| 15 | El Centro Rd | Street 6 | Street 5 | 90 | 71 | Yes | 6 | 246 | 114 |
| 16 | El Centro Rd | Street 5 | W El Camino Ave | 90 | 72 | Yes | 7 | 249 | 116 |
| 17 | El Centro Rd | W El Camino Ave | Street 4 | 80 | 66 | Yes | 1 | 96 | 45 |
| 18 | El Centro Rd | Street 4 | Street 3 | 80 | 65 | No | 0 | 83 | 39 |
| 19 | El Centro Rd | Street 3 | Street 2 | 80 | 62 | No | 0 | 51 | 24 |
| 20 | El Centro Rd | Street 2 | Street 1 | 80 | 53 | No | 0 | 12 | 5 |
| 21 | Farm Road | Street F | Bryte Bend Rd | 60 | 60 | No | 0 | 27 | 12 |
| 22 | Farm Road | Bryte Bend Rd | Street D | 75 | 61 | No | 0 | 43 | 20 |
| 23 | Farm Road | Street D | Street C | 65 | 63 | No | 0 | 47 | 22 |
| 24 | Farm Road | Street C | Street B | 65 | 64 | No | 0 | 56 | 26 |
| 25 | Farm Road | Street B | Street A | 65 | 65 | No | 0 | 64 | 30 |
| 26 | Farm Road | Street A | El Centro Rd | 65 | 66 | Yes | 1 | 72 | 33 |
| 27 | Farm Road | El Centro Rd | Street H | 80 | 68 | Yes | 3 | 121 | 56 |
| 28 | Garden Highway | San Juan Rd | Street 9 | 1300 | 39 | No | 0 | 23 | 11 |
| 29 | Garden Highway | Street 9 | Bryte Bend Rd | 950 | 41 | No | 0 | 23 | 11 |
| 30 | Orchard Lane | San Juan Rd | Street 7 | 60 | 59 | No | 0 | 23 | 11 |
| 31 | Radio Head | Garden Highway | Street 12 W | 75 | 60 | No | 0 | 33 | 16 |
| 32 | Radio Head | Street 12 W | Bryte Bend Rd | 75 | 53 | No | 0 | 13 | 6 |

**Table 16**
**Predicted Future Traffic Noise Levels along Roadways Affecting Development within the Plan area**
**Upper Westside Specific Plan**

| Segment | Roadway | From | To | Distance[1] | DNL[2] | Level Above 65 DNL?[3] | dBA Above 65 DNL[4] | Contour Distance (ft)[5] | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 65 DNL | 70 DNL |
| 33 | Radio Head | Bryte Bend Rd | Street 12 E | 75 | 60 | No | 0 | 33 | 16 |
| 34 | Radio Head | Street 12 E | El Centro Rd | 75 | 66 | Yes | 1 | 84 | 39 |
| 35 | San Juan Rd | Garden Highway | Bryte Bend Rd | 75 | 61 | No | 0 | 43 | 20 |
| 36 | San Juan Rd | Bryte Bend Rd | El Centro Rd | 130 | 60 | No | 0 | 57 | 27 |
| 37 | San Juan Rd | El Centro Rd | Orchard Lane | 130 | 62 | No | 0 | 79 | 37 |
| 38 | Street 1 | Street C | Bryte Bend Rd | 60 | 55 | No | 0 | 13 | 6 |
| 39 | Street 1 | Street C | Street B | 60 | 54 | No | 0 | 12 | 5 |
| 40 | Street 1 | Street B | El Centro Rd | 60 | 54 | No | 0 | 12 | 5 |
| 41 | Street 2 | Bryte Bend Rd | Street 3 | 70 | 59 | No | 0 | 28 | 13 |
| 42 | Street 2 | Street D | Street C | 70 | 60 | No | 0 | 32 | 15 |
| 43 | Street 2 | Street C | Street B | 70 | 61 | No | 0 | 37 | 17 |
| 44 | Street 2 | Street B | Street A | 70 | 61 | No | 0 | 37 | 17 |
| 45 | Street 2 | Street A | El Centro Rd | 70 | 61 | No | 0 | 38 | 18 |
| 46 | Street 3 | Street 2 | Street C | 60 | 45 | No | 0 | 3 | 1 |
| 47 | Street 3 | Street B | Street A | 60 | 61 | No | 0 | 33 | 16 |
| 48 | Street 3 | Street A | El Centro Rd | 60 | 62 | No | 0 | 36 | 16 |
| 49 | Street 4 | Street E | Street D | 60 | 53 | No | 0 | 10 | 5 |
| 50 | Street 4 | Street D | Street C | 60 | 55 | No | 0 | 13 | 6 |
| 51 | Street 4 | Street B | Street A | 60 | 54 | No | 0 | 11 | 5 |
| 52 | Street 4 | Street A | El Centro Rd | 60 | 61 | No | 0 | 33 | 15 |
| 53 | Street 5 | Street E | Street D | 60 | 50 | No | 0 | 6 | 3 |
| 54 | Street 5 | Street D | Street C | 60 | 63 | No | 0 | 44 | 20 |
| 55 | Street 5 | Street B | El Centro Rd | 60 | 59 | No | 0 | 24 | 11 |
| 56 | Street 6 | Street E | Street C | 60 | 48 | No | 0 | 4 | 2 |
| 57 | Street 6 | Street D | Street C | 60 | 50 | No | 0 | 6 | 3 |
| 58 | Street 6 | Street B | Street A | 60 | 57 | No | 0 | 19 | 9 |
| 59 | Street 6 | El Centro Rd | Street A | 60 | 57 | No | 0 | 17 | 8 |
| 60 | Street 7 | Bryte Bend Rd | Street C | 60 | 45 | No | 0 | 3 | 1 |
| 61 | Street 7 | Street C | Street B | 60 | 50 | No | 0 | 6 | 3 |
| 62 | Street 7 | Street B | El Centro Rd | 60 | 57 | No | 0 | 17 | 8 |
| 63 | Street 7 | El Centro Rd | Orchard Lane | 60 | 60 | No | 0 | 29 | 13 |
| 64 | Street 7 | Orchard Lane | Street H | 60 | 55 | No | 0 | 13 | 6 |

**Table 16**
**Predicted Future Traffic Noise Levels along Roadways Affecting Development within the Plan area**
**Upper Westside Specific Plan**

| Segment | Roadway | From | To | Distance[1] | DNL[2] | Level Above 65 DNL?[3] | dBA Above 65 DNL[4] | Contour Distance (ft)[5] | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 65 DNL | 70 DNL |
| 65 | Street 8 | Street F | Bryte Bend Rd | 50 | 56 | No | 0 | 12 | 5 |
| 66 | Street 8 | Street F | Street G | 50 | 56 | No | 0 | 13 | 6 |
| 67 | Street 8 | Street G | Bryte Bend Rd | 50 | 56 | No | 0 | 13 | 6 |
| 68 | Street 10 | Bryte Bend Rd | Street F | 50 | 55 | No | 0 | 11 | 5 |
| 69 | Street 10 | Street F | Street G | 50 | 46 | No | 0 | 3 | 1 |
| 70 | Street A | Farm Rd | Street 6 | 60 | 59 | No | 0 | 23 | 11 |
| 71 | Street A | Street 6 | Street5 | 60 | 60 | No | 0 | 26 | 12 |
| 72 | Street A | Street 5 | W El Camino Ave | 60 | 63 | No | 0 | 47 | 22 |
| 73 | Street A | W El Camino Ave | Street 4 | 60 | 61 | No | 0 | 31 | 15 |
| 74 | Street A | Street 4 | Street 3 | 60 | 50 | No | 0 | 6 | 3 |
| 75 | Street A | Street 3 | Street 2 | 60 | 50 | No | 0 | 6 | 3 |
| 76 | Street B | Street 7 | Farm Rd | 60 | 57 | No | 0 | 18 | 8 |
| 77 | Street B | Farm Rd | Street 6 | 60 | 58 | No | 0 | 21 | 10 |
| 78 | Street B | Street 6 | Street 5 | 60 | 58 | No | 0 | 21 | 10 |
| 79 | Street B | Street 5 | W El Camino Ave | 60 | 55 | No | 0 | 13 | 6 |
| 80 | Street B | W El Camino Ave | Street 4 | 60 | 56 | No | 0 | 14 | 7 |
| 81 | Street B | Street 4 | Street 3 | 60 | 54 | No | 0 | 11 | 5 |
| 82 | Street B | Street 3 | Street 2 | 60 | 45 | No | 0 | 3 | 1 |
| 83 | Street B | Street 2 | Street 1 | 60 | 50 | No | 0 | 6 | 3 |
| 84 | Street C | Street 7 | Farm Rd | 60 | 54 | No | 0 | 11 | 5 |
| 85 | Street C | Farm Rd | Street 6 | 60 | 58 | No | 0 | 22 | 10 |
| 86 | Street C | Street 6 | Street 5 | 60 | 57 | No | 0 | 17 | 8 |
| 87 | Street C | Street 5 | W El Camino Ave | 60 | 57 | No | 0 | 17 | 8 |
| 88 | Street C | W El Camino Ave | Street 4 | 60 | 60 | No | 0 | 27 | 13 |
| 89 | Street C | Street 4 | Street 3 | 60 | 54 | No | 0 | 11 | 5 |
| 90 | Street C | Street 3 | Street 2 | 60 | 51 | No | 0 | 7 | 3 |
| 91 | Street C | Street 2 | Street 1 | 60 | 56 | No | 0 | 14 | 7 |
| 92 | Street D | Farm Rd | Street 6 | 60 | 56 | No | 0 | 15 | 7 |
| 93 | Street D | Street 6 | Street 5 | 60 | 56 | No | 0 | 16 | 7 |
| 94 | Street D | Street 5 | W El Camino Ave | 60 | 56 | No | 0 | 14 | 7 |
| 95 | Street D | W El Camino | Street 4 | 60 | 59 | No | 0 | 26 | 12 |
| 96 | Street D | Street 4 | Street 3 | 60 | 48 | No | 0 | 4 | 2 |

**Table 16**
**Predicted Future Traffic Noise Levels along Roadways Affecting Development within the Plan area**
**Upper Westside Specific Plan**

| Segment | Roadway | From | To | Distance[1] | DNL[2] | Level Above 65 DNL?[3] | dBA Above 65 DNL[4] | Contour Distance (ft)[5] | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 65 DNL | 70 DNL |
| 97 | Street D | Street 3 | Street 2 | 60 | 45 | No | 0 | 3 | 1 |
| 98 | Street E | Street 5 | W El Camino Ave | 60 | 45 | No | 0 | 3 | 1 |
| 99 | Street E | W El Camino | Street 4 | 60 | 56 | No | 0 | 16 | 7 |
| 100 | Street E | Street 4 | Street 3 | 60 | 48 | No | 0 | 4 | 2 |
| 101 | Street F | Street 8 | Bryte Bend Rd | 60 | 55 | No | 0 | 13 | 6 |
| 102 | Street F | Farm Rd | Street 10 | 60 | 56 | No | 0 | 14 | 7 |
| 103 | Street G | Street 9 | Street 10 | 100 | 42 | No | 0 | 3 | 1 |
| 104 | Street H | Street 7 | Farm Rd | 60 | 54 | No | 0 | 12 | 5 |
| 105 | W El Camino Ave | Bryte Bend Rd | Street E | 105 | 58 | No | 0 | 36 | 16 |
| 106 | W El Camino Ave | Street E | Street D | 105 | 56 | No | 0 | 25 | 11 |
| 107 | W El Camino Ave | Street D | Street C | 105 | 59 | No | 0 | 44 | 20 |
| 108 | W El Camino Ave | Street C | Street B | 105 | 62 | No | 0 | 65 | 30 |
| 109 | W El Camino Ave | Street B | Street A | 105 | 62 | No | 0 | 63 | 29 |
| 110 | W El Camino Ave | Street A | El Centro Rd | 105 | 64 | No | 0 | 89 | 42 |
| 111 | W El Camino Ave | El Centro Rd | Interstate 80 | 90 | 72 | Yes | 7 | 252 | 117 |
| 112 | I-80 | Yolo County | W El Camino Ave | 220 | 76 | Yes | 11 | 1,270 | 590 |
| 113 | I-80 | West El Camino | I-5 | 220 | 76 | Yes | 11 | 1,236 | 574 |

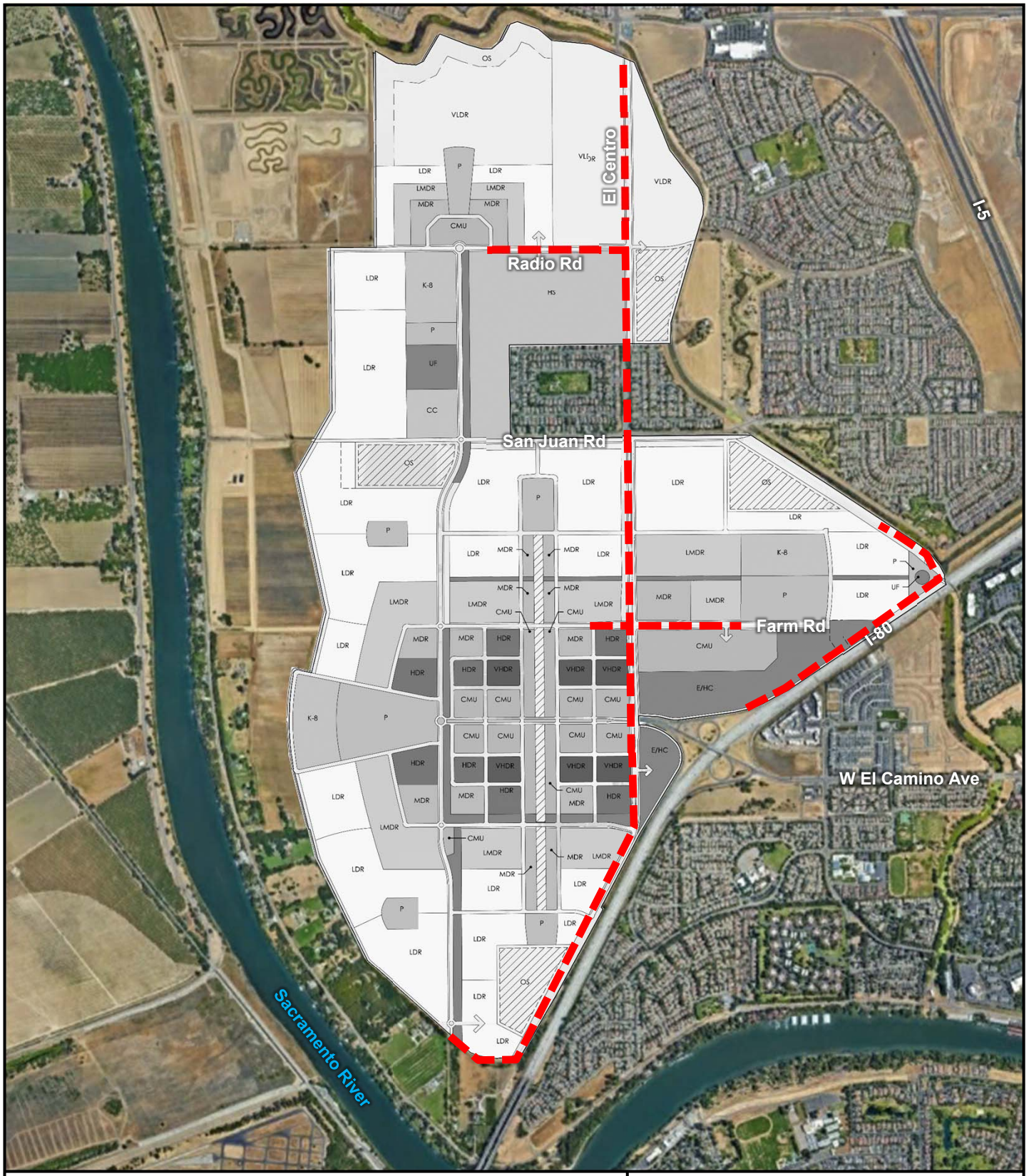
1. The distance from the roadway segment centerline to the nearest potential location for an outdoor activity area based on proposed roadway cross-sections.
2. The Day/Night Average Level (DNL) computed at the distance cited in the “Distance” column.
3. If the predicted DNL at the nearest potential outdoor activity areas exceeds the County’s 65 dBA exterior noise level standard this column is flagged as “Yes”.
4. The level above 65 dBA DNL represents the degree of sound attenuation which would be required to reduce traffic noise levels to 65 dBA DNL if the outdoor activity area were located at the distance from the centerline shown under the “Distance” column.
5. The contour distances represent the distance from the roadway segment centerline to the indicated contours.

As indicated in Table 16, predicted future traffic noise level exposure could exceed 65 dBA DNL at the nearest potential outdoor activity areas of proposed residential uses along 14 roadway segments affecting the Plan area. However, no residential uses are proposed along West El Camino Avenue between El Centro and Interstate 80, so the actual number of affected segments where projected future traffic noise exposure would exceed 65 dBA DNL at proposed residential uses is 12.

Table 16 also indicates that, with the exception of Interstate 80, traffic noise attenuation ranging from 1 to 5 dB would be required to reduce future traffic noise levels to a state of compliance with the County's 65 dBA DNL exterior noise standard. This degree of attenuation is relatively low and could be achieved through a variety of noise mitigation options. Such options are discussed below under the mitigation measures for this impact statement.

Although the project site plans contain the general locations of the proposed residential uses, the specific locations of the individual residences and outdoor activity areas are currently unknown. However, because residential outdoor activity areas could be located in areas where future traffic noise exposure is predicted to exceed 65 dBA DNL, this impact is identified as being **potentially significant**.

Figure 6 shows a graphical representation of the roadway segments where future traffic noise levels at proposed residential land uses within the Plan Area are predicted to exceed 65 dB DNL and, therefore, require consideration of noise mitigation.




***Legend***

- – – – : Roadway segments or locations where future traffic noise levels are predicted to exceed 65 dB DNL and traffic noise mitigation would be required.

N

Scale (Feet)

0 750 1,500

Traffic Noise Mitigation Locations

Upper Westside Master Plan Area

Figure 6

BOLLARD Acoustical Consultants

Mitigation for Impact 17:

To satisfy the Sacramento County General Plan 65 dB DNL exterior noise level standard at the outdoor activity areas of future residential uses proposed within the Plan area, the following noise mitigation measures should be considered either singularly or in combination during project design, depending on the level of sound attenuation required. At proposed residential locations adjacent to Interstate 80 it is probable that a combination of the following measures would be required:

**MM-17A:** Residential outdoor activity areas shall be located beyond the 65 dBA DNL noise contour distances shown in Table 16. This includes individual backyards of single-family residences and common outdoor use areas of multi-family residences.

**OR**

**MM-17B:** Residential outdoor activity areas proposed within the 65 dBA DNL noise contour distances shown in Table 16 shall be screened from view of the roadway by intervening structures or sound barriers. If sound barriers are proposed, project-specific grading plans shall be reviewed to determine the location and heights of barrier necessary to achieve compliance with the County's noise standards. With the exception of residences proposed in proximity to Interstate 80, noise barriers along other roadways would not need to exceed 6 feet in height to provide the required traffic noise attenuation.

If noise barriers are to be constructed within the Plan area, the traffic noise barriers shall take the form of a masonry wall, earthen berm, or combination of the two, or, if reviewed and approved by an acoustical consultant as providing comparable performance prior to construction, other materials may be acceptable (i.e., wood or wood composite fence with overlapping slat construction).

**OR**

**MM-17C:** Single-family residences shall be oriented such that the front of the residence faces the roadway segment where levels exceeding 65 dBA DNL would occur, thereby using the residence to shield the backyard from the roadway and creating a larger setback between the roadway centerline and backyard outdoor activity area.

**OR**

**MM-17D:** Roadways where future traffic noise levels are predicted to exceed the County's noise standards by 4 dBA or less shall be paved with noise-reducing asphalt.

**Significance of Impact 17 after Mitigation:** ***Less than Significant***

### Impact 18: Future Interior Traffic Noise Levels at Proposed Sensitive Uses

Based upon years of experience and testing conducted by BAC, standard building construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), typically results in an exterior to interior noise reduction of at least 25 dBA with windows closed and approximately 15 dB with windows open. Therefore, provided predicted future traffic noise exposure at residential building facades does not exceed 70 dBA DNL, standard construction would be adequate to reduce interior noise levels to a state of compliance with the County's 45 dBA DNL interior noise level standard.

As indicated in Table 16, future traffic noise levels are not predicted to exceed 70 dBA DNL adjacent to the majority of the project-area roadways where residential and other noise-sensitive land uses are proposed. However, at residential uses proposed adjacent to El Centro Road and in the vicinity of Interstate 80, it is probable that future traffic noise exposure would exceed the County's 45 dBA DNL interior noise level standard without mitigation, particularly at upper floor locations which would not likely be shielded from view of roadways by sound walls. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 18:

**MM-18:** At locations where residential building facades are proposed in future noise environments exceeding 70 dBA DNL, project plans shall be reviewed by a qualified acoustical consultant to ensure that appropriate construction upgrades (typically higher-rated STC values for windows) are specified to ensure compliance with the County's interior noise standard.

**Significance of Impact 18 after Mitigation: *Less than Significant***

## Noise Impacts from Plan area Components at Proposed Uses

### Impact 19: Commercial Mixed-Use Parking Noise at Proposed Sensitive Uses

An analysis of commercial parking area noise exposure was presented in **Impact 3**. The results from that analysis indicate that noise exposure from an individual parking area having 300 vehicle stalls computes to approximately 49 dB $L_{50}$ and 65 dB $L_{max}$ at a distance of 50 feet from the effective noise center of the area.

The nearest proposed sensitive uses (residential) would be located with the Commercial Mixed-Use components themselves. However, future configurations and sizes of parking areas and related distances to residential uses within those components are currently not known at this time. Thus, it is possible that Commercial Mixed-Use parking area noise exposure could exceed the General Plan's exterior and interior daytime and nighttime standards at nearby proposed residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 19:

To satisfy applicable Sacramento County General Plan exterior and interior daytime and nighttime noise level standards at nearby proposed noise-sensitive uses, the following noise mitigation measure should be implemented:

**MM-19:** A site specific noise impact study that addresses Commercial Mixed-Use parking area activities shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of Commercial Mixed-Use parking noise exposure at the nearest proposed noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as appropriate) to reduce parking area noise levels to a state of compliance with applicable Sacramento County General Plan exterior and interior noise level limits at nearby proposed sensitive receptors. Such measures could include, but are not limited to, increasing setbacks between sensitive uses and parking areas, construction of noise barriers where appropriate, and incorporation of upgraded building construction.

**Significance of Impact 19 after Mitigation: *Less than Significant***

**Impact 20: Commercial Mixed-Use Delivery Truck Noise at Proposed Sensitive Uses**

An analysis of commercial delivery truck activity noise exposure was presented in **Impact 4**. The results from that analysis indicate that noise exposure from commercial delivery truck activities was calculated to be 46 dB $L_{50}$ and 74 dB $L_{max}$ at a distance of 100 feet from the unloading area.

The nearest proposed sensitive uses (residential) would be located with the Commercial Mixed-Use components themselves. However, future locations of delivery unloading areas and related distances to residential uses within those components are currently not known at this time. Thus, it is possible that Commercial Mixed-Use delivery truck activity noise exposure could exceed the General Plan's exterior and interior daytime and nighttime standards at nearby proposed residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 20:

To satisfy applicable Sacramento County General Plan exterior and interior daytime and nighttime noise level standards at nearby proposed noise-sensitive uses, the following noise mitigation measure should be implemented:

**MM-20:** A site specific noise impact study that addresses Commercial Mixed-Use truck delivery activities shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of Commercial Mixed-Use delivery truck noise exposure at the nearest proposed noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as appropriate) to reduce Commercial Mixed-Use truck delivery noise levels to a state of compliance with applicable Sacramento County

General Plan exterior and interior noise level limits at nearby proposed sensitive receptors. Specific mitigation measures could include but are not limited to shielding from features integrated into site design, and/or restrictions on hours for commercial deliveries within the Commercial Mixed-Use areas.

**Significance of Impact 20 after Mitigation: *Less than Significant***

**Impact 21: Commercial Mixed-Use HVAC Equipment Noise at Proposed Sensitive Uses**

An analysis of commercial HVAC equipment noise exposure was presented in **Impact 5.** The results from that analysis indicate that noise exposure from commercial HVAC equipment was calculated to be 45 dB $L_{50}$ at a distance of 100 feet from the building facade.

The nearest proposed sensitive uses (residential) would be located with the Commercial Mixed-Use components themselves. However, future locations of buildings and related distances to residential uses within those components are currently not known at this time. Thus, it is possible that Commercial Mixed-Use HVAC equipment noise exposure could exceed the General Plan's exterior and interior daytime and nighttime standards at nearby proposed residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 21:

To satisfy applicable Sacramento County General Plan exterior and interior daytime and nighttime noise level standards at nearby proposed noise-sensitive uses, the following noise mitigation measure should be implemented:

**MM-21:** A site specific noise impact study that addresses Commercial Mixed-Use HVAC equipment shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of Commercial Mixed-Use HVAC equipment noise exposure at the nearest proposed noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as appropriate) to reduce Commercial Mixed-Use HVAC equipment noise levels to a state of compliance with applicable Sacramento County General Plan exterior and interior noise level limits at nearby proposed sensitive receptors. Such measures could include, but are not limited to, the use of building parapets to screen HVAC equipment from nearby sensitive uses, locating HVAC equipment within isolated mechanical equipment rooms, or relocating HVAC equipment as far as feasible from proposed noise-sensitive receptors.

**Significance of Impact 21 after Mitigation: *Less than Significant***

**Impact 22: Employment/Highway Commercial Parking Noise at Proposed Sensitive Uses**

An analysis of commercial parking area noise exposure was presented in **Impact 3**. The results from that analysis indicate that noise exposure from an individual parking area having 300 vehicle stalls computes to approximately 49 dB $L_{50}$ and 65 dB $L_{max}$ at a distance of 50 feet from the effective noise center of the area.

The nearest proposed sensitive uses (residential) are located adjacent to Employment/Highway Commercial components. However, future configurations and sizes of parking areas and related distances to adjacent residential uses within the Plan area are currently not known at this time. Thus, it is possible that Employment/Highway Commercial parking area noise exposure could exceed the General Plan's exterior and interior daytime and nighttime standards at nearby proposed residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 22:

To satisfy applicable Sacramento County General Plan exterior and interior daytime and nighttime noise level standards at nearby proposed noise-sensitive uses, the following noise mitigation measure should be implemented:

**MM-22:** A site specific noise impact study that addresses Employment/Highway Commercial parking activities shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of Employment/Highway Commercial parking area noise exposure at the nearest proposed noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as appropriate) to reduce Employment/Highway Commercial parking noise levels to a state of compliance with applicable Sacramento County General Plan exterior and interior noise level limits at nearby proposed sensitive receptors. Such measures could include, but are not limited to, increasing setbacks between sensitive uses and parking areas, construction of noise barriers where appropriate, and incorporation of upgraded building construction.

**Significance of Impact 22 after Mitigation: *Less than Significant***

**Impact 23: Employment/Highway Commercial Delivery Truck Noise at Proposed Sensitive Uses**

An analysis of commercial delivery truck activity noise exposure was presented in **Impact 4**. The results from that analysis indicate that noise exposure from commercial delivery truck activities was calculated to be 46 dB $L_{50}$ and 74 dB $L_{max}$ at a distance of 100 feet from the unloading area.

The nearest proposed sensitive uses (residential) are located adjacent to an Employment/Highway Commercial component. However, future locations of delivery unloading areas and related distances to adjacent residential uses are currently not known at this time. Thus, it is possible that Employment/Highway Commercial delivery truck activity noise exposure could exceed the General Plan's exterior and interior daytime and nighttime noise level standards at nearby proposed residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 23:

To satisfy applicable Sacramento County General Plan exterior and interior daytime and nighttime noise level standards at nearby proposed noise-sensitive uses, one of the following noise mitigation measures should be implemented:

**MM-23a:** Future truck delivery unloading areas within Employment/Highway Commercial components shall maintain a minimum setback of 150 feet from proposed residential boundaries within the Plan area. When projected to a distance of 150 feet, commercial delivery truck noise levels are calculated to be 42 dB $L_{50}$ and 70 dB $L_{max}$, which would satisfy the General Plan's exterior nighttime noise level standards of 50 dB $L_{50}$ and 70 dB $L_{max}$. After consideration of the exterior to interior noise reduction provided by standard residential construction (approximately 25 dB with windows closed and approximately 15 dB with windows open), the predicted delivery truck noise levels at a distance of 150 feet would also satisfy the General Plan's interior (anytime) noise level standards of 35 dB $L_{50}$ and 55 dB $L_{max}$.

OR

**MM-23b:** Should delivery unloading areas of Employment/Highway Commercial components be proposed within 150 feet from residential boundaries within the Plan area, a noise impact study that addresses parking activities shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of Employment/Highway Commercial parking area noise exposure at the nearest proposed noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as appropriate) to reduce Employment/Highway Commercial parking noise levels to a state of compliance with applicable Sacramento County General Plan exterior and interior noise level limits at nearby proposed sensitive receptors.

Specific mitigation measures could include but are not limited to the following:

- The construction of solid noise barriers that effectively attenuate delivery truck noise exposure to a state of compliance with the applicable noise limits at existing sensitive receptors.

- A site design that integrates intervening shielding, setbacks, and/or restrictions on hours for truck deliveries.

**Significance of Impact 23 after Mitigation: *Less than Significant***

**Impact 24: Employment/Highway Commercial HVAC Equipment Noise at Proposed Sensitive Uses**

An analysis of commercial HVAC equipment noise exposure was presented in **Impact 5.** The results from that analysis indicate that noise exposure from commercial HVAC equipment was calculated to be 45 dB $L_{50}$ at a distance of 100 feet from the building facade.

The nearest proposed sensitive uses (residential) are located adjacent to an Employment/Highway Commercial component. However, future locations of buildings and related distances to adjacent residential uses are currently not known at this time. Thus, it is possible that Employment/Highway Commercial HVAC equipment noise exposure could exceed the General Plan's exterior and interior daytime and nighttime standards at nearby proposed residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 24:

To satisfy applicable Sacramento County General Plan exterior and interior daytime and nighttime noise level standards at nearby proposed noise-sensitive uses, one of the following noise mitigation measures should be implemented:

**MM-24a:** Future buildings within Employment/Highway Commercial components shall maintain a minimum setback of 55 feet from proposed residential boundaries within the Plan area. When projected to a distance of 55 feet, commercial HVAC equipment noise level exposure is calculated to be 50 dB $L_{50}$, which would satisfy the General Plan's exterior nighttime noise level standard of 50 dB $L_{50}$. After consideration of the exterior to interior noise reduction provided by standard residential construction (approximately 25 dB with windows closed and approximately 15 dB with windows open), the predicted HVAC equipment noise level at a distance of 55 feet would also satisfy the General Plan's interior (anytime) noise level standards of 35 dB $L_{50}$.

OR

**MM-24b:** Should buildings of Employment/Highway Commercial components be proposed within 55 feet from residential boundaries within the Plan area, a noise impact study that addresses HVAC equipment shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of Employment/Highway Commercial HVAC equipment noise exposure at the nearest proposed noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as appropriate) to reduce Employment/Highway Commercial HVAC equipment noise levels to a state of compliance with applicable Sacramento County General Plan exterior and interior noise level limits at nearby proposed sensitive receptors. Such measures could include, but are not limited to, the use of building parapets to screen HVAC equipment from nearby sensitive uses, locating HVAC equipment within isolated mechanical equipment rooms, or relocating HVAC equipment as far as feasible from proposed noise-sensitive receptors.

**Significance of Impact 24 after Mitigation: *Less than Significant***

**Impact 25: Employment/Highway Commercial Drive-Through Restaurant Noise at Proposed Sensitive Uses**

An analysis of commercial drive-through restaurant noise exposure was presented in **Impact 9.** As indicated in that analysis, noise exposure from commonly used drive-through menu speaker boards have measured noise levels of approximately 63 dB $L_{50}$ and 67 dB $L_{max}$ at 10 feet. That analysis further indicates that vehicle passbys in drive-through lanes have measured levels of approximately 60 dB $L_{50}$ and 70 dB $L_{max}$ at 5 feet.

The nearest proposed sensitive uses (residential) are located adjacent to an Employment/Highway Commercial component. However, future locations of restaurants and associated distances to adjacent residential uses are currently not known at this time. Thus, it is possible that Employment/Highway Commercial restaurant drive-through operations noise exposure could exceed the General Plan's exterior and interior daytime and nighttime standards at nearby proposed residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 25:

To satisfy applicable Sacramento County General Plan exterior and interior daytime and nighttime noise level standards at nearby proposed noise-sensitive uses, one of the following noise mitigation measures should be implemented:

**MM-25a:** Future restaurant drive-through lanes within Employment/Highway Commercial components shall maintain a minimum setback of at least 85 feet from proposed residential boundaries within the Plan area. When projected to a distance of 85 feet, combined restaurant drive-through operations noise levels are calculated to be 45 dB $L_{50}$ and 50 dB $L_{max}$, which would satisfy the General Plan's downward adjusted exterior nighttime noise level standards of 45 dB $L_{50}$ and 65 dB $L_{max}$.

After consideration of the exterior to interior noise reduction provided by standard residential construction (approximately 25 dB with windows closed and approximately 15 dB with windows open), predicted drive-through operations noise levels at a distance of 85 feet would also satisfy the General Plan's downward adjusted interior (anytime) noise level standards of 30 dB $L_{50}$ and 50 dB $L_{max.}$

OR

**MM-25b:** Should restaurant drive-through operations of Employment/Highway Commercial components be proposed within 85 feet from residential boundaries within the Plan area, a noise impact study that addresses drive-through operations shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of Employment/Highway Commercial drive-through operations noise exposure at the nearest proposed noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as appropriate) to reduce Employment/Highway Commercial drive-through operations noise levels to a state of compliance with applicable Sacramento County General Plan exterior and interior noise level limits at nearby proposed sensitive receptors.

Specific mitigation measures could include but are not limited to the following:

- The construction of solid noise barriers that effectively attenuate drive-through operations noise exposure to a state of compliance with the applicable noise limits at existing sensitive receptors.

- A site design that integrates intervening shielding, setbacks, and/or restrictions on hours for drive-through operations.

**Significance of Impact 25 after Mitigation:** ***Less than Significant***

**Impact 26: Employment/Highway Commercial Car Wash Operations Noise at Proposed Sensitive Uses**

The nearest proposed sensitive uses (residential) are located adjacent to an Employment/Highway Commercial component. However, future (potential) locations of car wash tunnels, vacuum systems, and associated distances to adjacent residential uses are currently not known at this time. Thus, it is possible that car wash operations within Employment/Highway Commercial components could exceed the General Plan's exterior and interior daytime and nighttime standards at nearby proposed residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 26:

To satisfy applicable Sacramento County General Plan exterior and interior daytime and nighttime noise level standards at nearby proposed noise-sensitive uses, the following noise mitigation measure should be implemented:

**MM-26:** Should car wash uses be proposed within Employment/Highway Commercial components, a noise impact study that addresses car wash operations shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of Employment/Highway Commercial car wash drying assembly and vacuum equipment operations noise exposure at the nearest proposed noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as appropriate) to reduce Employment/Highway Commercial car wash and vacuum system operations noise levels to a state of compliance with applicable Sacramento County General Plan exterior and interior noise level limits at nearby proposed sensitive receptors.

Specific mitigation measures could include but are not limited to the following:

- The construction of solid noise barriers that effectively attenuate car wash and vacuum system equipment operations noise exposure to a state of compliance with the applicable noise limits at existing sensitive receptors.
- A site design that integrates intervening shielding, setbacks, and/or restrictions on hours for car wash and vacuum system equipment operations.

Significance of Impact 26 after Mitigation: Less than Significant

**Impact 27: School Parking Noise at Proposed Sensitive Uses**

An analysis of school parking area noise exposure was presented in **Impact 11**. The results from that analysis indicate that noise exposure from an individual parking area having 300 vehicle stalls computes to approximately 49 dB $L_{50}$ and 65 dB $L_{max}$ at a distance of 50 feet from the effective noise center of the area.

The nearest proposed sensitive uses (residential) are located adjacent to School components. However, future configurations and sizes of parking areas and related distances to adjacent residential uses within the Plan area are currently not known at this time. Thus, it is possible that School parking area noise exposure could exceed the General Plan's exterior and interior daytime standards at nearby proposed residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 27:

To satisfy applicable Sacramento County General Plan exterior and interior daytime noise level standards at nearby proposed noise-sensitive uses, the following noise mitigation measure should be implemented:

**MM-27:** A site specific noise impact study that addresses School component parking activities shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of School component parking area noise exposure at the nearest proposed noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as appropriate) to reduce School component parking noise levels to a state of compliance with applicable Sacramento County General Plan exterior and interior noise level limits at nearby proposed sensitive receptors. Such measures could include, but are not limited to, increasing setbacks between sensitive uses and school parking areas, construction of noise barriers where appropriate, and incorporation of upgraded building construction for sensitive receptors located in close proximity to school parking areas.

**Significance of Impact 27 after Mitigation: *Less than Significant***

**Impact 28: School Playground Noise at Proposed Sensitive Uses**

An analysis of school playground noise exposure was presented in **Impact 12**. As indicated in that analysis, outdoor play areas containing approximately 50 children are measured to be 55 dB $L_{eq}$ and 75 dB $L_{max}$ at a distance of 50 feet from the focal point of the play area during school recess.

The nearest proposed sensitive uses (residential) are located adjacent to School components. However, future locations, sizes, and associated related distances to adjacent residential uses within the Plan area are currently not known at this time. Thus, it is possible that School playground activity noise exposure could exceed the General Plan's exterior and interior daytime standards at nearby proposed residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 28:

To satisfy applicable Sacramento County General Plan exterior and interior daytime noise level standards at nearby proposed noise-sensitive uses, one of the following noise mitigation measures should be implemented:

**MM-28a:** The center of future playgrounds within School components shall maintain a minimum setback of 90 feet from proposed residential boundaries within the Plan area. When projected to a distance of 90 feet, playground activity noise levels are calculated to be 50 dB $L_{50}$ and 70 dB $L_{max}$, which would satisfy the General Plan's downward adjusted exterior daytime noise level standards of 50 dB $L_{50}$ and 70 dB

$L_{max}$. After consideration of the exterior to interior noise reduction provided by standard residential construction (approximately 25 dB with windows closed and approximately 15 dB with windows open), predicted playground activity noise levels at a distance of 90 feet would also satisfy the General Plan's downward adjusted interior (anytime) noise level standards of 30 dB $L_{50}$ and 50 dB $L_{max}$.

OR

**MM-28b:** Should playgrounds be proposed within 90 feet from a residential boundary within the Plan area, a noise impact study that addresses School playground noise shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of School playground noise exposure at the nearest proposed noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as appropriate) to reduce School playground noise levels to a state of compliance with applicable Sacramento County General Plan exterior and interior noise level limits at nearby proposed sensitive receptors.

Specific mitigation measures could include but are not limited to the following:

- The construction of solid noise barriers that effectively attenuate playground noise exposure to a state of compliance with the applicable noise limits at existing sensitive receptors.

- A site design that integrates intervening shielding and setbacks.

**Significance of Impact 28 after Mitigation:** ***Less than Significant***

**Impact 29: School Sports Stadium Noise at Proposed Sensitive Uses**

The nearest proposed sensitive uses (residential) are located adjacent to a School component. However, future locations and sizes of outdoor playing fields/sports stadiums, PA system configurations, and associated distances to adjacent residential uses are currently not known at this time. Thus, it is possible that noise from events at school sports stadiums could exceed the General Plan's exterior and interior daytime standards at nearby proposed residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 29:

To satisfy applicable Sacramento County General Plan exterior and interior daytime noise level standards at nearby proposed noise-sensitive uses, the following noise mitigation measure should be implemented:

**MM-29:** A noise impact study that addresses School sports stadium noise shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of stadium noise exposure at the nearest proposed noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as appropriate) to reduce stadium noise levels, including crowd and PA system noise, to a state of compliance with applicable Sacramento County General Plan exterior and interior noise level limits at nearby proposed sensitive receptors.

Specific mitigation measures could include but are not limited to the following:

- The construction of solid noise barriers that effectively attenuate sports stadium noise exposure to a state of compliance with the applicable noise limits at existing sensitive receptors.
- A site design that integrates intervening shielding, setbacks, and restrictions on equipment configurations and settings.

**Significance of Impact 29 After Mitigation:** ***Less than Significant***

**Impact 30: Park Activity Noise at Proposed Sensitive Uses**

An analysis of park activity noise exposure was presented in **Impact 14**. As indicated in that analysis, parks consisting of active uses (playing fields/playgrounds) have noise levels of approximately 60 dB $L_{50}$ and 70 dB $L_{max}$ at a distance of 50 feet from the area's focal point.

The nearest proposed sensitive uses (residential) are located adjacent to Parks components. However, future locations of playing fields/playgrounds and associated distances to adjacent residential uses are currently not known at this time. Thus, it is possible that noise from park activities could exceed the General Plan's exterior and interior daytime standards at nearby proposed residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 30:

To satisfy applicable Sacramento County General Plan exterior and interior daytime noise level standards at nearby proposed noise-sensitive uses, one of the following noise mitigation measures should be implemented:

**MM-30a:** The center of future active uses within Parks components (i.e., playing fields/playgrounds) shall maintain a minimum setback of 150 feet from proposed residential boundaries within the Plan area. When projected to a distance of 150 feet, park activity noise levels are calculated to be 50 dB $L_{50}$ and 60 dB $L_{max}$, which would satisfy the General Plan's downward adjusted exterior daytime noise level standards of 50 dB $L_{50}$ and 70 dB $L_{max}$. After consideration of the exterior to interior noise reduction provided by standard residential construction (approximately 25 dB with windows closed and approximately 15 dB with windows open), predicted park activity noise levels at a distance of 150 feet would also satisfy the General

Plan's downward adjusted interior (anytime) noise level standards of 30 dB $L_{50}$ and 50 dB $L_{max}$.

**MM-30b:** Should the centers of future active uses within Parks components be proposed within 150 feet from a residential boundary within the Plan area, a noise impact study that addresses park activities shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of park activity noise exposure at the nearest proposed noise-sensitive uses (residential). The analysis shall include associated mitigation measures (as appropriate) to reduce park noise levels to a state of compliance with applicable Sacramento County General Plan exterior and interior noise level limits at nearby proposed sensitive receptors.

Specific mitigation measures could include but are not limited to the following:

- The construction of solid noise barriers that effectively attenuate park activity noise exposure to a state of compliance with the applicable noise limits at existing sensitive receptors.

- A site design that integrates intervening shielding and setbacks.

**Significance of Impact 30 After Mitigation:** ***Less than Significant***

## Noise Impacts from Existing Commercial Operations at Proposed Uses

### Impact 31: Existing Commercial Noise at Proposed Plan area Uses

An existing Travel Plaza is located within the Plan area on the east side of El Centro Road adjacent to the westbound I-80 off-ramp. The primary noise sources associated with the Travel Plaza are heavy truck traffic on El Centro Road and West El Camino Avenue, and on-site truck circulation activities.

Noise measurement site 10 was selected to be representative of the ambient noise level environment at the portion of the Plan area proposed for commercial/mixed-use and very high-density residential uses. The noise level data collected at Site 10 includes vehicle passby noise on El Centro Road, including heavy truck passbys associated with the Travel Plaza, but also includes background noise from Interstate 80. Noise measurement Site 11 was specifically selected to be representative of noise generated at the Travel Plaza, but it was not possible to exclude noise from Interstate 80 in the data collected at Site 11. Analysis of the measured ambient noise data at these sites indicate that noise levels associated with the Travel Plaza were elevated. Based on the measured ambient noise level data, it is possible that noise from activities at the Travel Plaza could exceed the General Plan's exterior and interior daytime and nighttime standards at noise-sensitive areas of residential uses proposed in the immediate vicinity of the Travel Plaza. As a result, this impact is identified as being **potentially significant**.

Mitigation for Impact 31:

To satisfy applicable Sacramento County General Plan exterior and interior daytime and nighttime noise level standards at nearby proposed Plan area uses, the following noise mitigation measure should be implemented:

**MM-31:** A noise impact study that addresses Travel Plaza noise generation shall be completed by a qualified noise consultant once site-specific development plans are completed for the residential components of the project located adjacent to either El Centro Road near the Travel Plaza or on properties immediately adjacent to the Travel Plaza. The noise impact study shall include an analysis of existing Travel Plaza noise exposure at the nearest proposed uses within the Plan area. The analysis shall include associated mitigation measures (as appropriate) to reduce Travel Plaza noise levels to a state of compliance with applicable Sacramento County General Plan exterior and interior noise level limits at nearby proposed uses. Specific mitigation measures could include but are not limited to the following:

- The construction of solid noise barriers that effectively attenuate Travel Plaza noise exposure to a state of compliance with the applicable noise limits at existing sensitive receptors.

- A site design that integrates intervening shielding and setbacks.

**Significance of Impact 31 After Mitigation:** ***Less than Significant***

## Noise Impacts from Existing Airport Operations at Proposed Uses

### Impact 32: Airport Operations Noise at Proposed Plan area Uses

The Upper Westside Specific Plan area is located approximately 3 miles from the Sacramento International Airport. Pursuant to Policy NO-2 of the Sacramento County General Plan Noise Element, proposals for new development within Sacramento County that may be affected by aircraft noise from Sacramento International Airport shall be evaluated relative to the Sacramento International Airport Land Use Compatibility Plan (ALUCP) prepared by the Sacramento Area Council of Governments (SACOG) dated December 12, 2013. The Land Use Plan's noise compatibility criteria is reproduced in Table 10 of this report.

According to Map 1 of the Sacramento International Airport ALUCP (Compatibility Policy Map: Airport Influence Area), the Upper Westside Specific Plan area is geographically located within Referral Area 2 of the Airport Influence Area. According to ALUCP Policy 1.3.3 (Referral Areas), Referral Area 2 includes locations where airspace protection (other than wildlife hazards) and/or overflight are compatibility concerns, but not noise or safety. As indicated in Figure 5, the Plan area is located outside of the 60 dB CNEL noise contours.

Based on the information above, analysis of the BAC long-term noise level survey results within the Plan area, and after consideration of the exterior to interior noise level reduction achieved within standard building construction (at least 25 dB with windows closed and approximately 15 dB with windows open), noise generated from normal aircraft operations at the Sacramento International Airport is not predicted to exceed the applicable land use compatibility noise criteria established in the Sacramento International ALCUP within the Plan area. As a result, this impact is considered to be ***less than significant***.

## Appendix A
## Acoustical Terminology

**Acoustics** The science of sound.

**Ambient Noise** The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

**Attenuation** The reduction of an acoustic signal.

**A-Weighting** A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

**Decibel or dB** Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

**CNEL** Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

**Frequency** The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

**IIC** Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.

**$L_{dn}$** Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

**$L_{eq}$** Equivalent or energy-averaged sound level.

**$L_{max}$** The highest root-mean-square (RMS) sound level measured over a given period of time.

**Loudness** A subjective term for the sensation of the magnitude of sound.

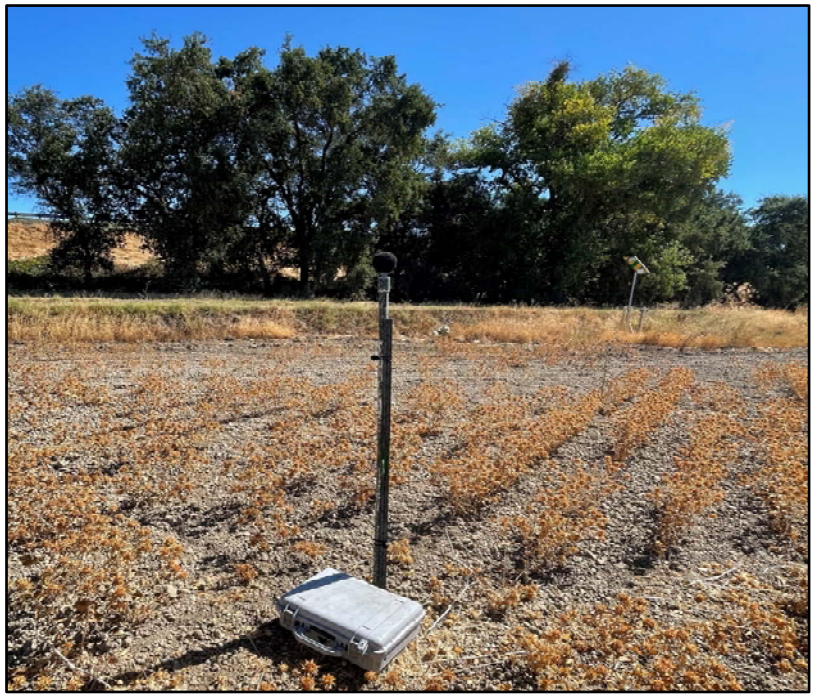
**Masking** The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

**Noise** Unwanted sound.

**Peak Noise** The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.

**$RT_{60}$** The time it takes reverberant sound to decay by 60 dB once the source has been removed.

**STC** Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.



BOLLARD
Acoustical Consultants

Appendix B-1
Long-Term Noise Survey Location – Site 1
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

Appendix B-2
Long-Term Noise Survey Location – Site 2
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

Appendix B-3
Short-Term Noise Survey Location – Site 3
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

Appendix B-4
Short-Term Noise Survey Location – Site 4
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

Appendix B-5
Short-Term Noise Survey Location – Site 5
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

Appendix B-6
Short-Term Noise Survey Location – Site 6
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

Appendix B-7
Long-Term Noise Survey Location – Site 7
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

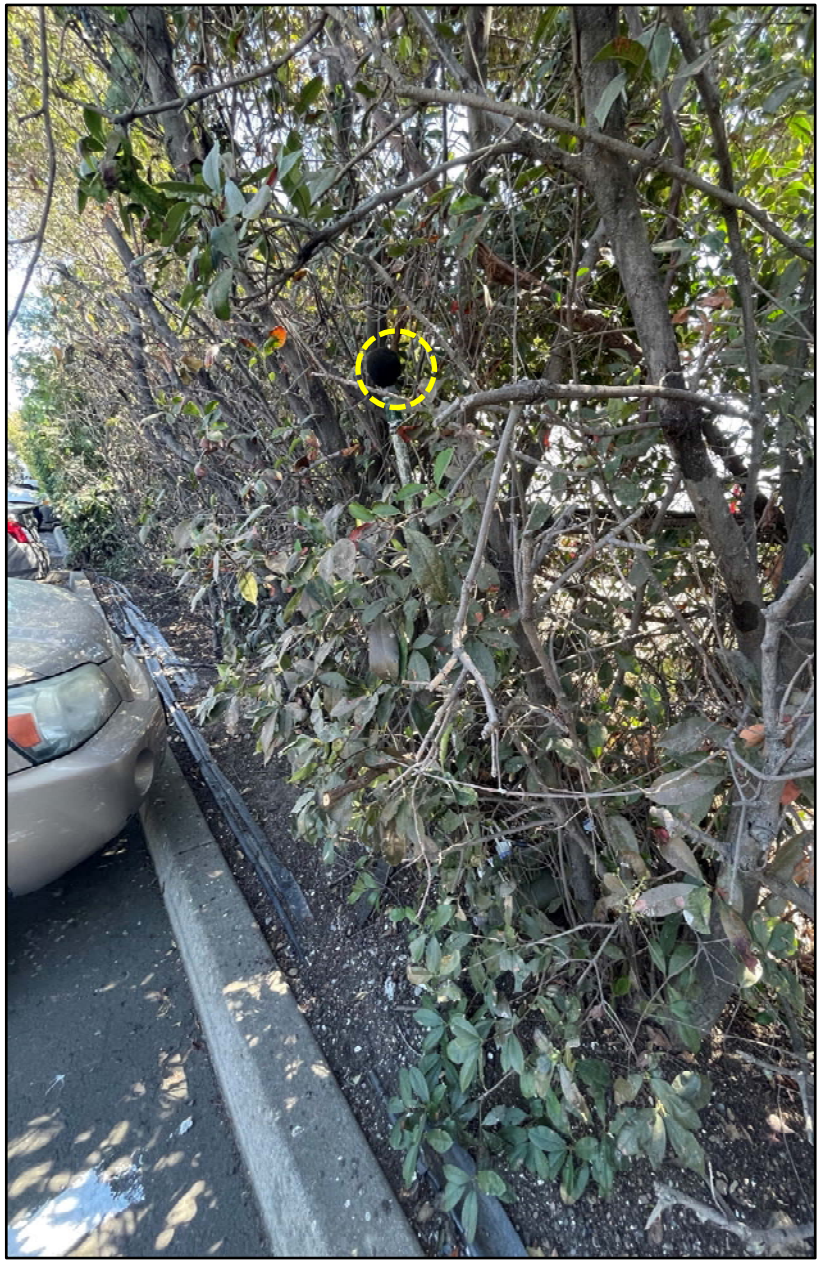
Appendix B-8
Long-Term Noise Survey Location – Site 8
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

Appendix B-9
Long-Term Noise Survey Location – Site 9
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

Appendix B-10
Long-Term Noise Survey Location – Site 10
Upper Westside Specific Plan – Sacramento County, CA



BOLLARD
Acoustical Consultants

Appendix B-11
Long-Term Noise Survey Location – Site 11
Upper Westside Specific Plan – Sacramento County, CA


BOLLARD
Acoustical Consultants

Appendix B-12
Long-Term Noise Survey Location – Site 12
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

Appendix B-13
Long-Term Noise Survey Location – Site 13
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

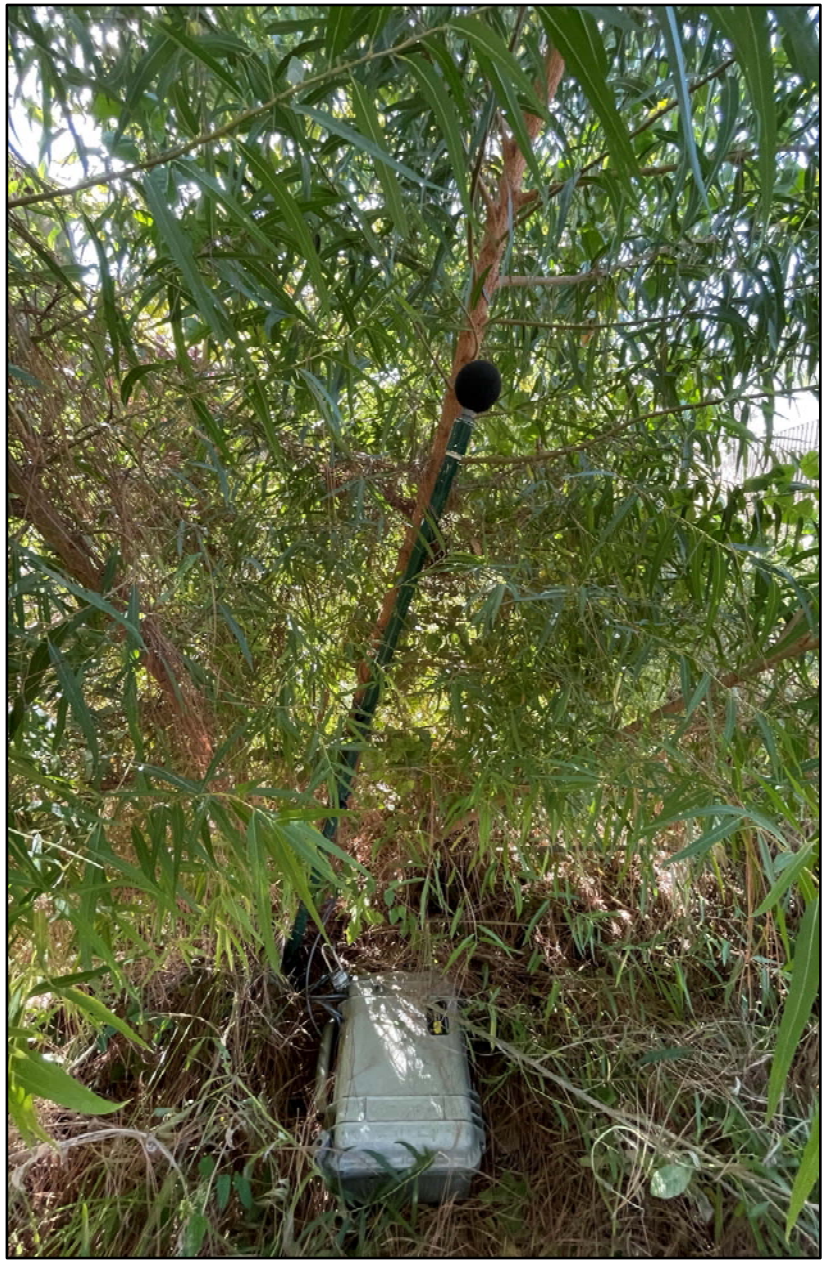
Appendix B-14
Long-Term Noise Survey Location – Site 14
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

Appendix B-15
Long-Term Noise Survey Location – Site 15
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

Appendix B-16
Long-Term Noise Survey Location – Site 16
Upper Westside Specific Plan – Sacramento County, CA



BOLLARD
Acoustical Consultants

Appendix B-17
Long-Term Noise Survey Location – Site 17
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

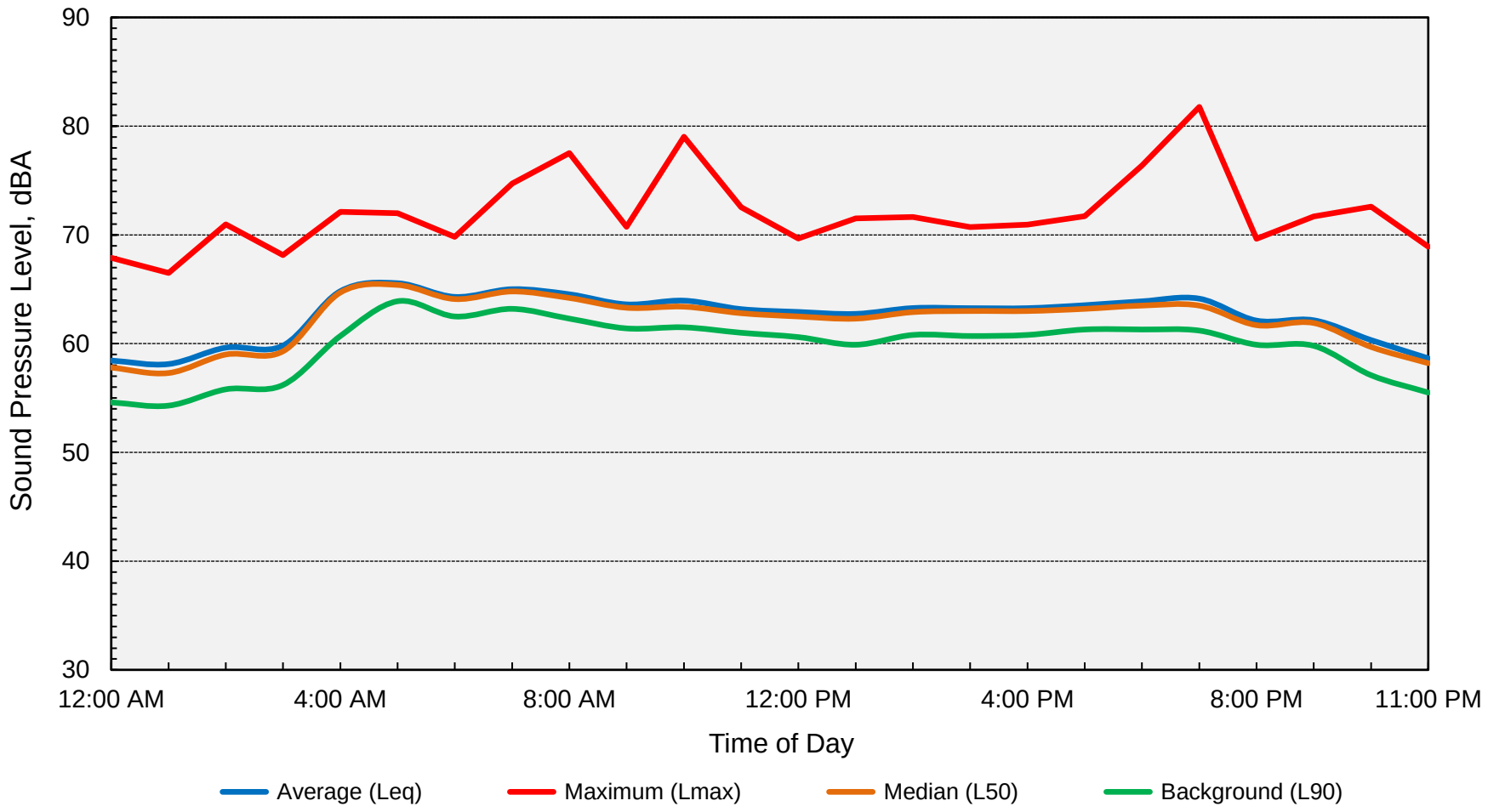
Appendix B-18
Long-Term Noise Survey Location – Site 18
Upper Westside Specific Plan – Sacramento County, CA



BOLLARD
Acoustical Consultants

Appendix B-19
Long-Term Noise Survey Location – Site 19
Upper Westside Specific Plan – Sacramento County, CA

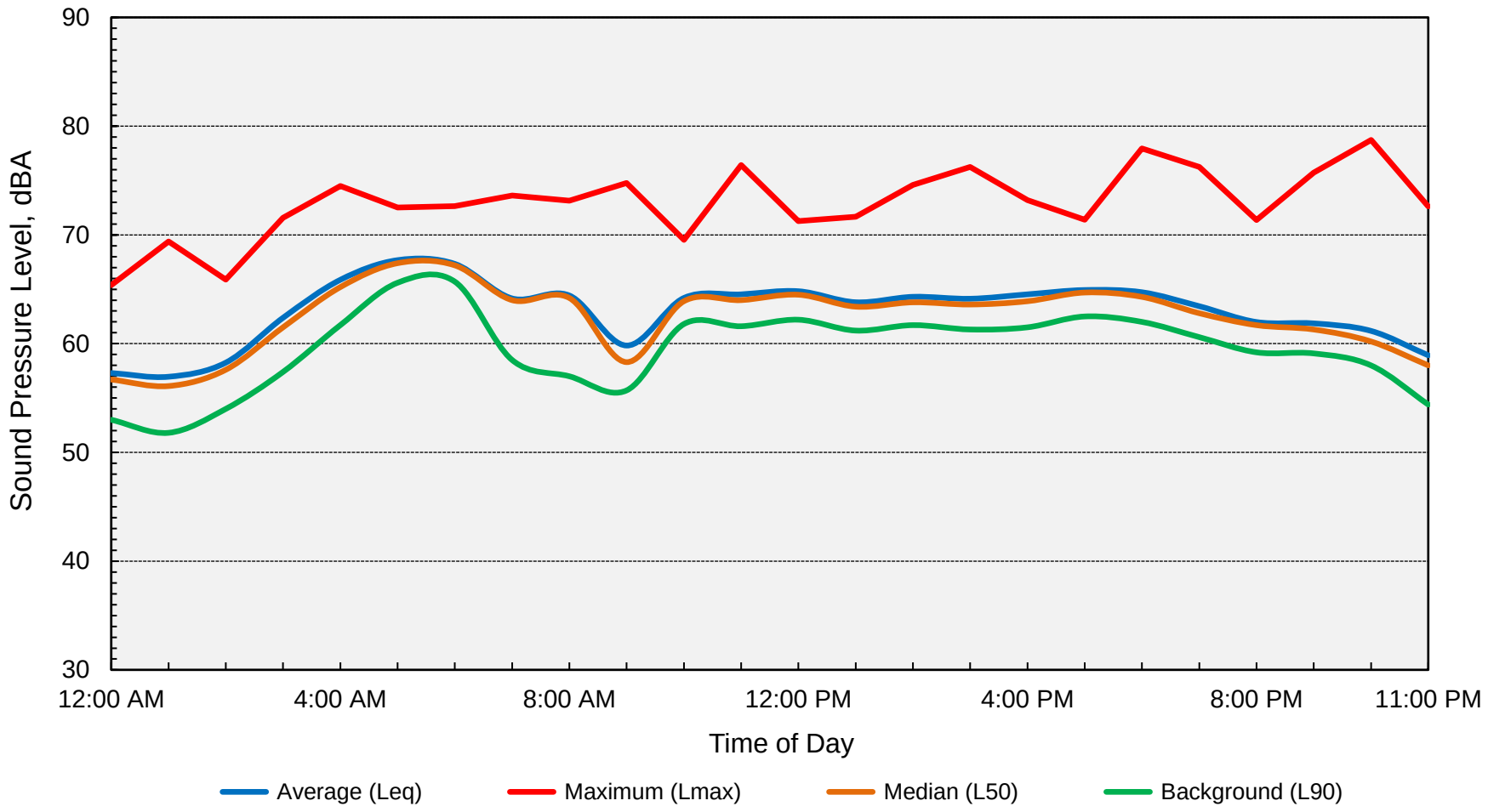
**Appendix C-1**
**Long-Term Ambient Noise Monitoring Results - Site 1**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 21, 2021**




**Computed DNL = 69 dB**

BOLLARD
Acoustical Consultants

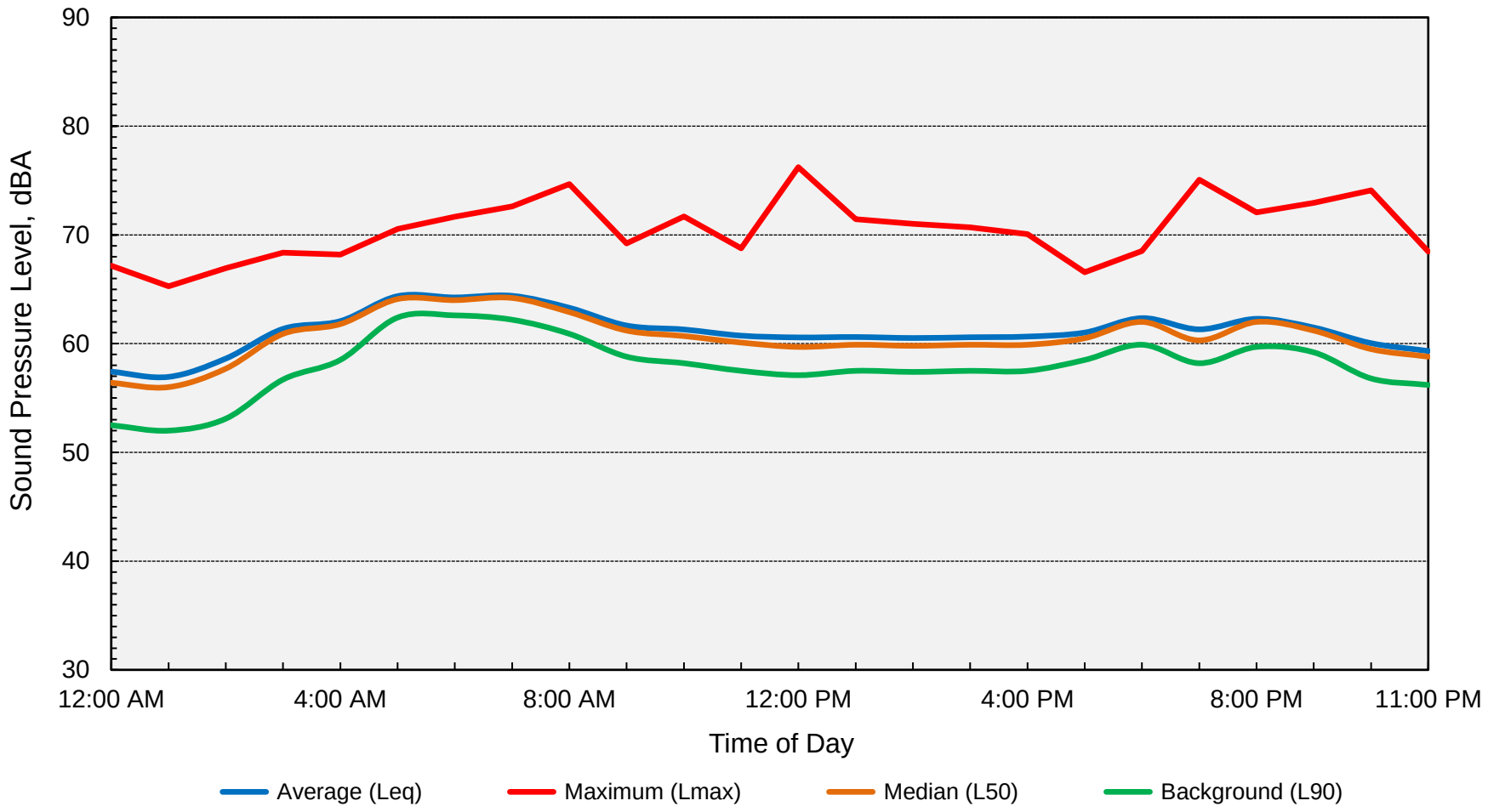
**Appendix C-2**
**Long-Term Ambient Noise Monitoring Results - Site 1**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 22, 2021**




**Computed DNL = 70 dB**

BOLLARD
Acoustical Consultants

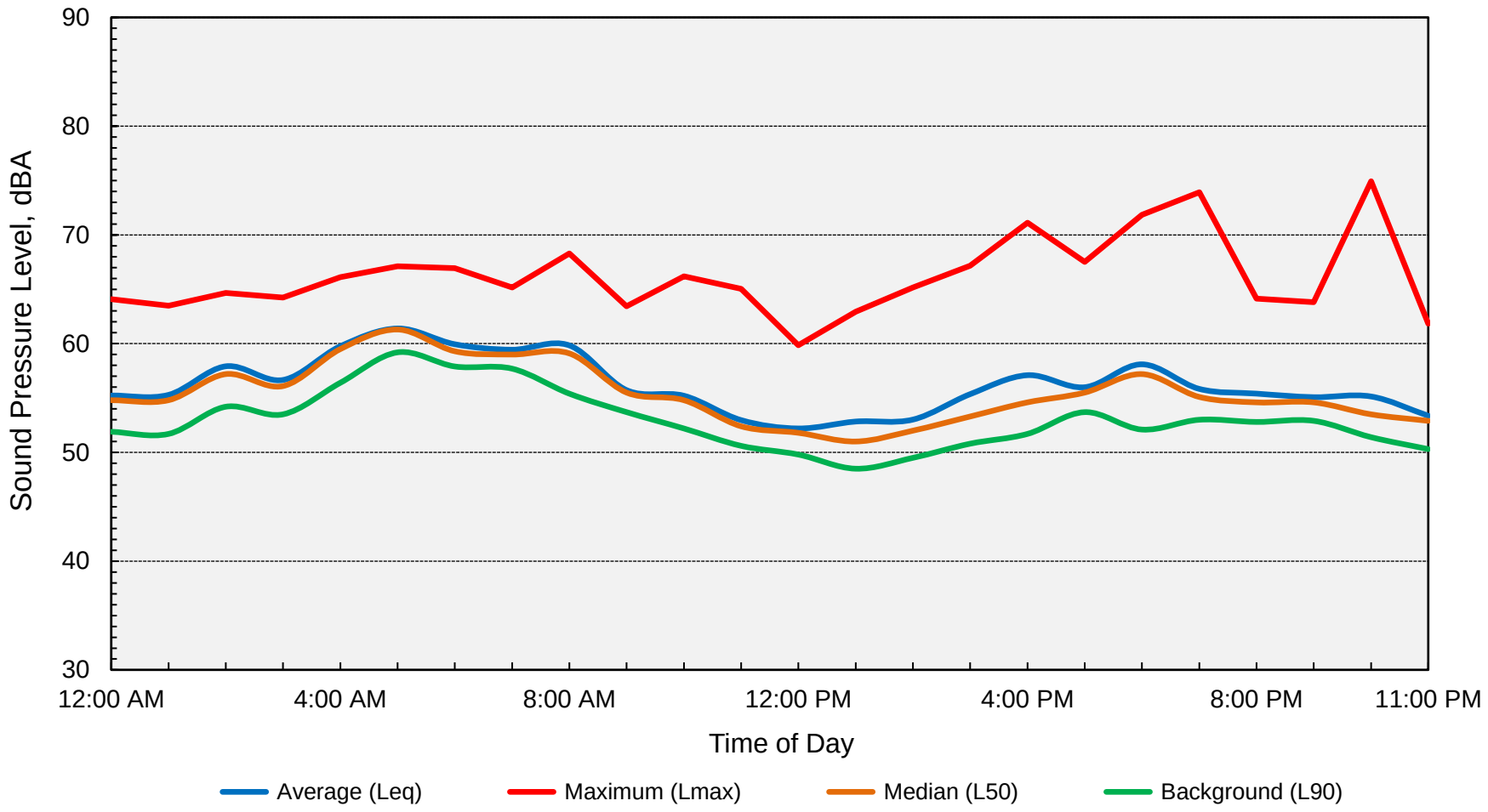
**Appendix C-3**
**Long-Term Ambient Noise Monitoring Results - Site 1**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 23, 2021**




**Computed DNL = 68 dB**

BOLLARD
Acoustical Consultants

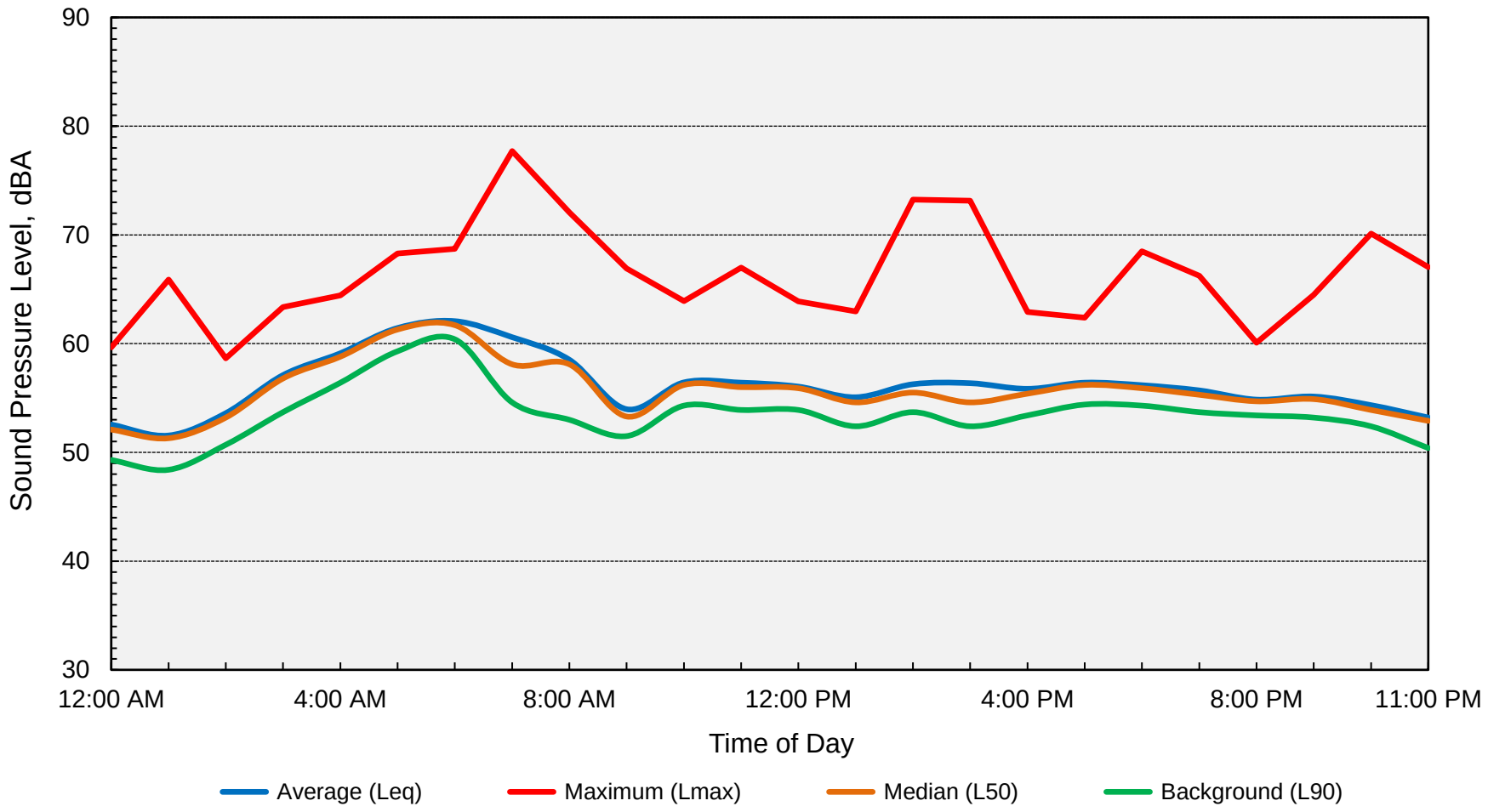
**Appendix C-4**
**Long-Term Ambient Noise Monitoring Results - Site 2**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 21, 2021**




**Computed DNL = 64 dB**

BOLLARD
Acoustical Consultants

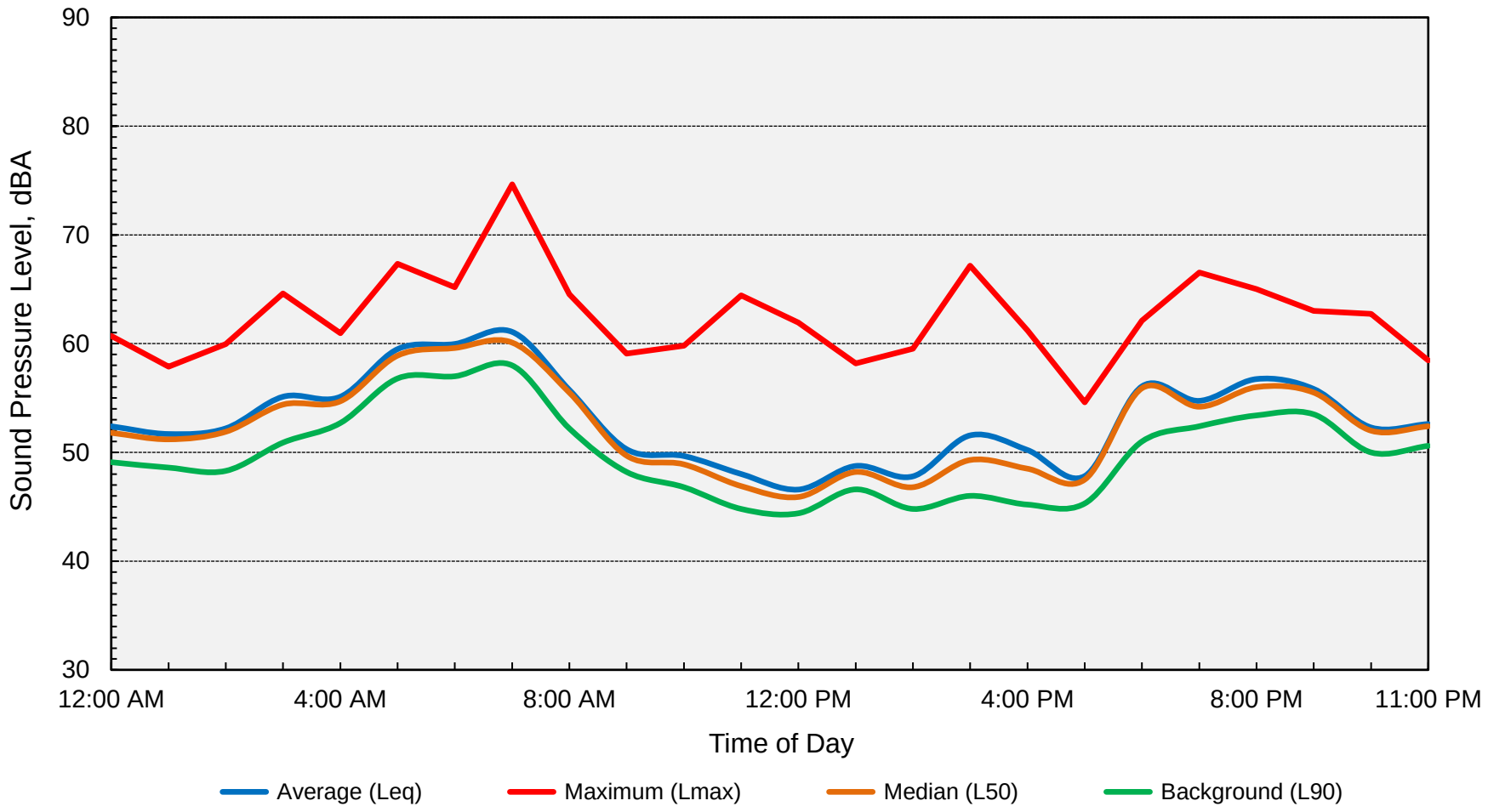
**Appendix C-5**
**Long-Term Ambient Noise Monitoring Results - Site 2**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 22, 2021**




**Computed DNL = 64 dB**

BOLLARD
Acoustical Consultants

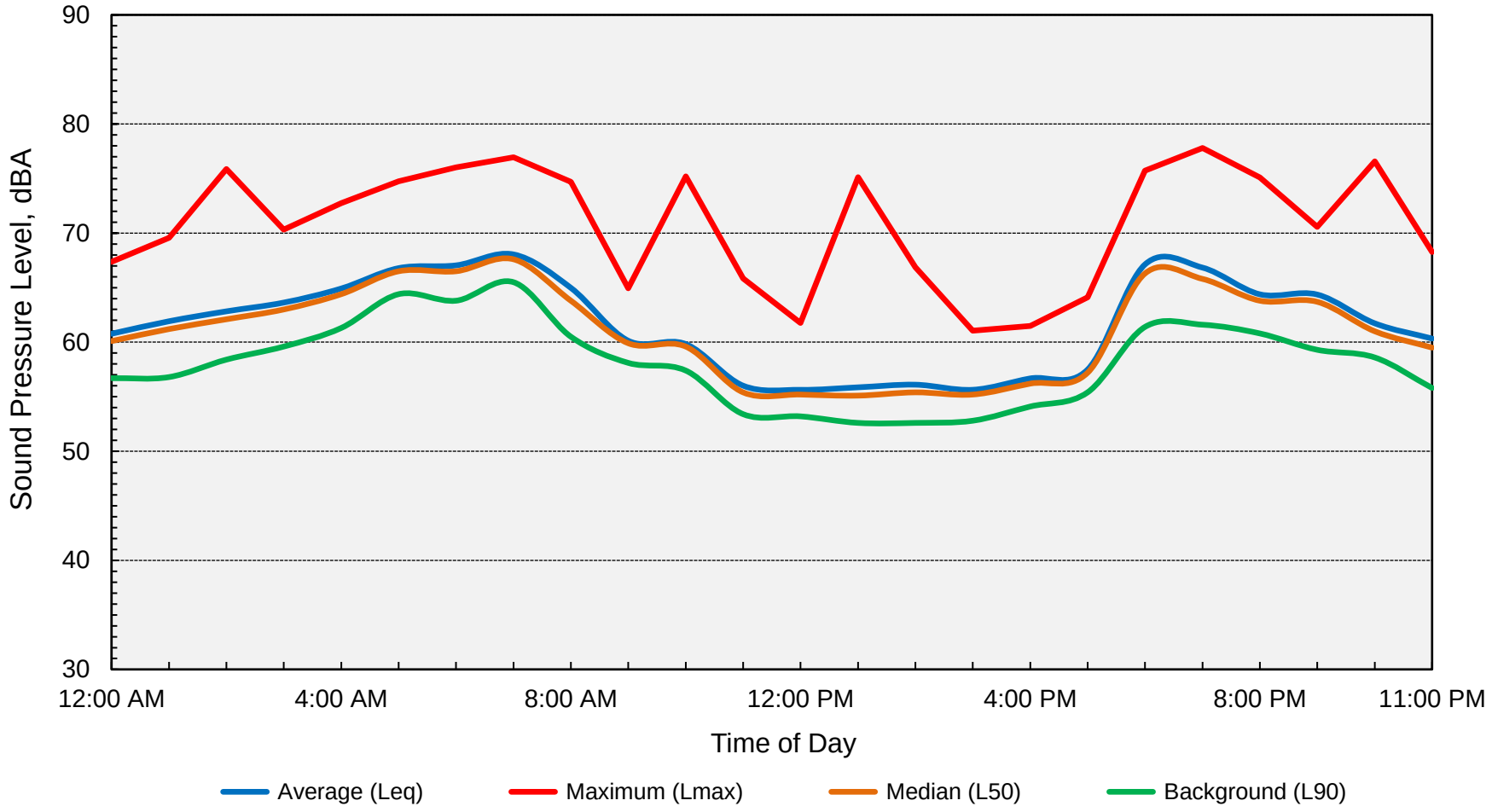
**Appendix C-6**
**Long-Term Ambient Noise Monitoring Results - Site 2**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 23, 2021**




**Computed DNL = 62 dB**

BOLLARD
Acoustical Consultants

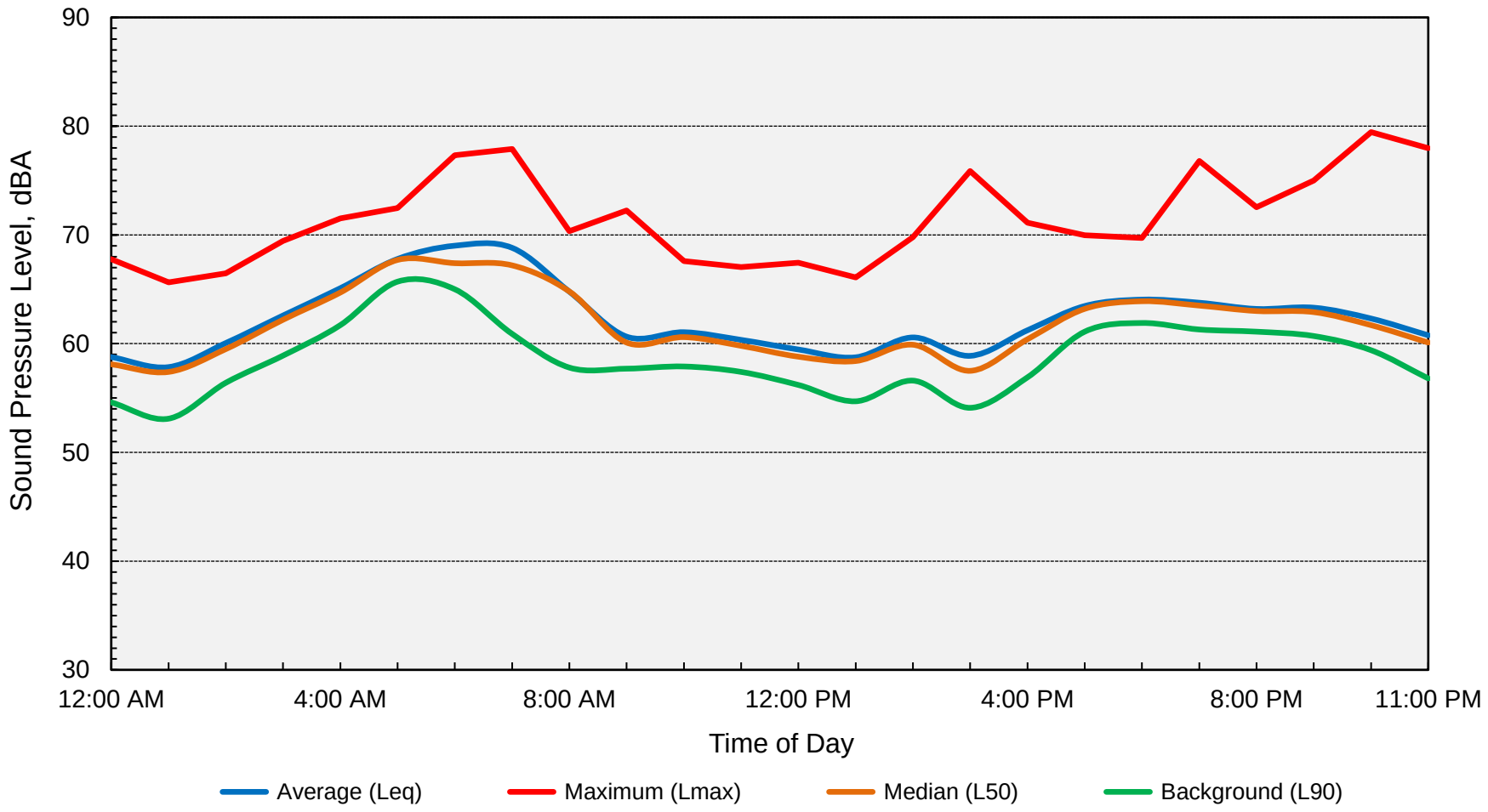
**Appendix C-7**
**Long-Term Ambient Noise Monitoring Results - Site 7**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 21, 2021**




**Computed DNL = 70 dB**

BOLLARD
Acoustical Consultants

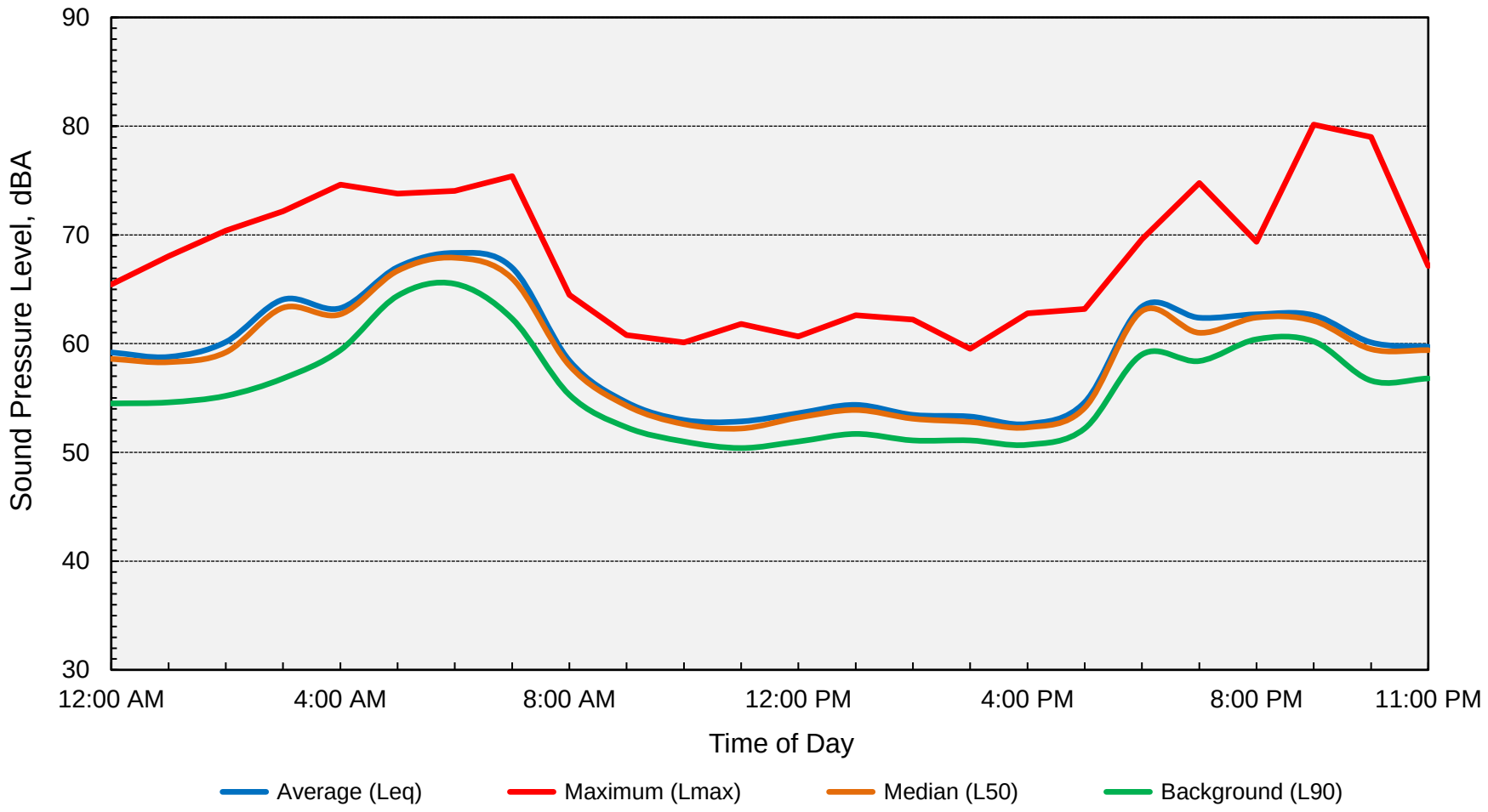
**Appendix C-8**
**Long-Term Ambient Noise Monitoring Results - Site 7**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 22, 2021**




**Computed DNL = 71 dB**

BOLLARD
Acoustical Consultants

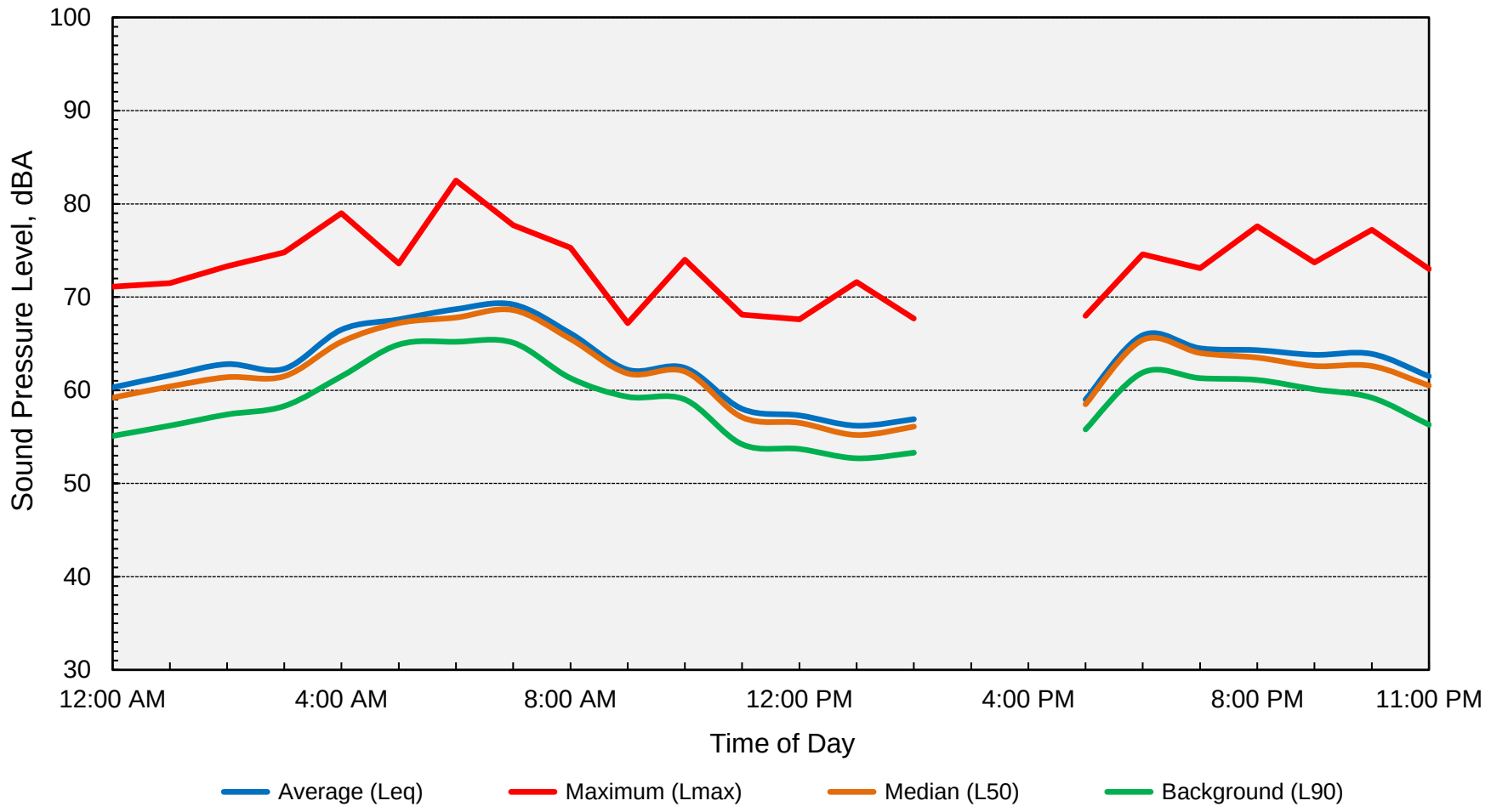
**Appendix C-9**
**Long-Term Ambient Noise Monitoring Results - Site 7**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 23, 2021**




**Computed DNL = 70 dB**

BOLLARD
Acoustical Consultants

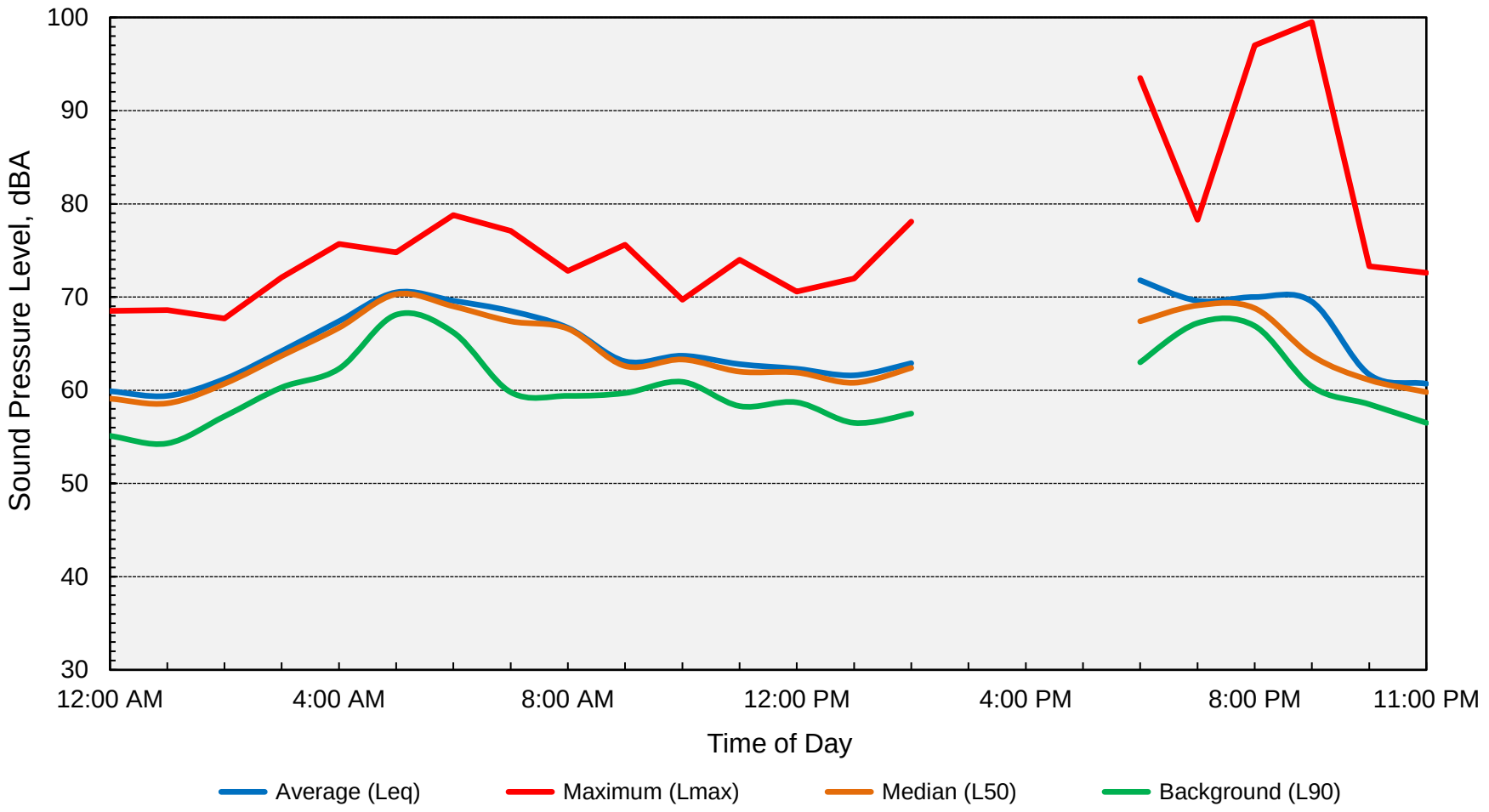
**Appendix C-10**
**Long-Term Ambient Noise Monitoring Results - Site 8**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 21, 2021**




**Computed DNL = 71 dB**

BOLLARD
Acoustical Consultants

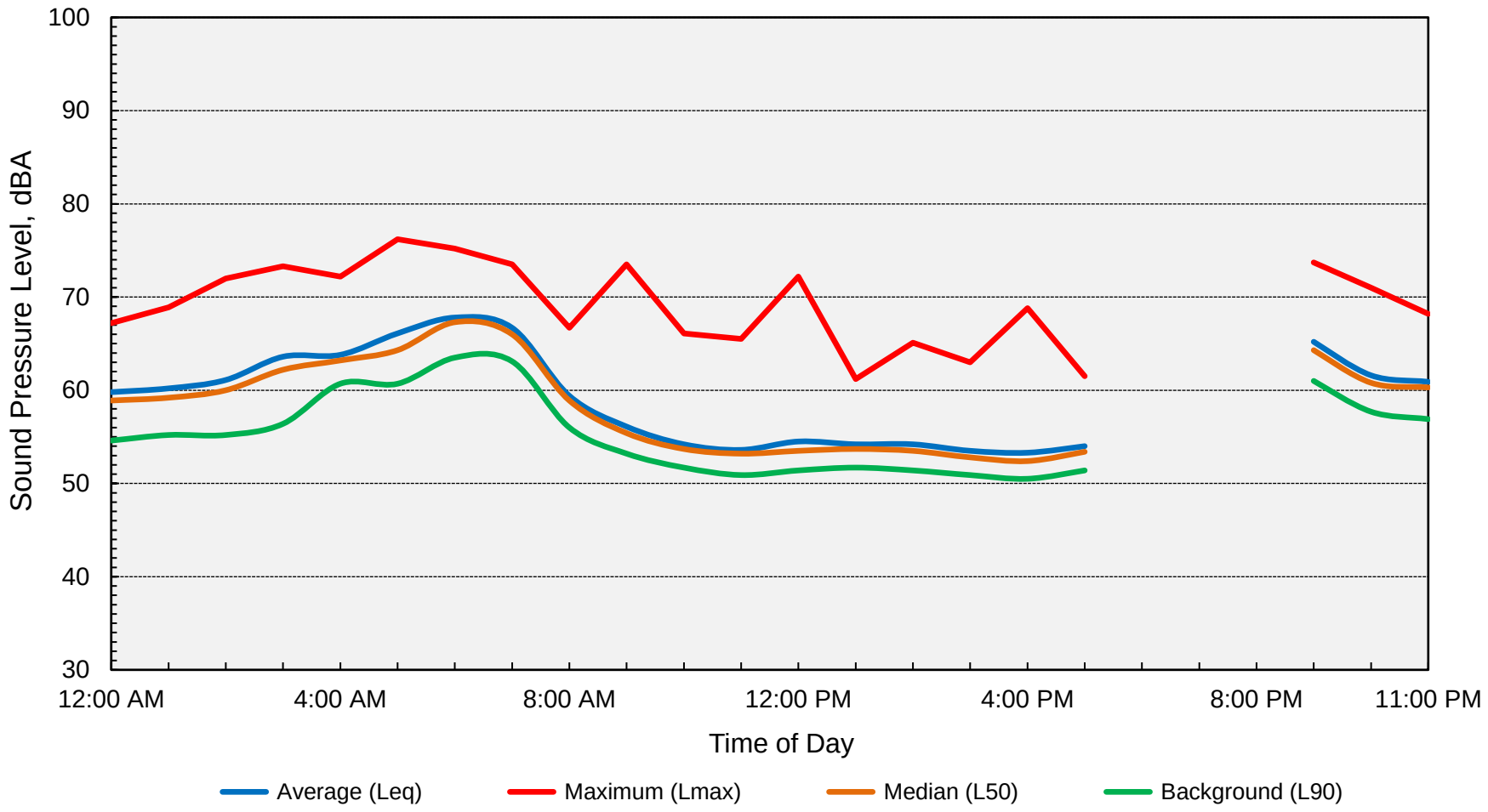
**Appendix C-11**
**Long-Term Ambient Noise Monitoring Results - Site 8**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 22, 2021**




**Computed DNL = 72 dB**

BOLLARD
Acoustical Consultants

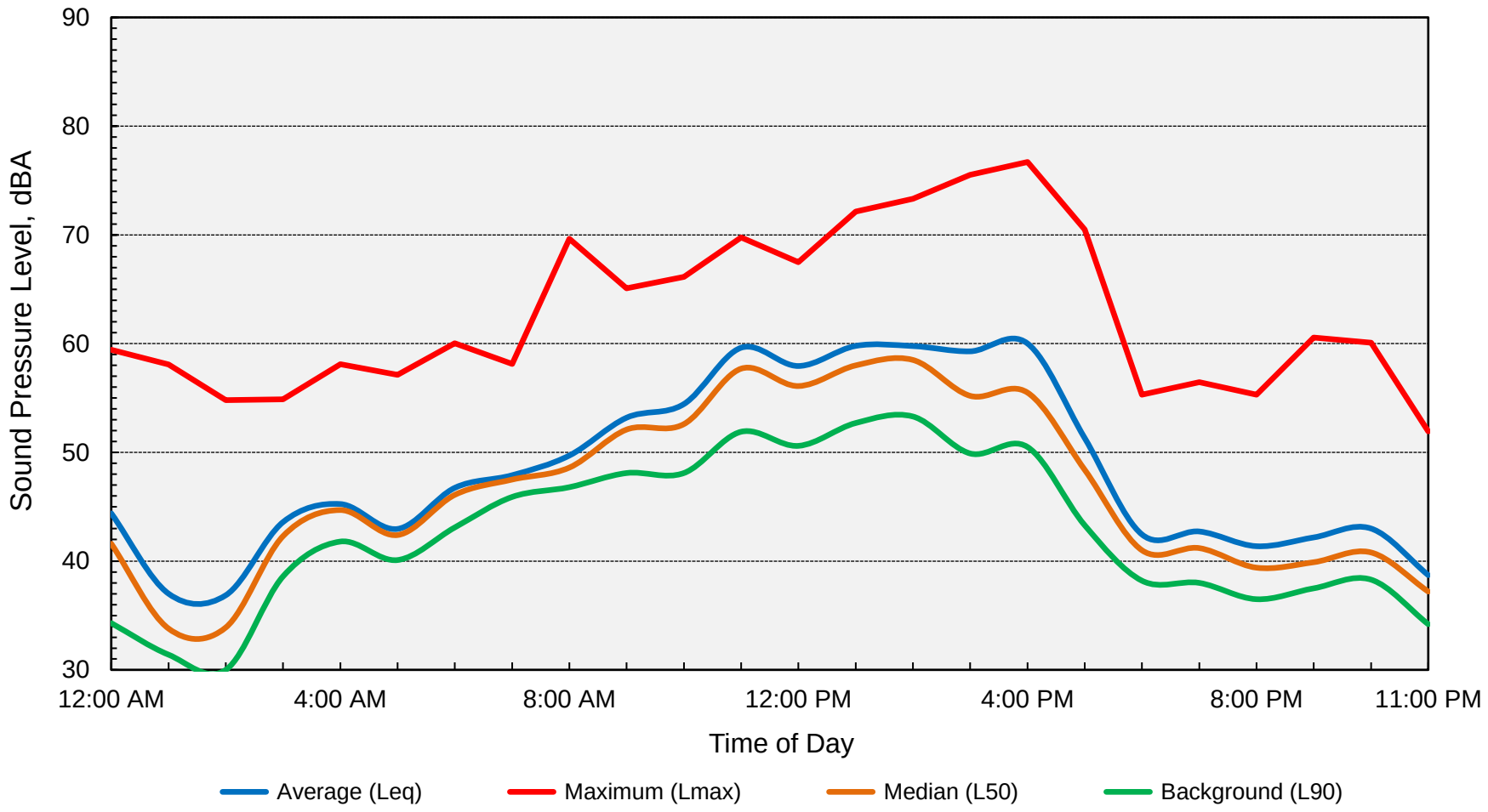
**Appendix C-12**
**Long-Term Ambient Noise Monitoring Results - Site 8**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 23, 2021**




**Computed DNL = 70 dB**

BOLLARD
Acoustical Consultants

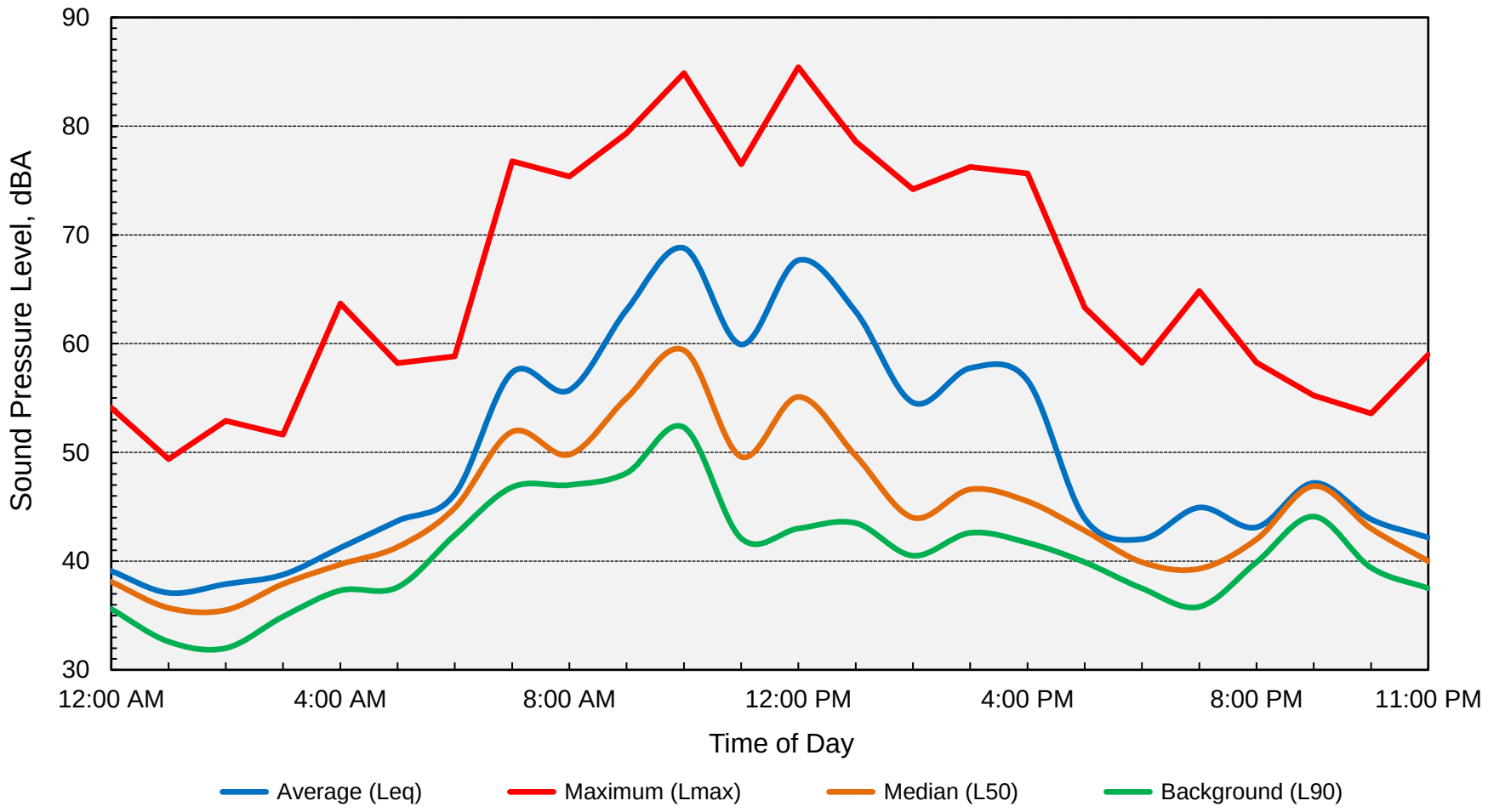
**Appendix C-13**
**Long-Term Ambient Noise Monitoring Results - Site 9**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 28, 2021**




**Computed DNL = 55 dB**

BOLLARD
Acoustical Consultants

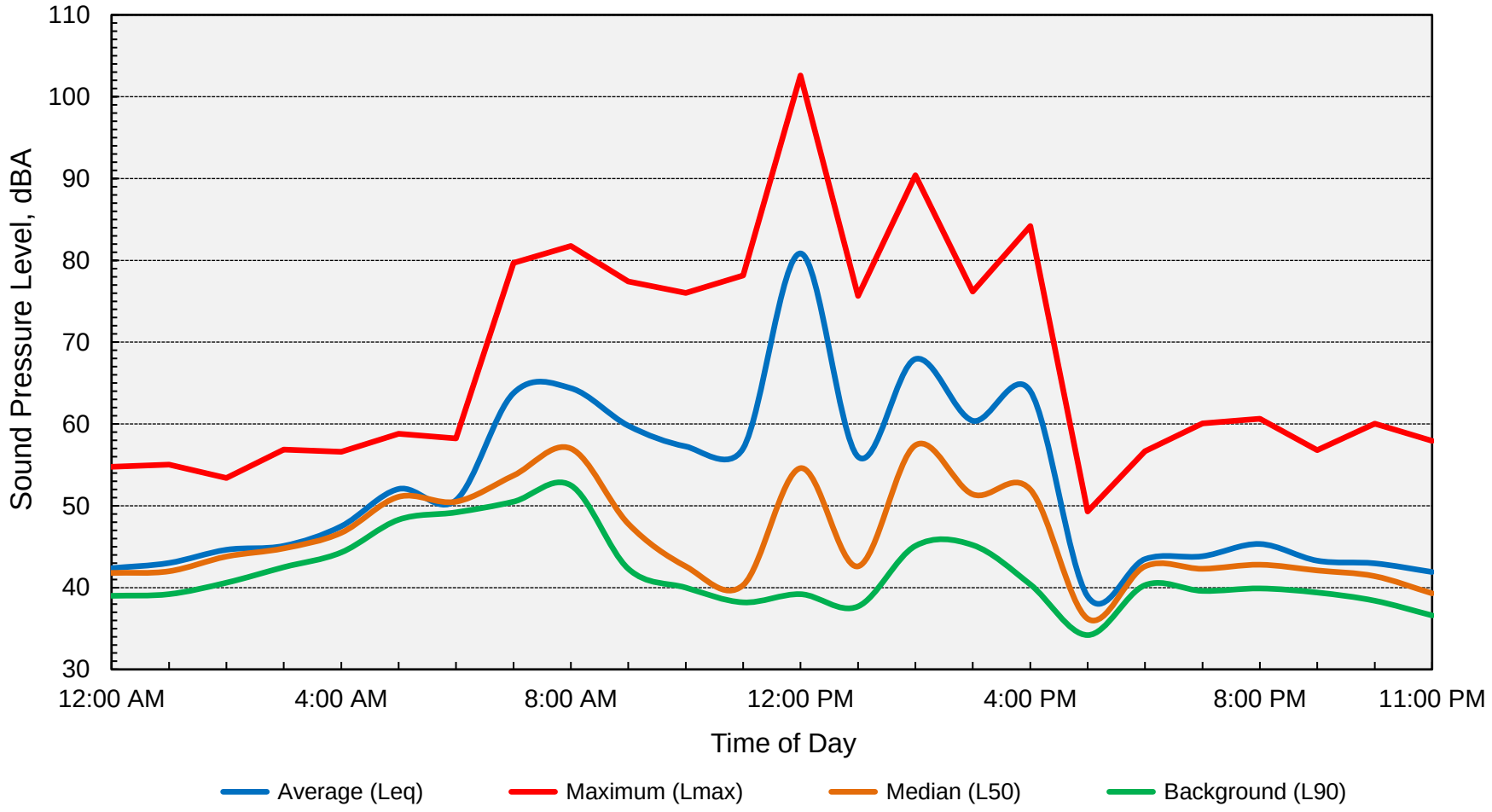
**Appendix C-14**
**Long-Term Ambient Noise Monitoring Results - Site 9**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 29, 2021**




**Computed DNL = 60 dB**

BOLLARD
Acoustical Consultants

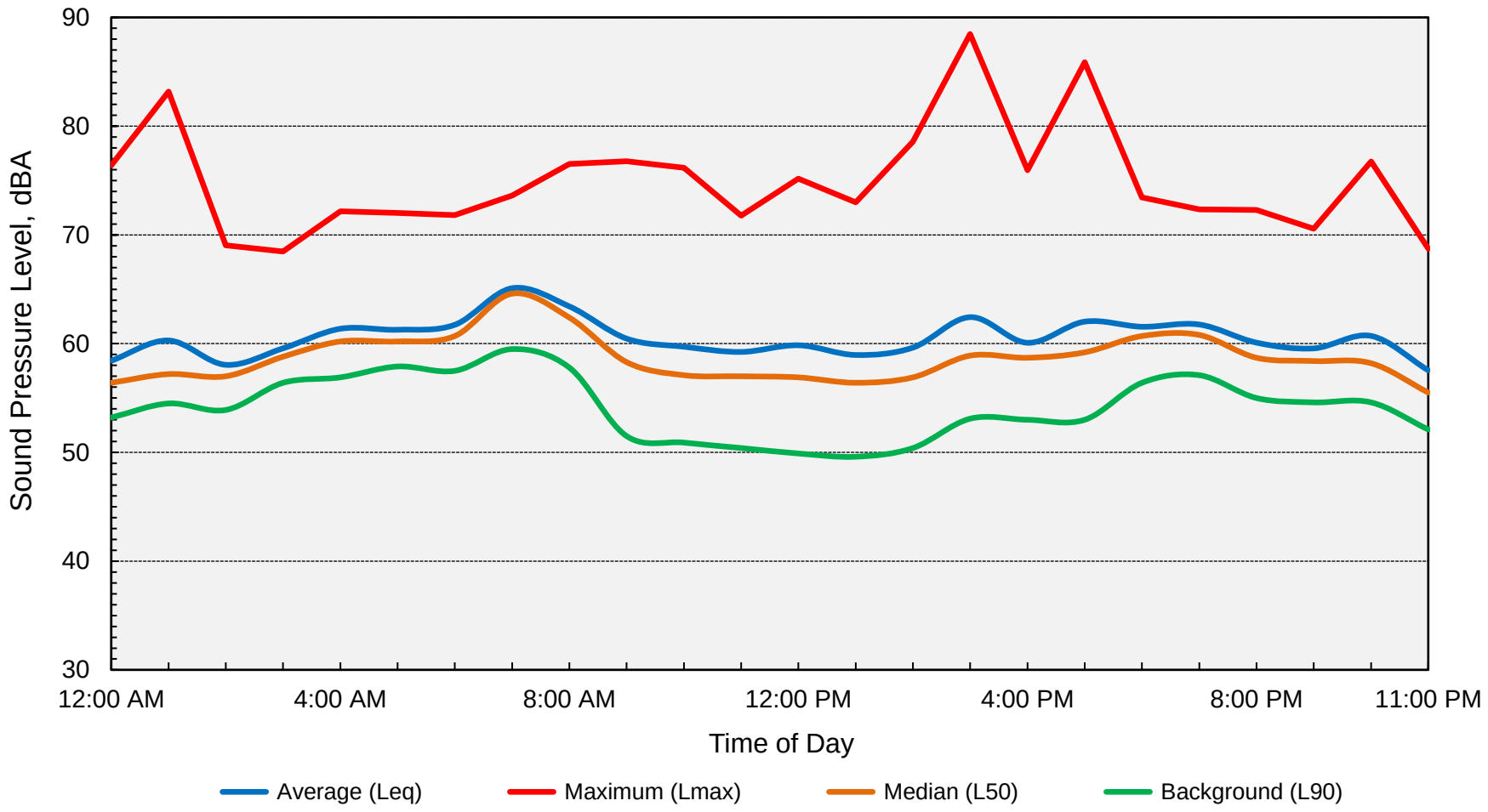
**Appendix C-15**
**Long-Term Ambient Noise Monitoring Results - Site 9**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 30, 2021**




**Computed DNL = 68 dB**

BOLLARD
Acoustical Consultants

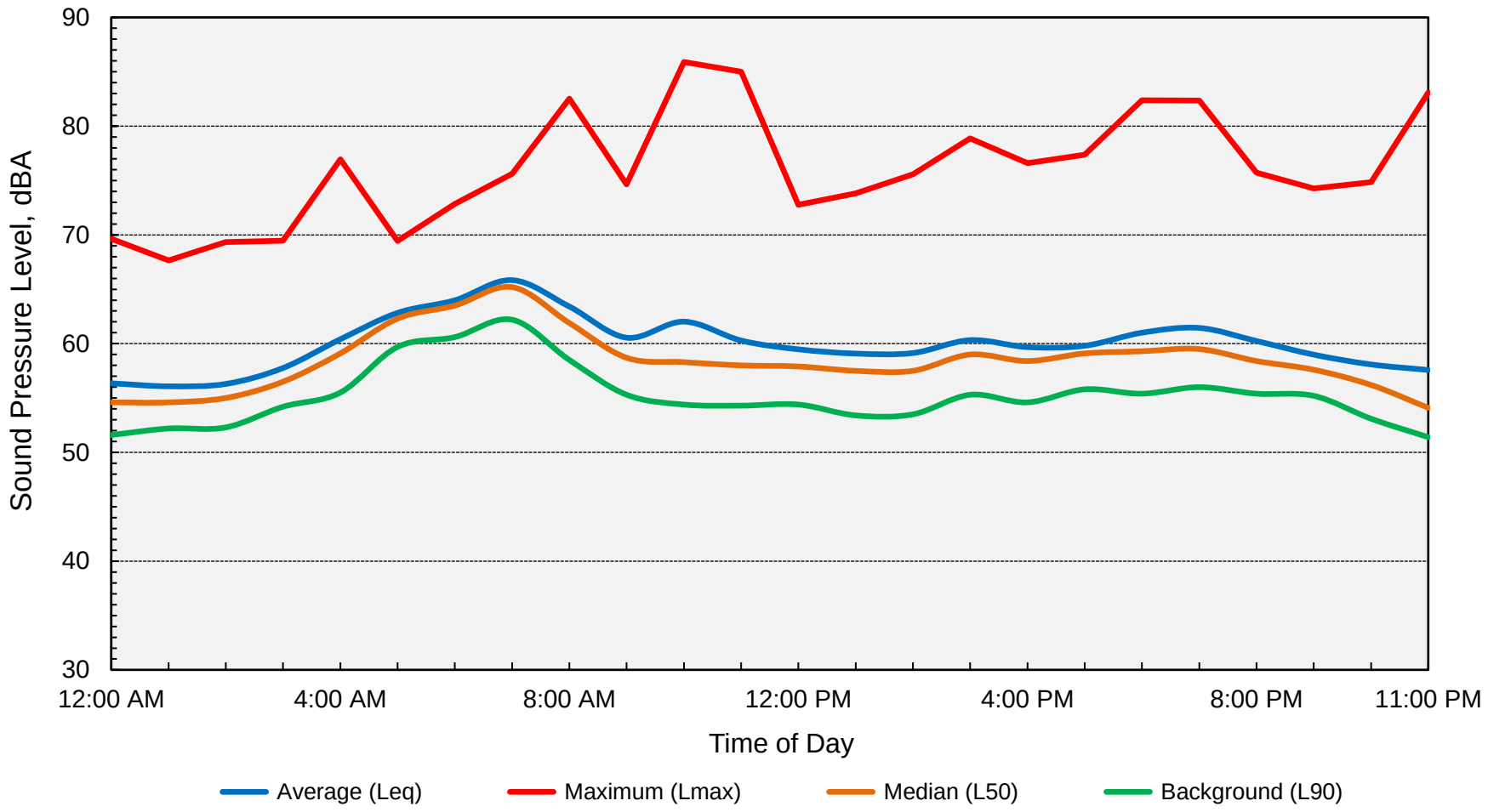
**Appendix C-16**
**Long-Term Ambient Noise Monitoring Results - Site 10**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 21, 2021**




**Computed DNL = 67 dB**

BOLLARD
Acoustical Consultants

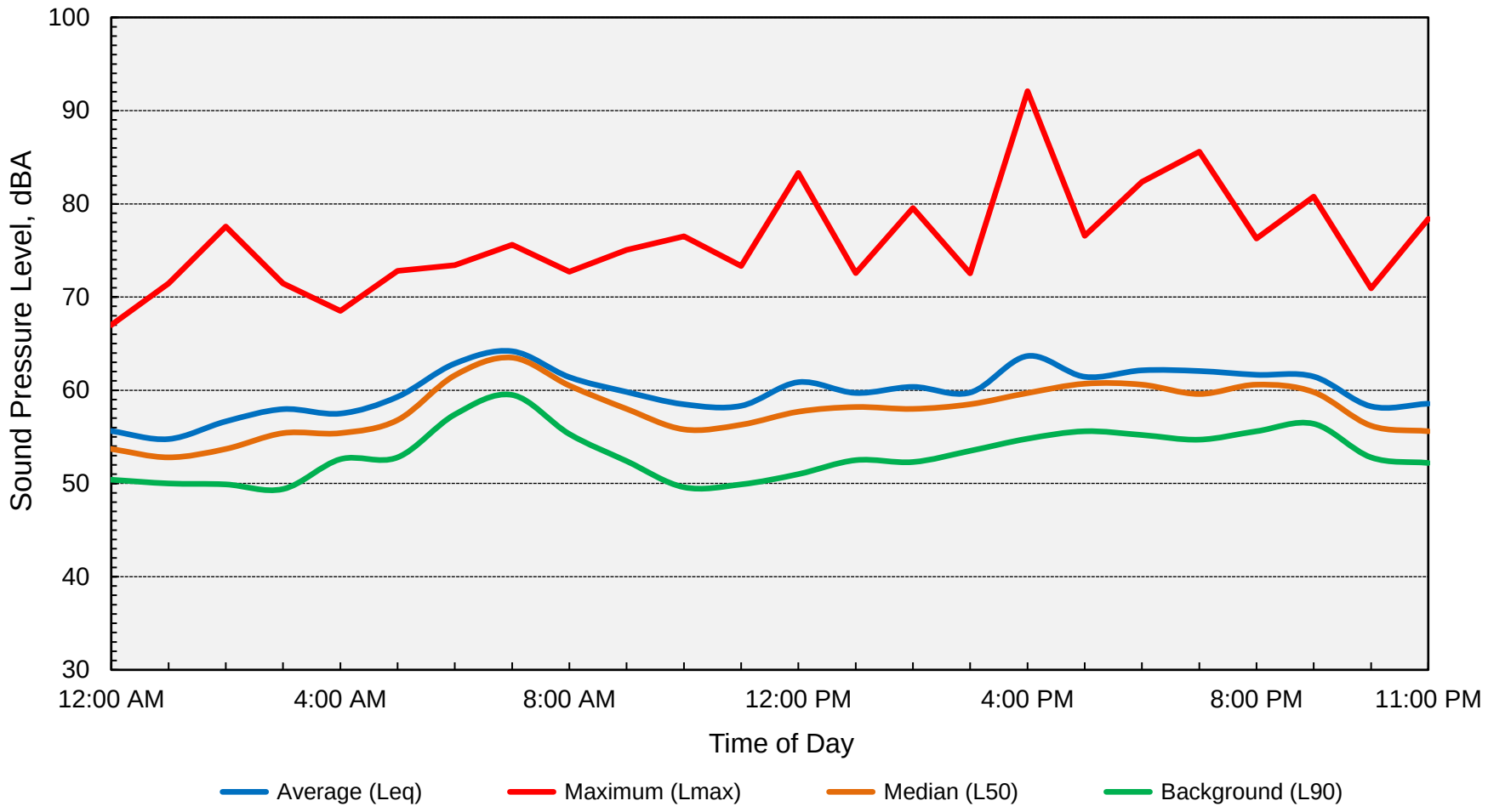
**Appendix C-17**
**Long-Term Ambient Noise Monitoring Results - Site 10**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 22, 2021**




**Computed DNL = 66 dB**

BOLLARD
Acoustical Consultants

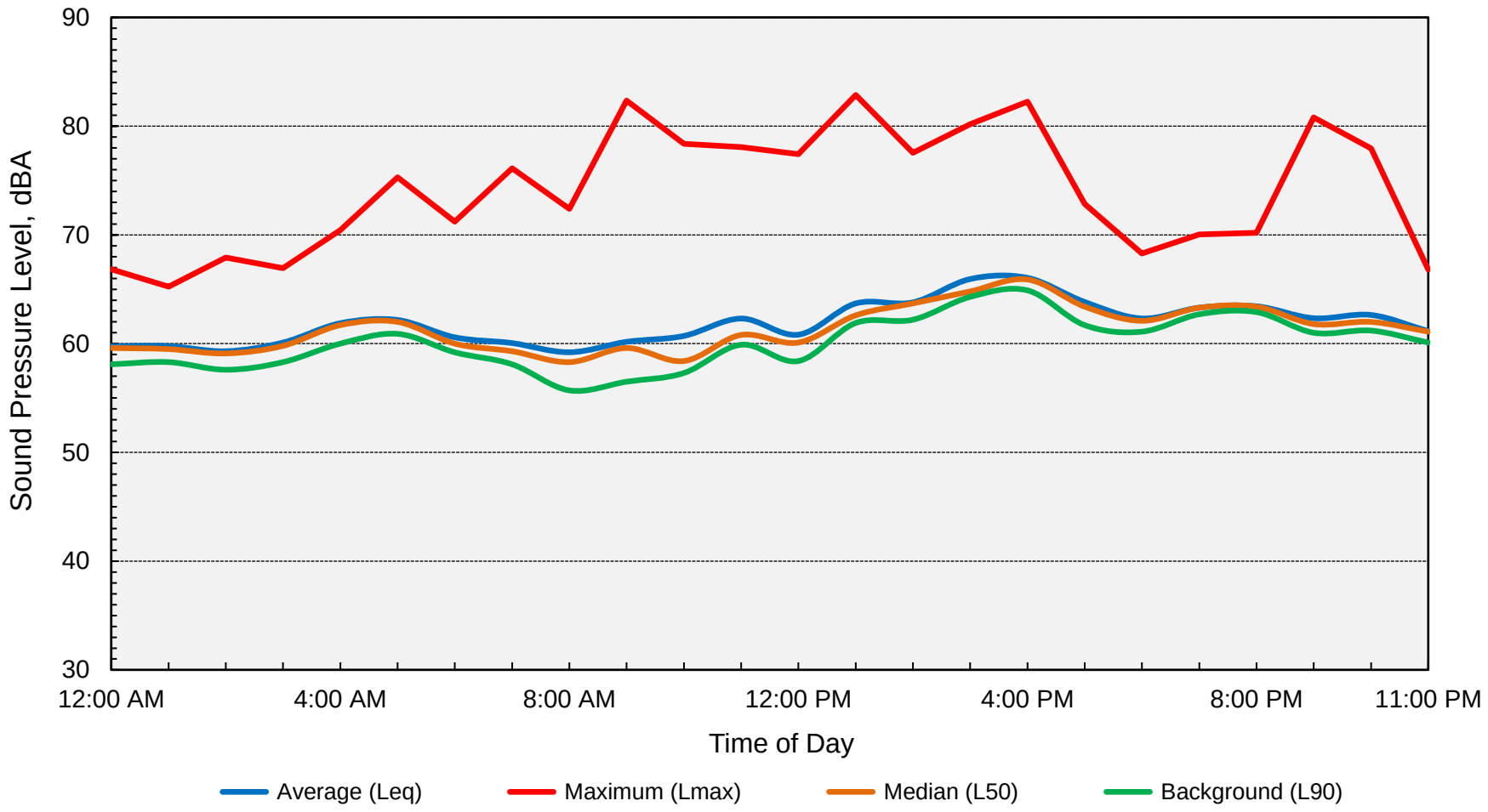
**Appendix C-18**
**Long-Term Ambient Noise Monitoring Results - Site 10**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 23, 2021**




**Computed DNL = 66 dB**

BOLLARD
Acoustical Consultants

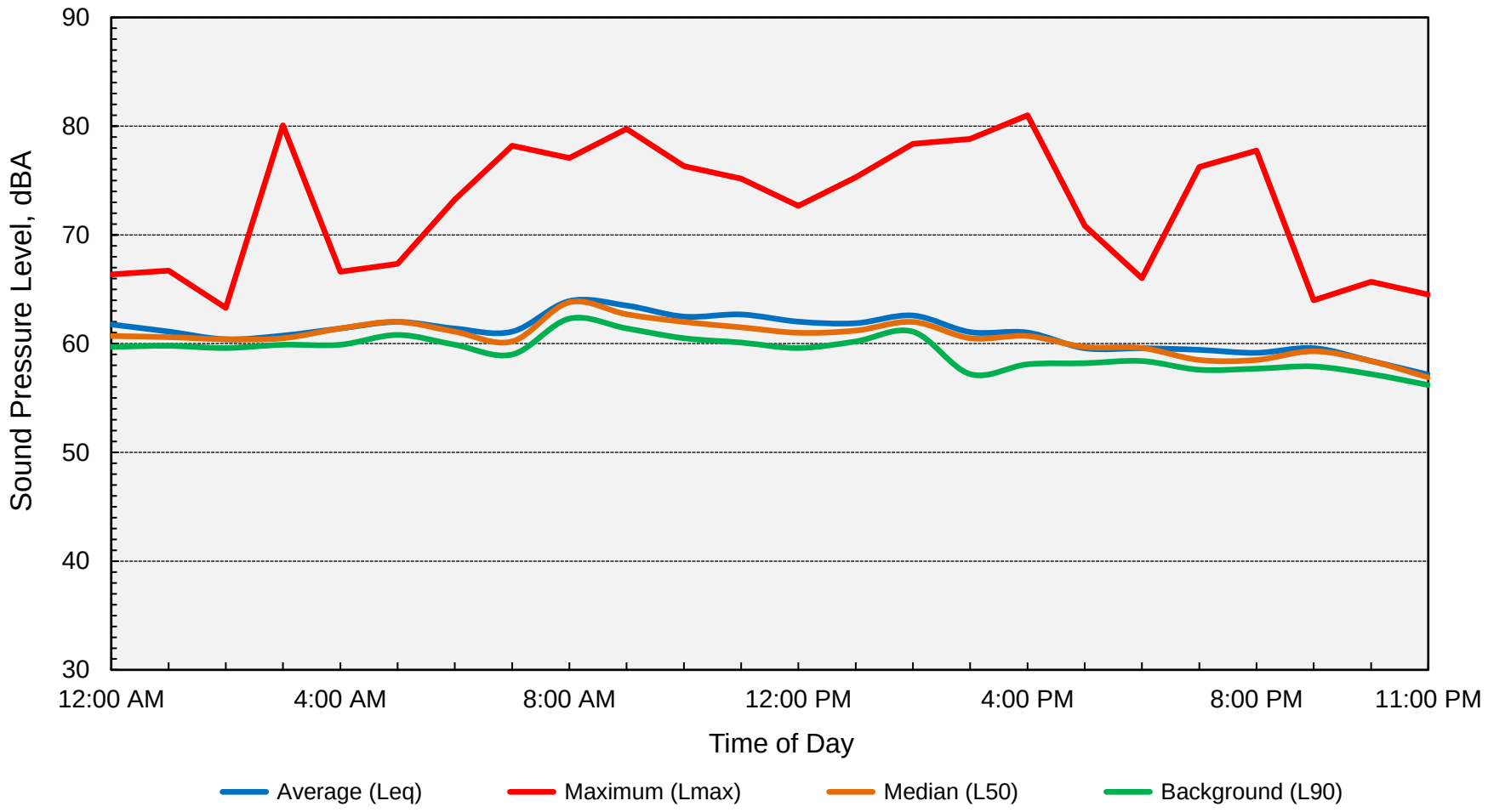
**Appendix C-19**
**Long-Term Ambient Noise Monitoring Results - Site 11**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 21, 2021**




**Computed DNL = 68 dB**

BOLLARD
Acoustical Consultants

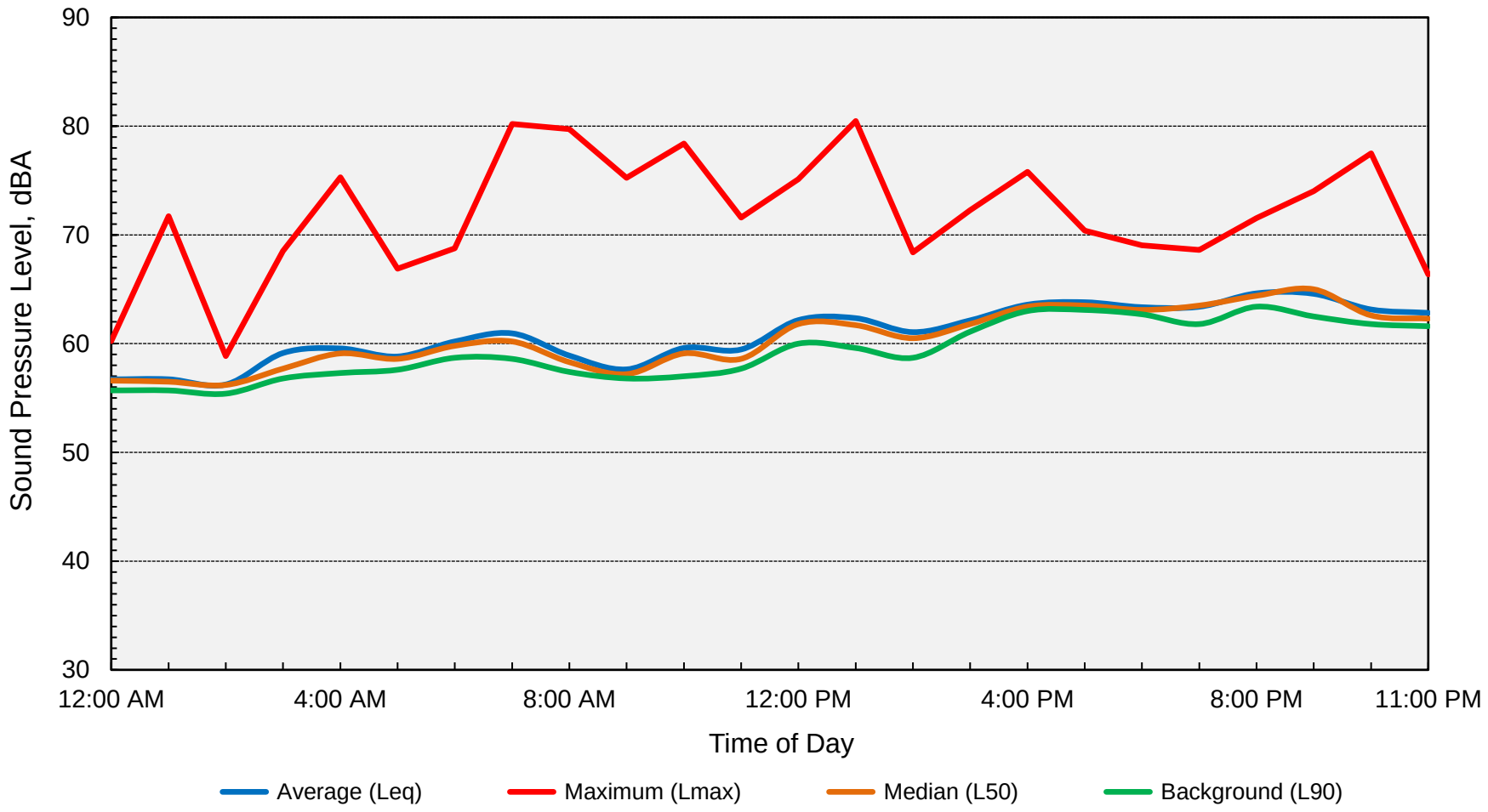
**Appendix C-20**
**Long-Term Ambient Noise Monitoring Results - Site 11**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 22, 2021**




**Computed DNL = 67 dB**

BOLLARD
Acoustical Consultants

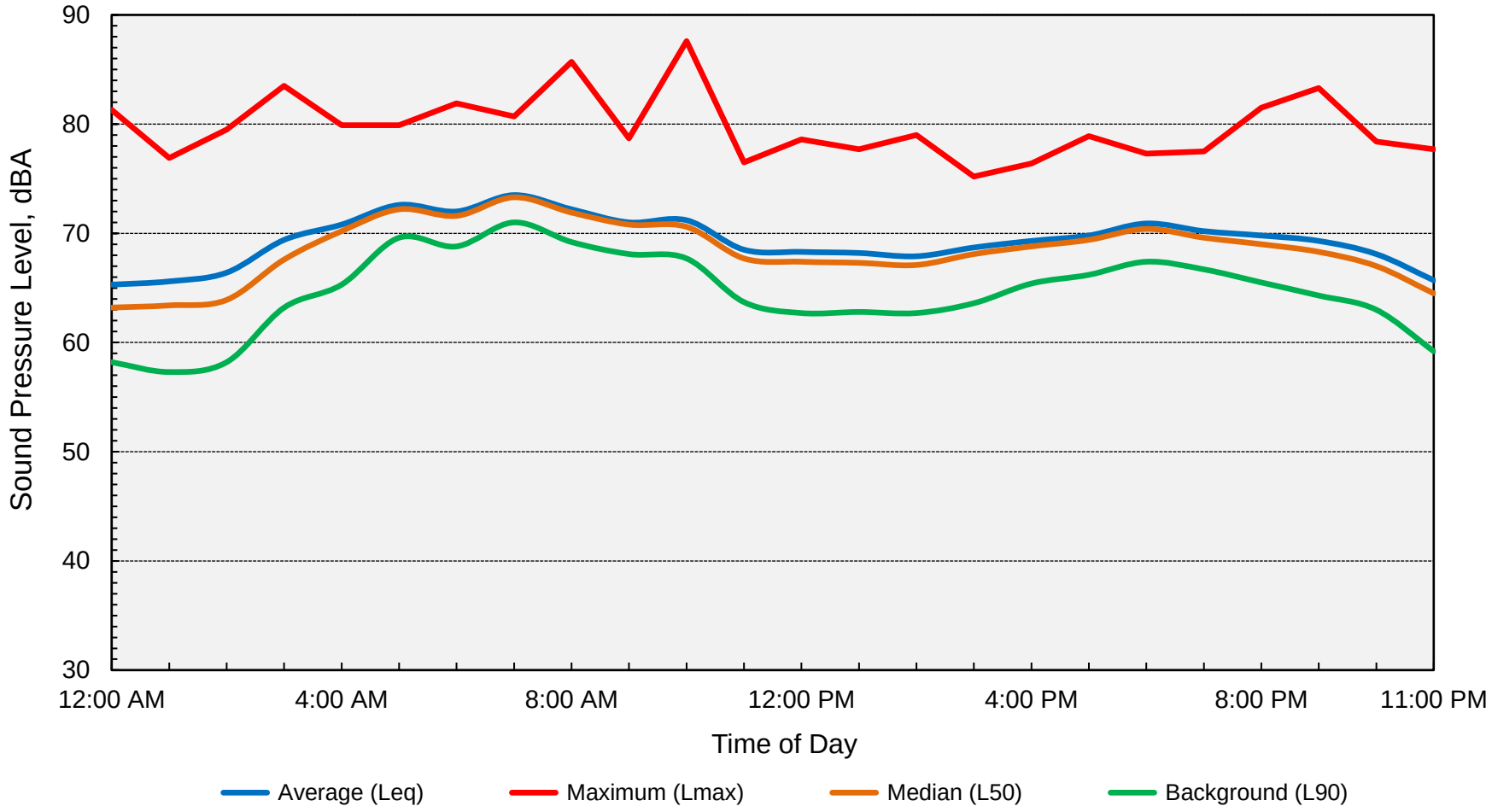
**Appendix C-21**
**Long-Term Ambient Noise Monitoring Results - Site 11**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 23, 2021**




**Computed DNL = 67 dB**

BOLLARD
Acoustical Consultants

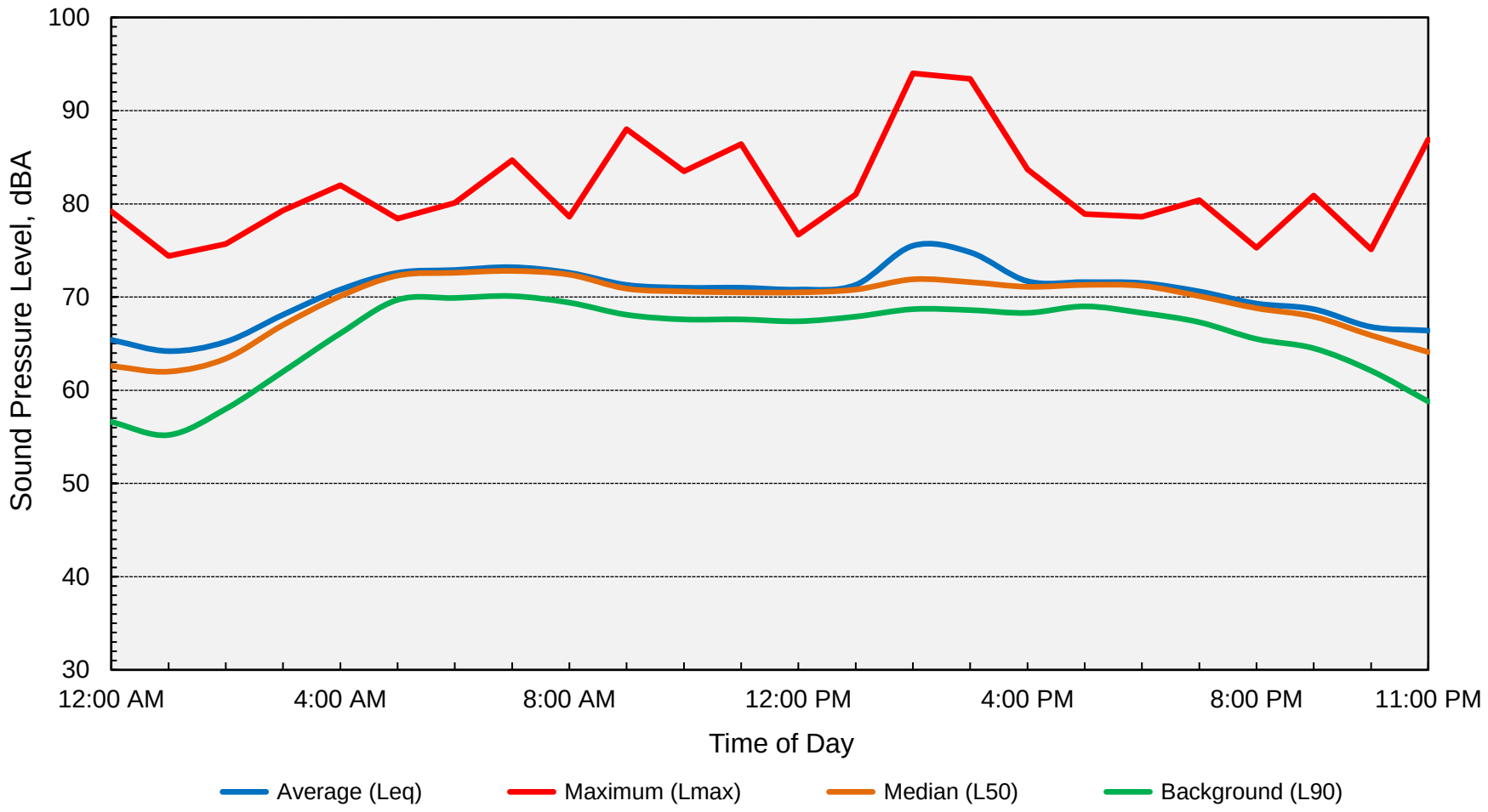
**Appendix C-22**
**Long-Term Ambient Noise Monitoring Results - Site 12**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 21, 2021**




**Computed DNL = 76 dB**

BOLLARD
Acoustical Consultants

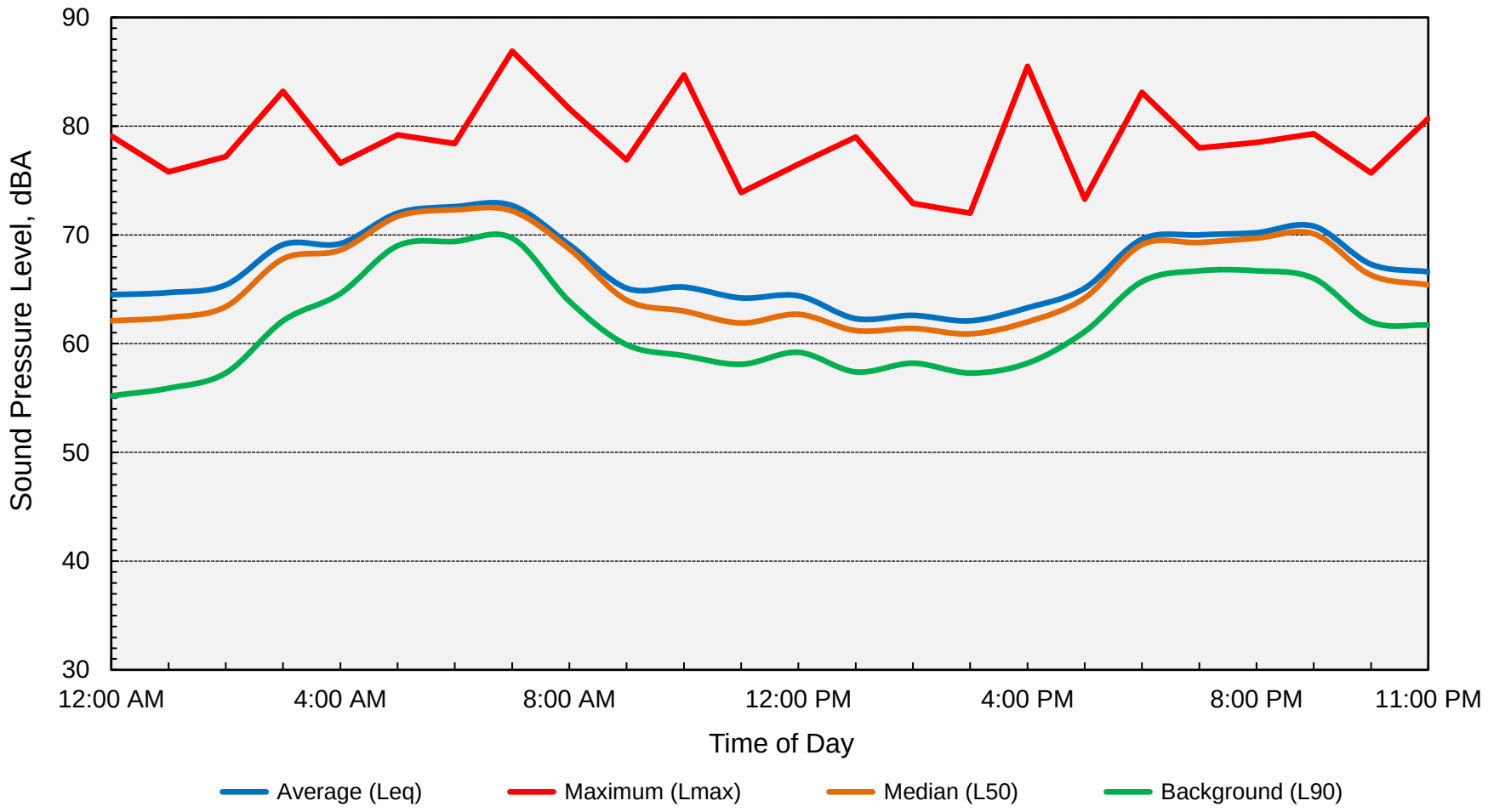
**Appendix C-23**
**Long-Term Ambient Noise Monitoring Results - Site 12**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 22, 2021**




**Computed DNL = 76 dB**

BOLLARD
Acoustical Consultants

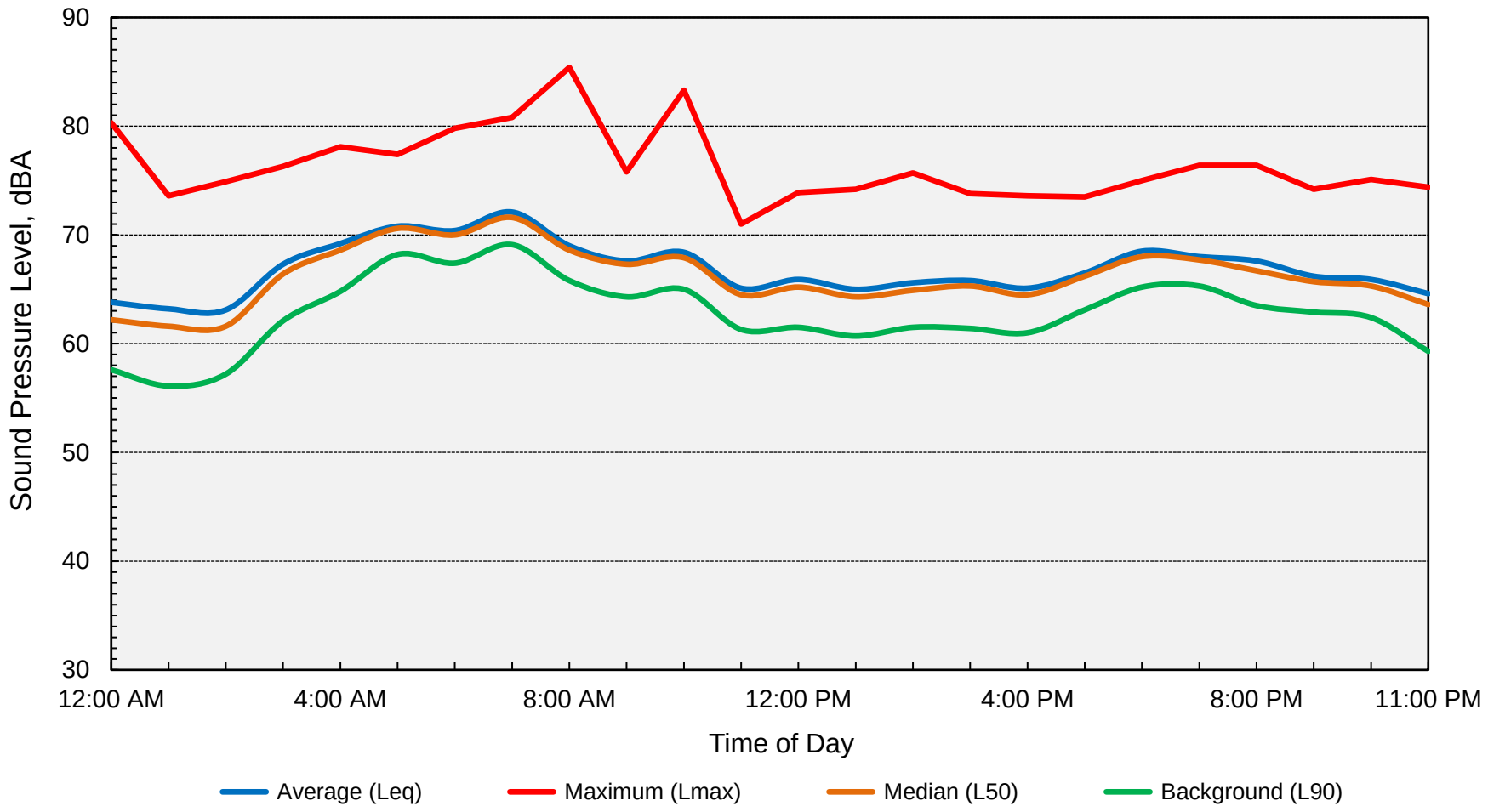
**Appendix C-24**
**Long-Term Ambient Noise Monitoring Results - Site 12**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 23, 2021**




**Computed DNL = 75 dB**

BOLLARD
Acoustical Consultants

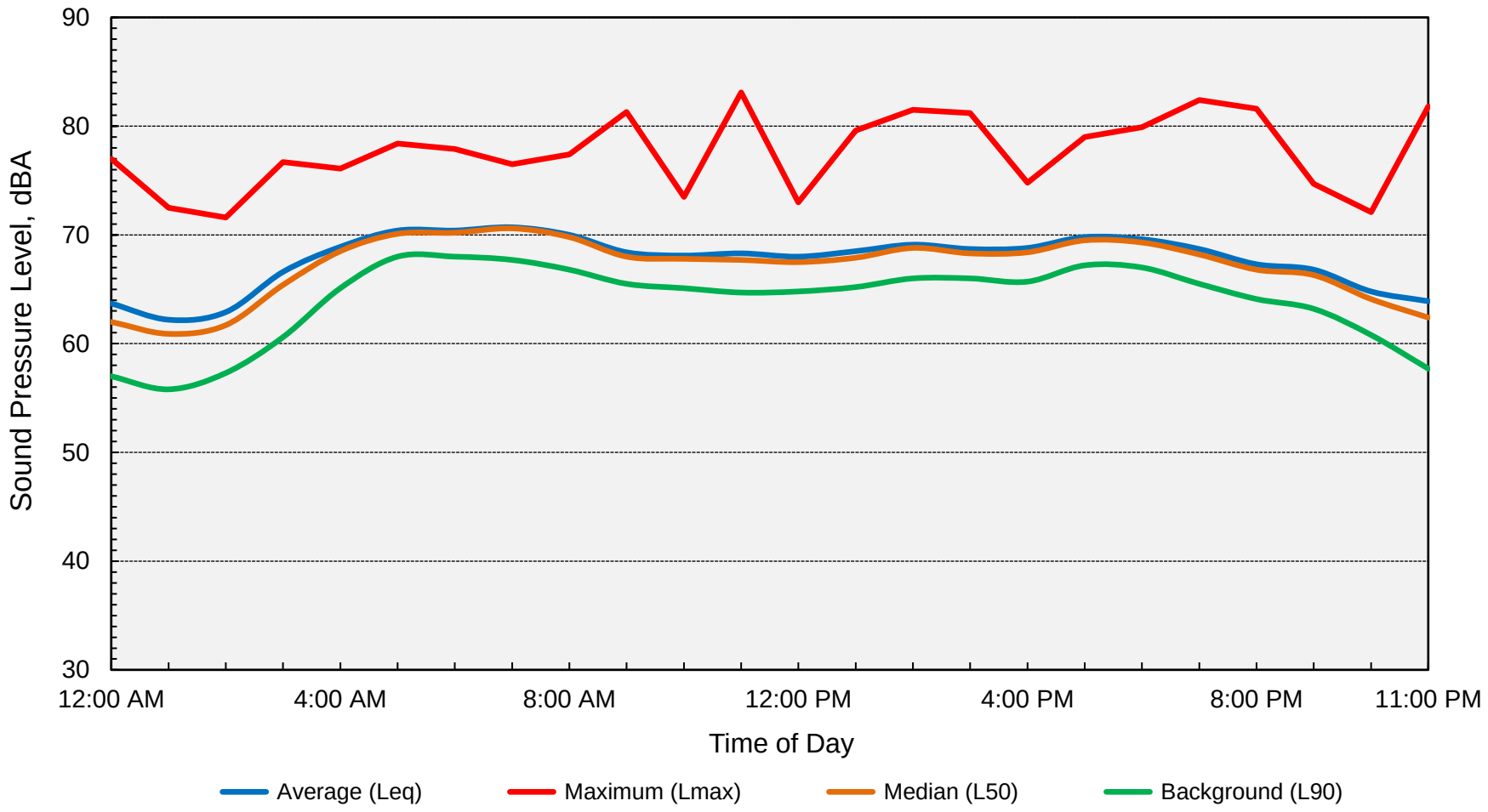
**Appendix C-25**
**Long-Term Ambient Noise Monitoring Results - Site 13**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 21, 2021**




**Computed DNL = 74 dB**

BOLLARD
Acoustical Consultants

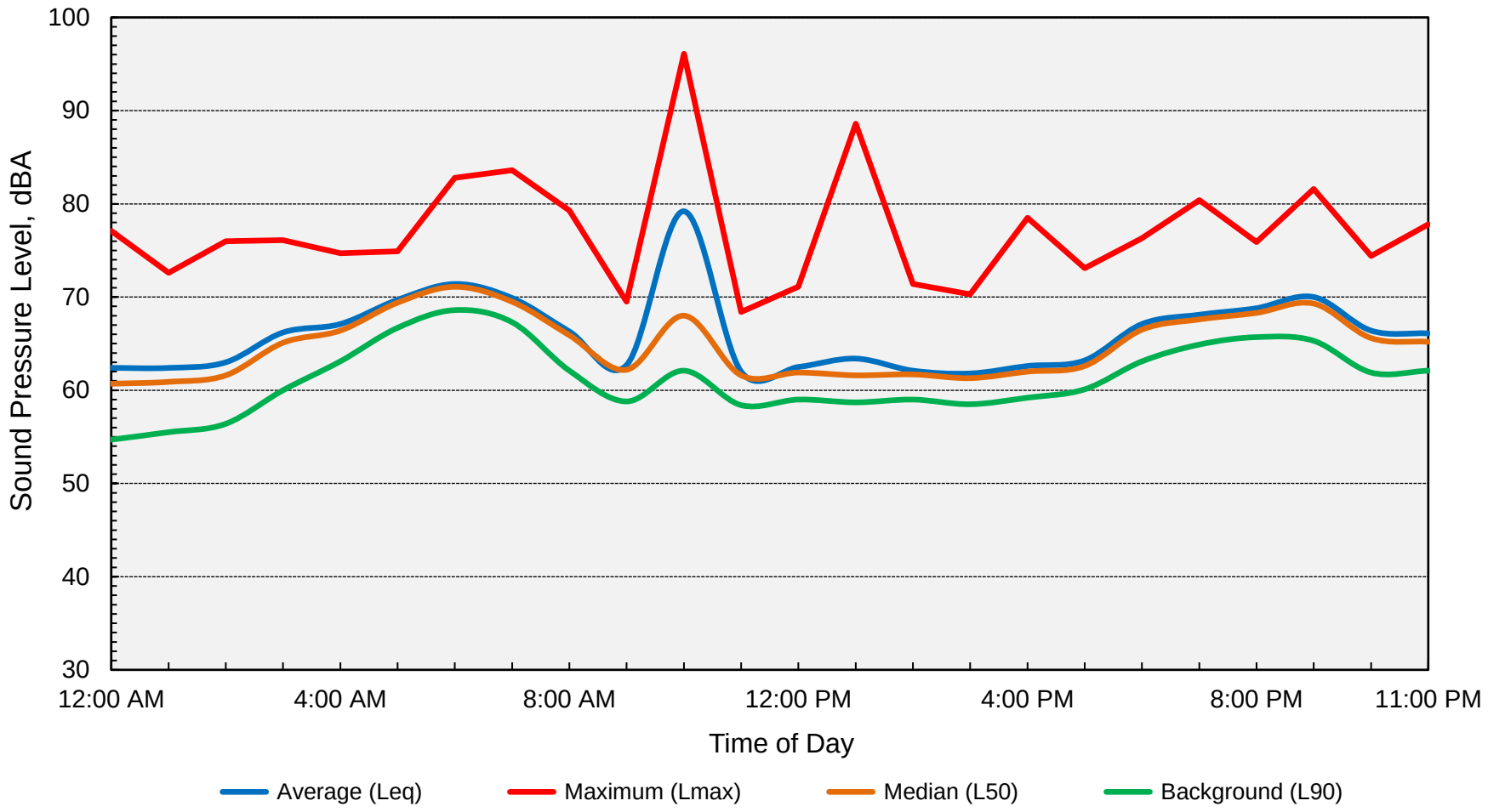
**Appendix C-26**
**Long-Term Ambient Noise Monitoring Results - Site 13**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 22, 2021**




**Computed DNL = 74 dB**

BOLLARD
Acoustical Consultants

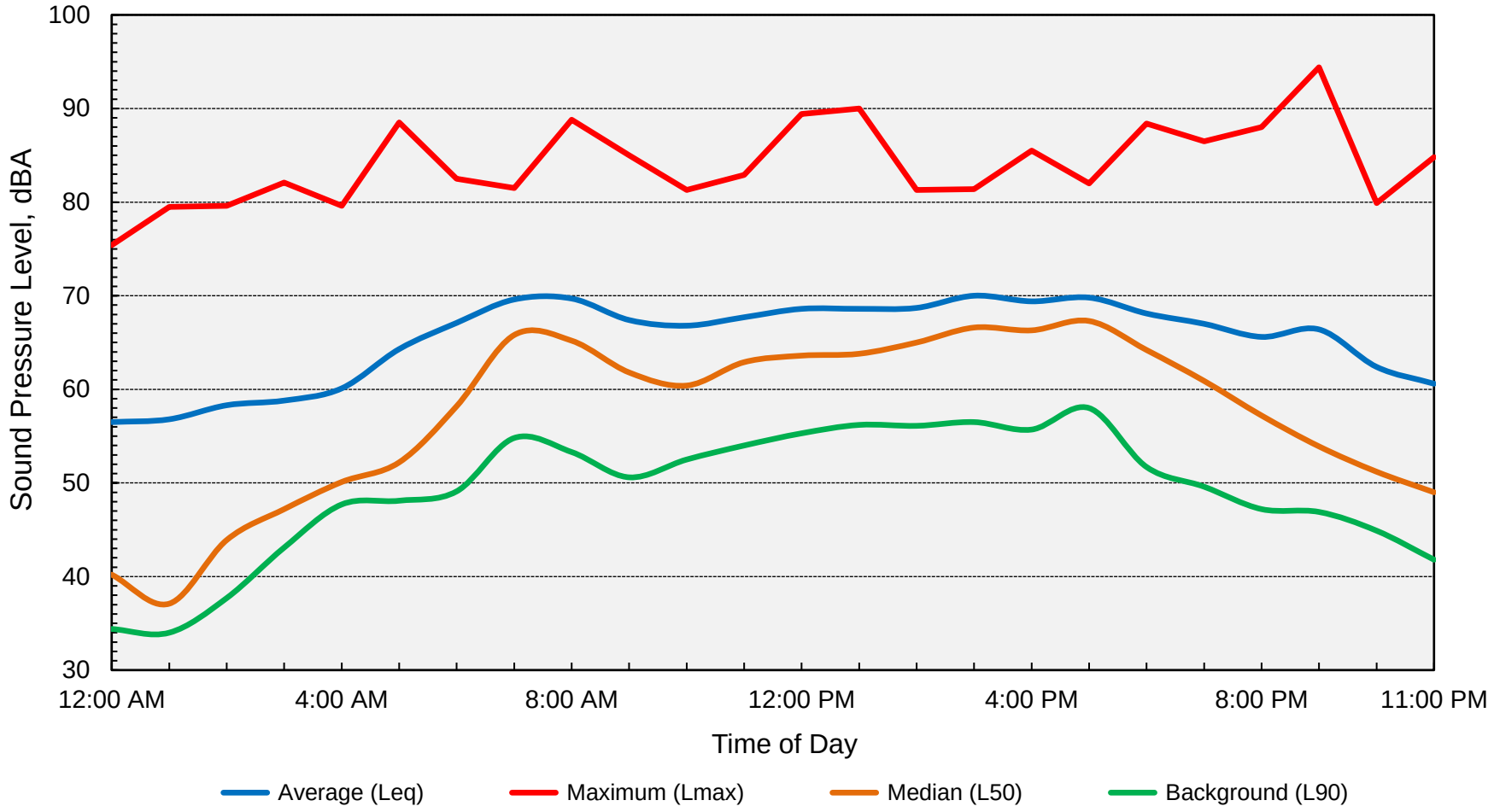
**Appendix C-27**
**Long-Term Ambient Noise Monitoring Results - Site 13**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 23, 2021**




**Computed DNL = 74 dB**

BOLLARD
Acoustical Consultants

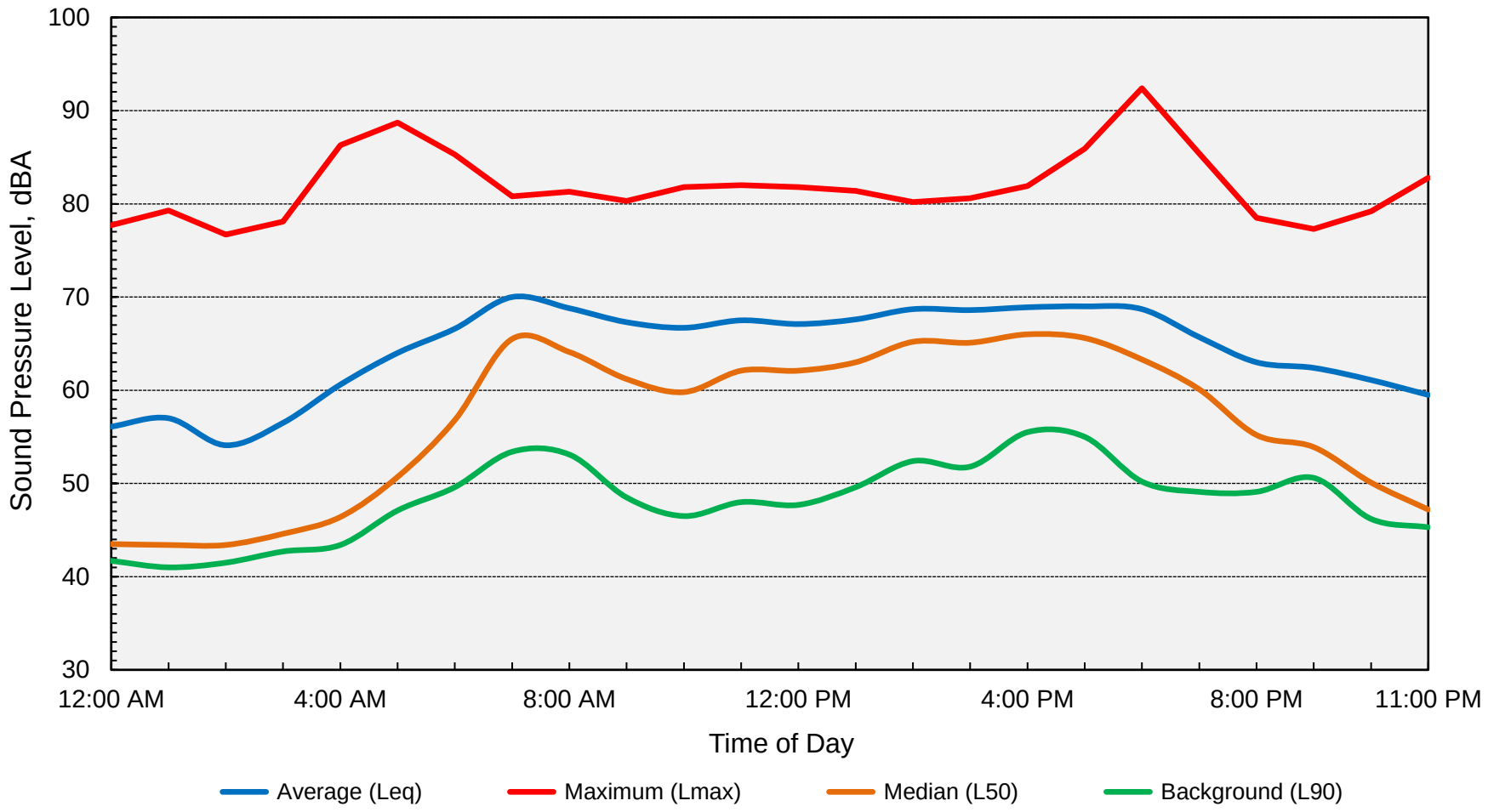
**Appendix C-28**
**Long-Term Ambient Noise Monitoring Results - Site 14**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 28, 2021**




**Computed DNL = 70 dB**

BOLLARD
Acoustical Consultants

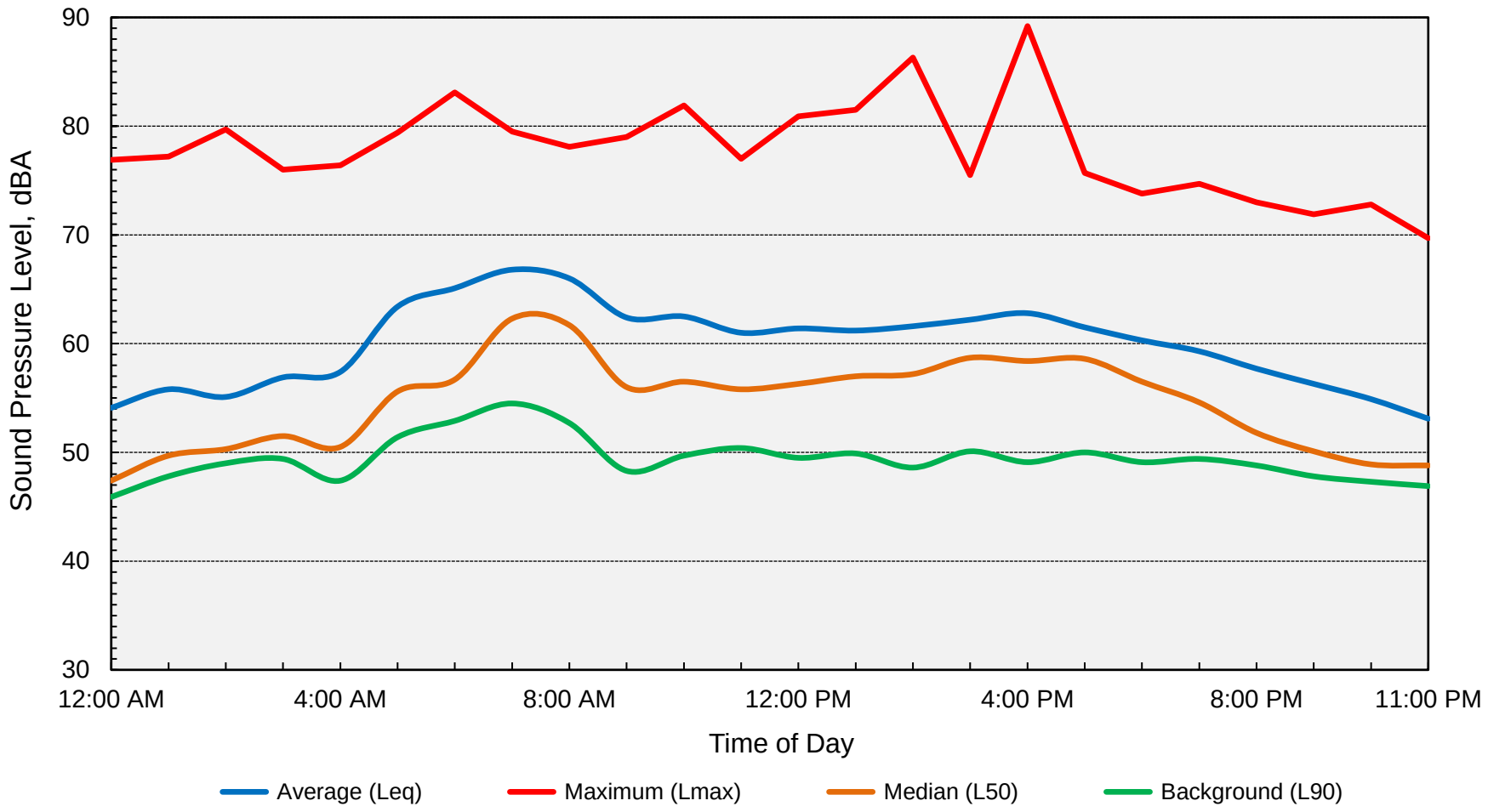
**Appendix C-29**
**Long-Term Ambient Noise Monitoring Results - Site 14**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 29, 2021**




**Computed DNL = 69 dB**

BOLLARD
Acoustical Consultants

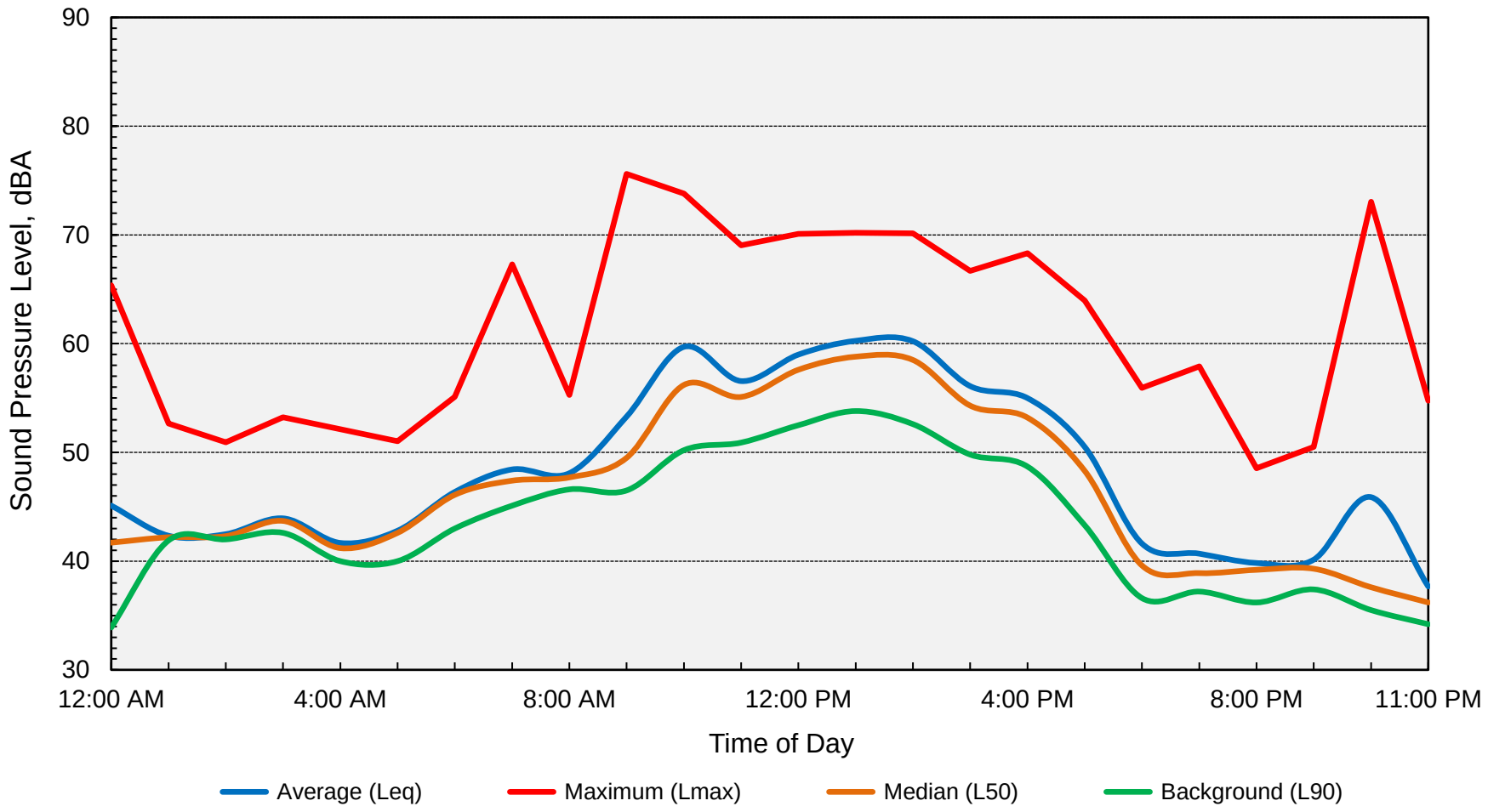
**Appendix C-30**
**Long-Term Ambient Noise Monitoring Results - Site 14**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 30, 2021**




**Computed DNL = 66 dB**

BOLLARD
Acoustical Consultants

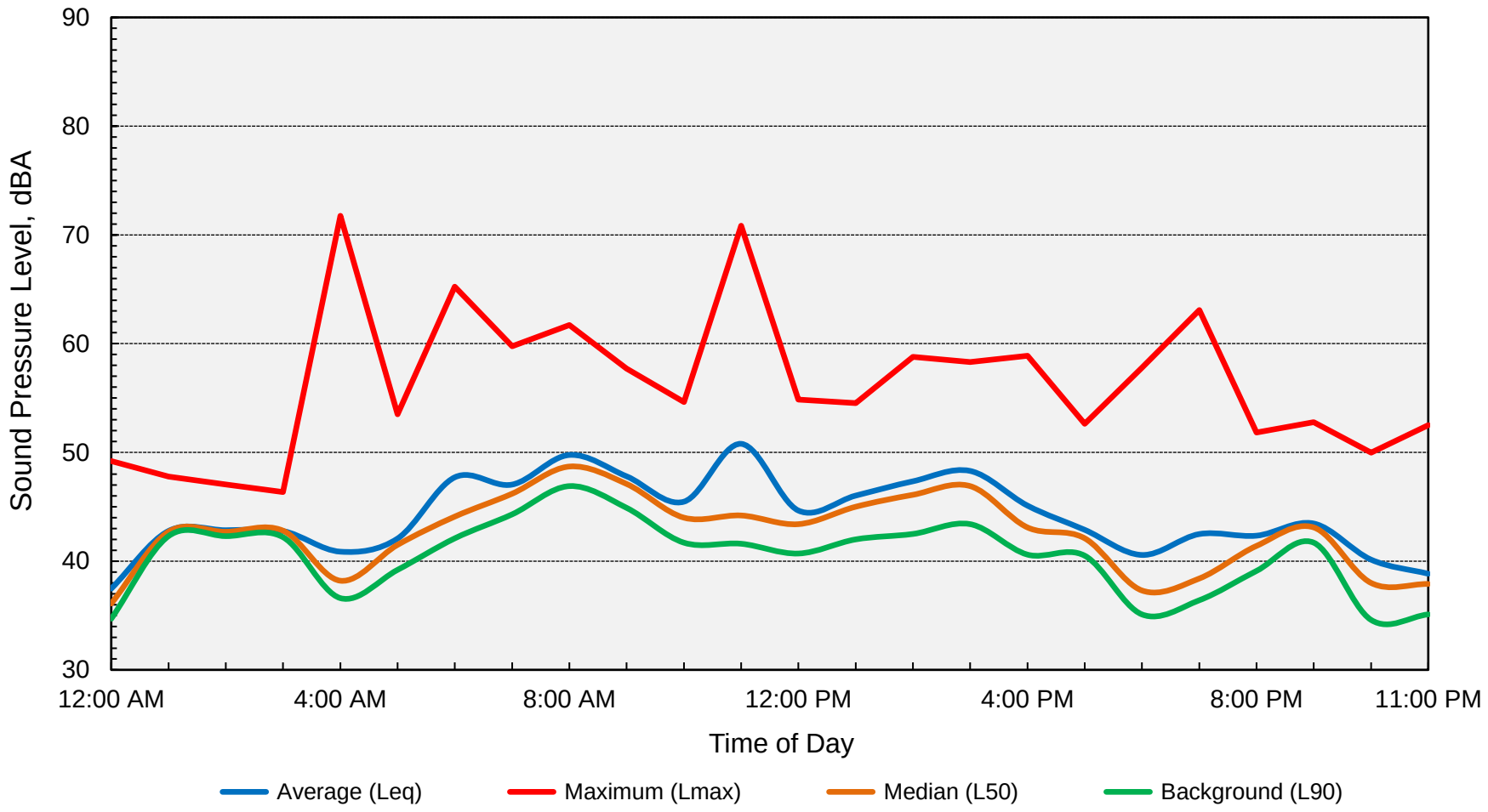
**Appendix C-31**
**Long-Term Ambient Noise Monitoring Results - Site 15**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 28, 2021**




**Computed DNL = 55 dB**

BOLLARD
Acoustical Consultants

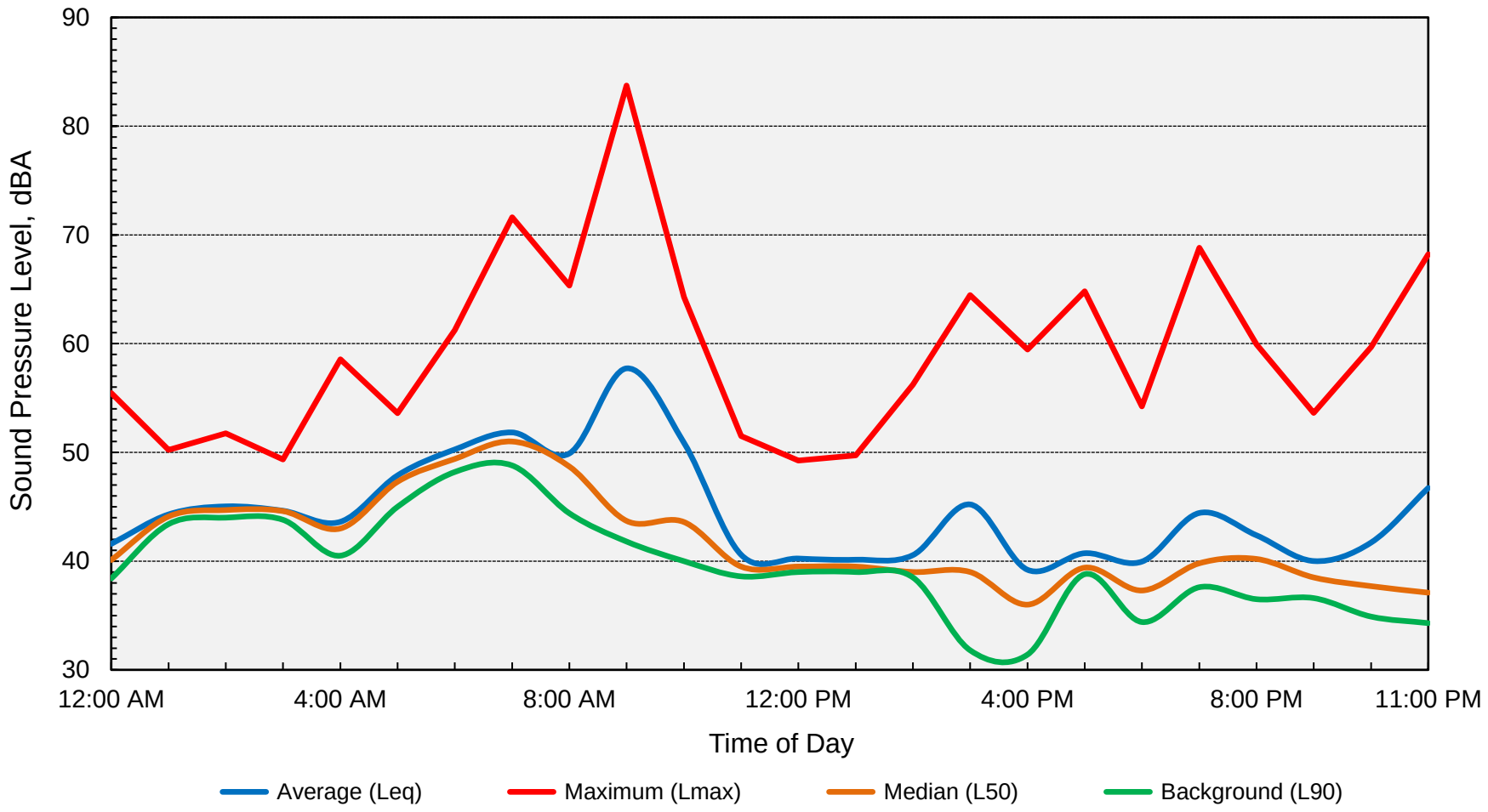
**Appendix C-32**
**Long-Term Ambient Noise Monitoring Results - Site 15**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 29, 2021**




**Computed DNL = 50 dB**

BOLLARD
Acoustical Consultants

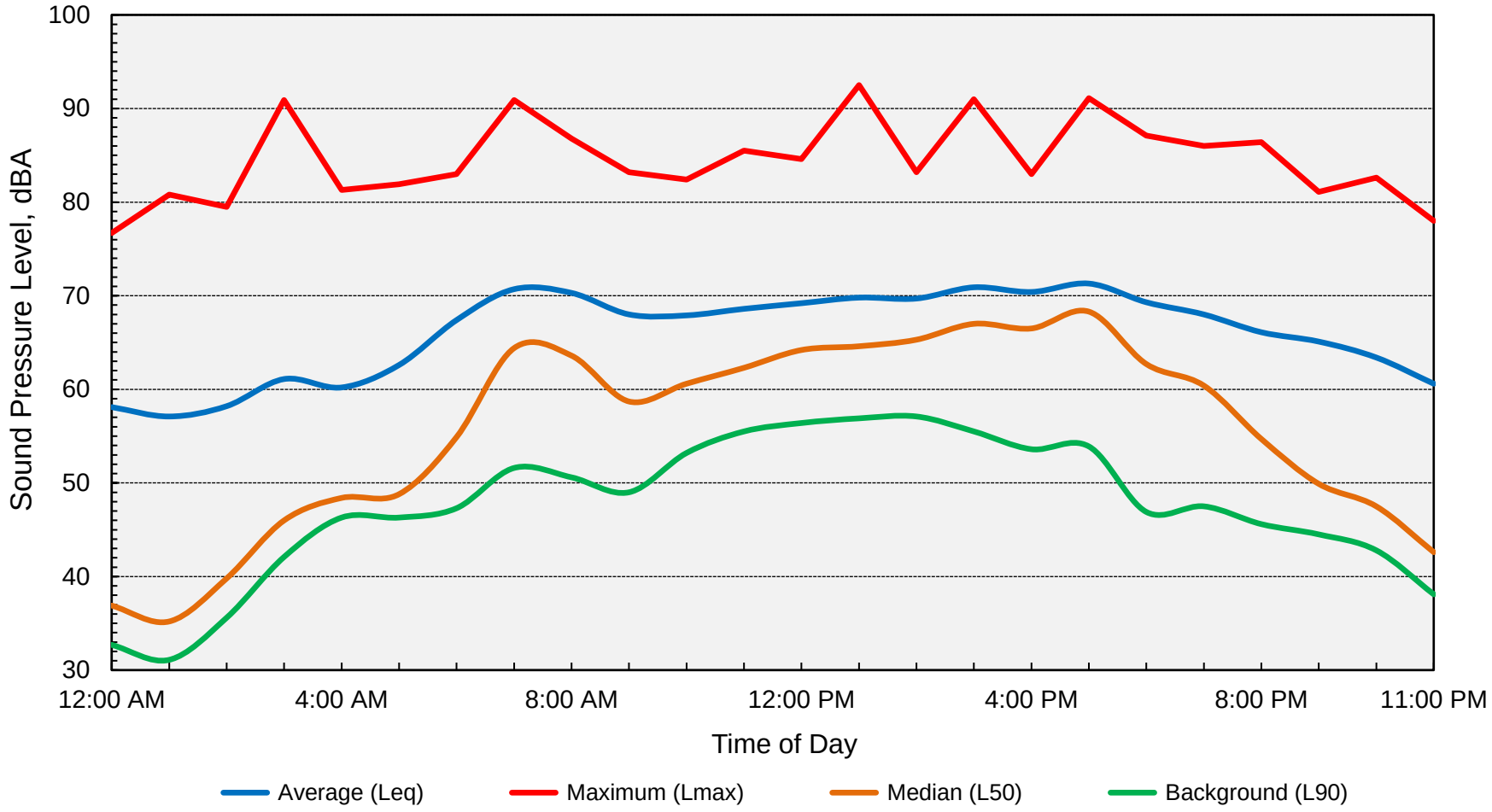
**Appendix C-33**
**Long-Term Ambient Noise Monitoring Results - Site 15**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 30, 2021**




**Computed DNL = 53 dB**

BOLLARD
Acoustical Consultants

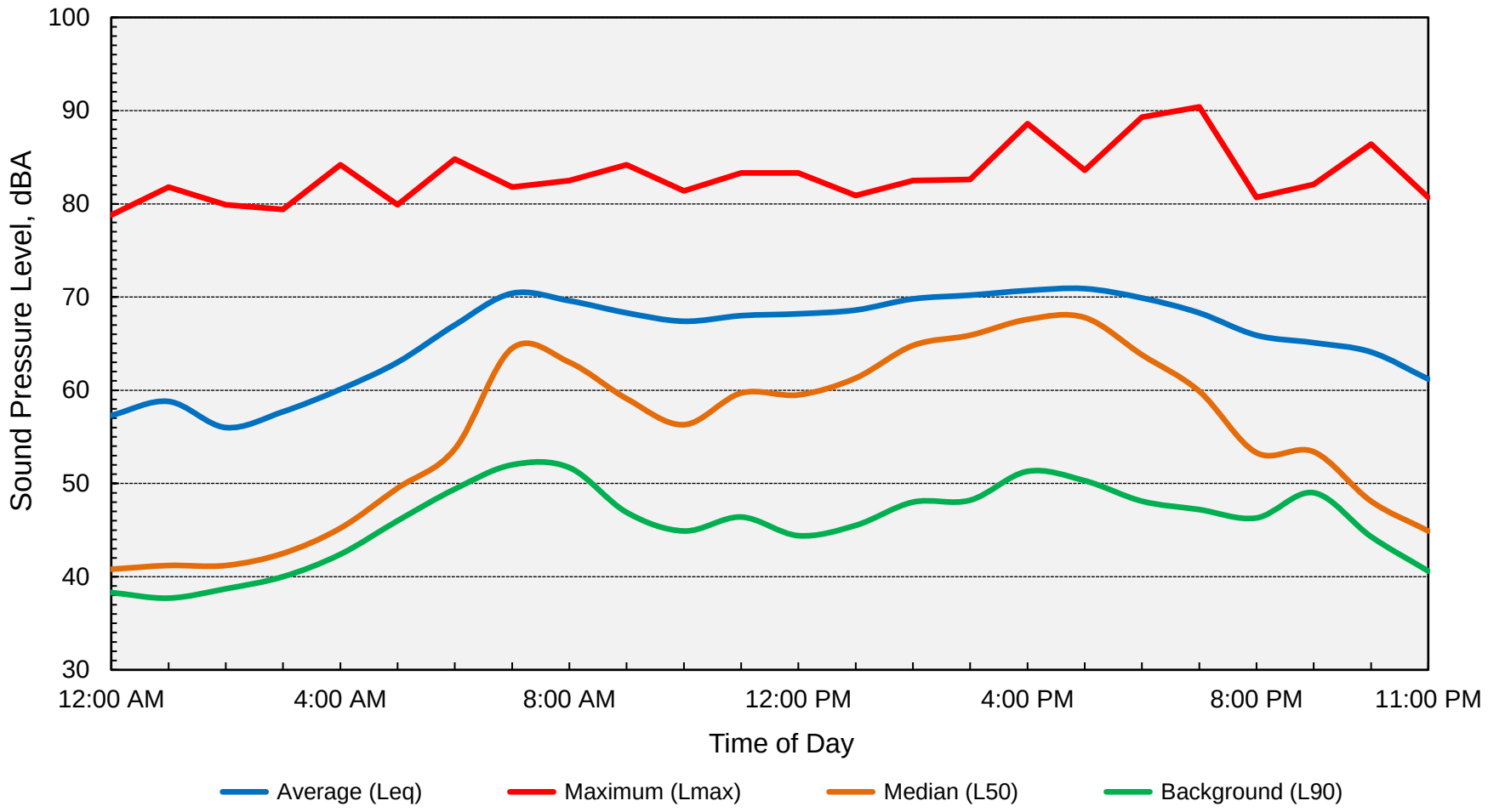
**Appendix C-34**
**Long-Term Ambient Noise Monitoring Results - Site 16**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 28, 2021**




**Computed DNL = 71 dB**

BOLLARD
Acoustical Consultants

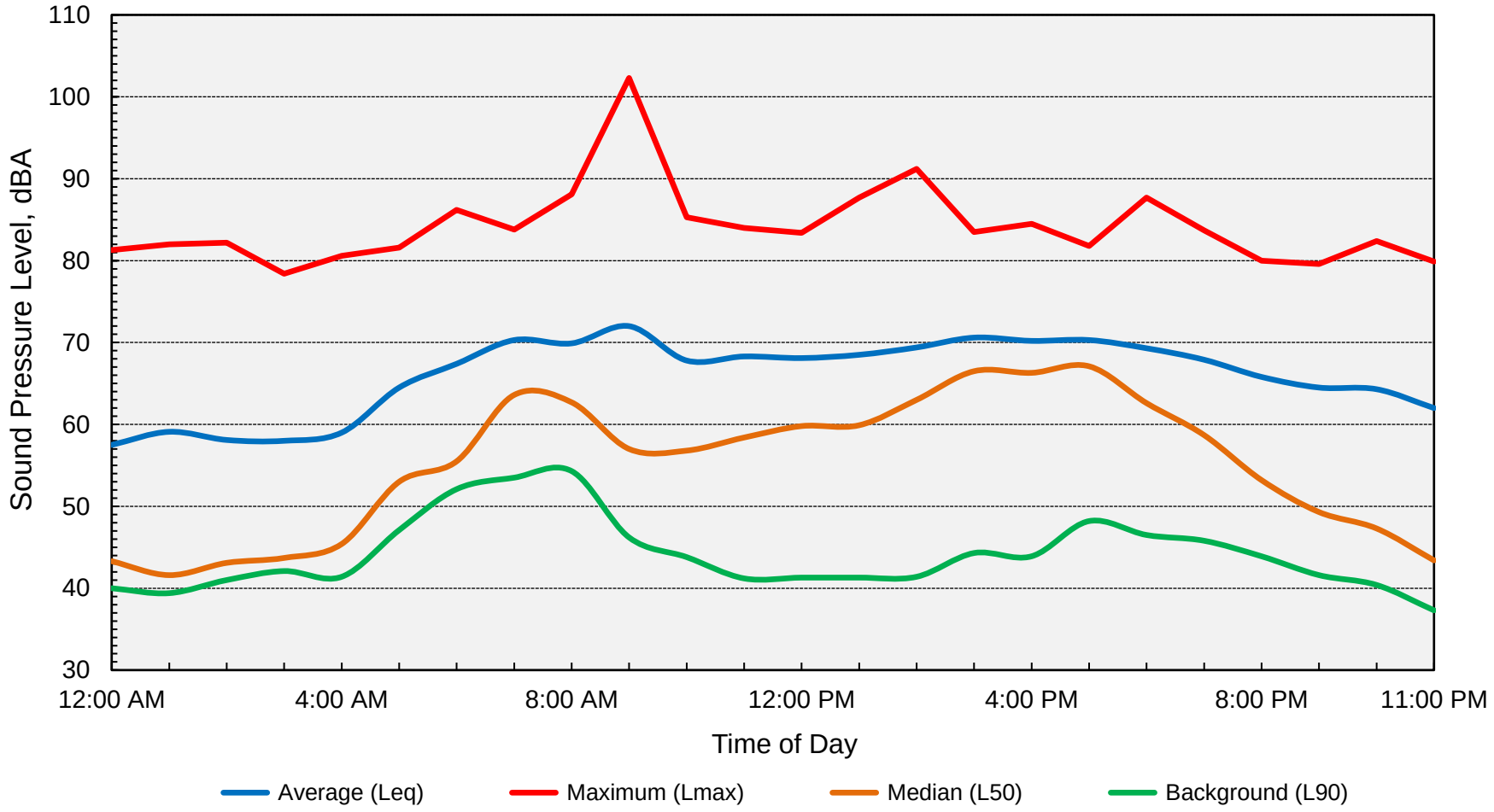
**Appendix C-35**
**Long-Term Ambient Noise Monitoring Results - Site 16**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 29, 2021**




**Computed DNL = 70 dB**

BOLLARD
Acoustical Consultants

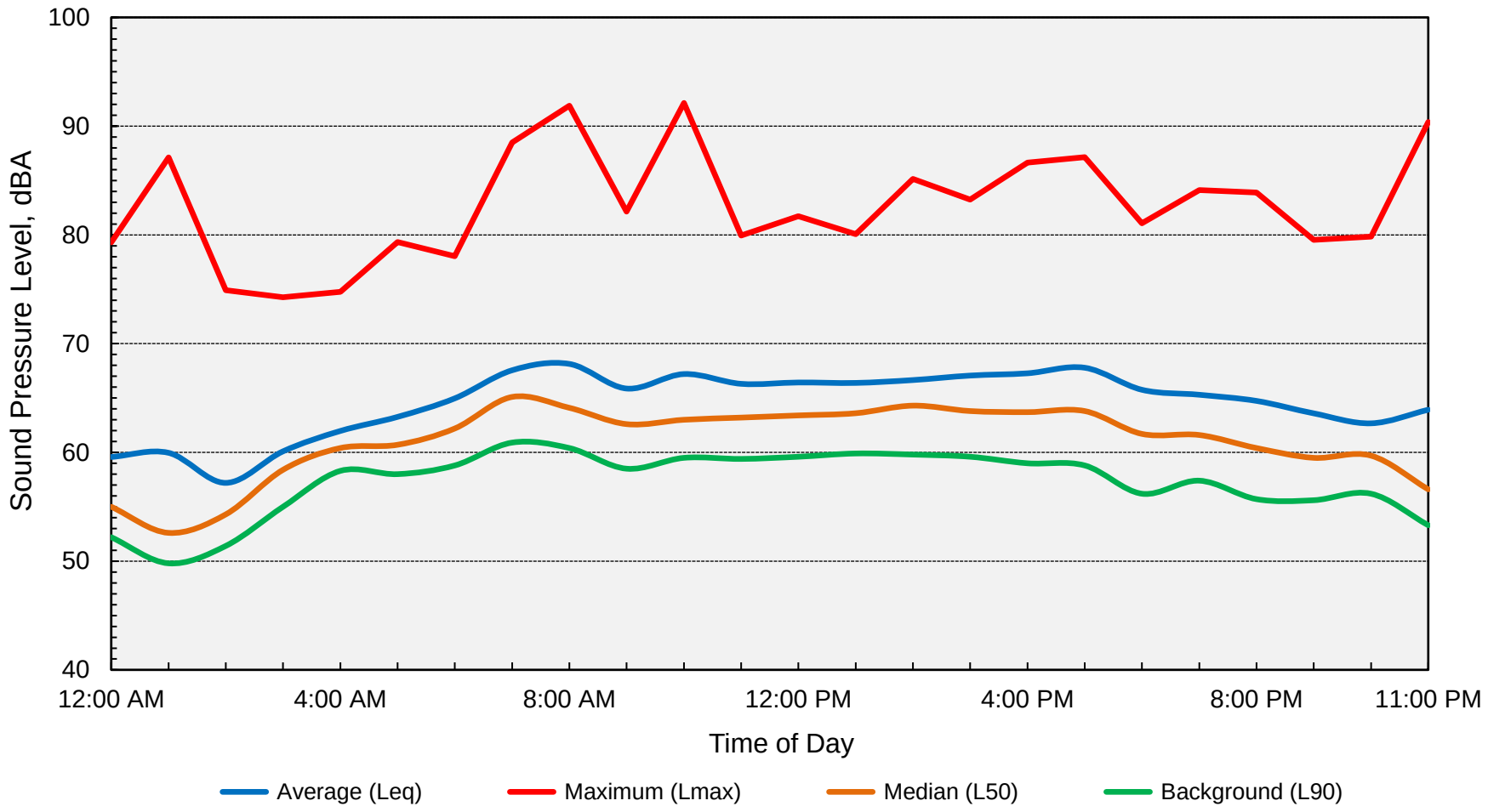
**Appendix C-36**
**Long-Term Ambient Noise Monitoring Results - Site 16**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 30, 2021**




**Computed DNL = 71 dB**

BOLLARD
Acoustical Consultants

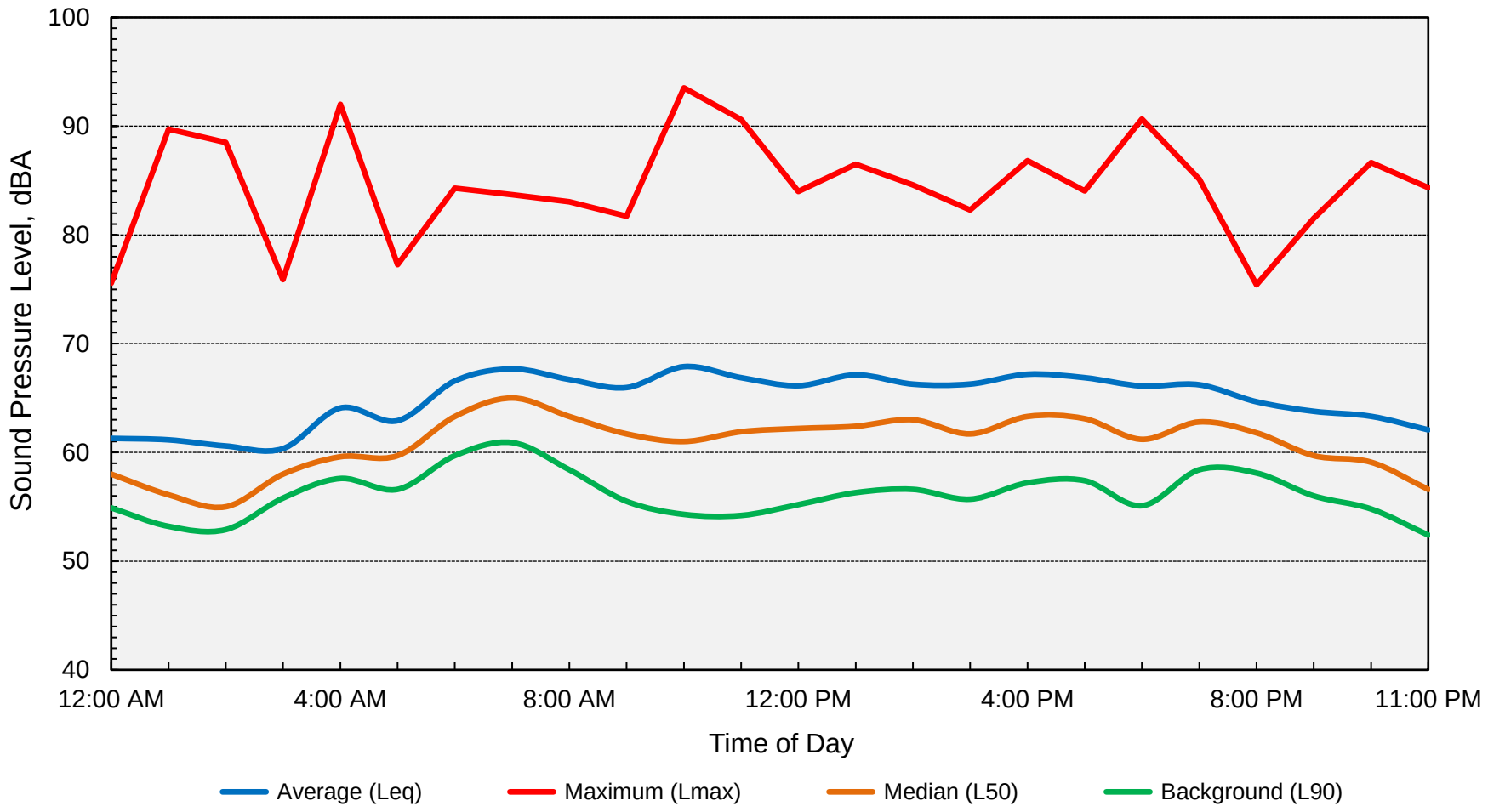
**Appendix C-37**
**Long-Term Ambient Noise Monitoring Results - Site 17**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 28, 2021**




**Computed DNL = 69 dB**

BOLLARD
Acoustical Consultants

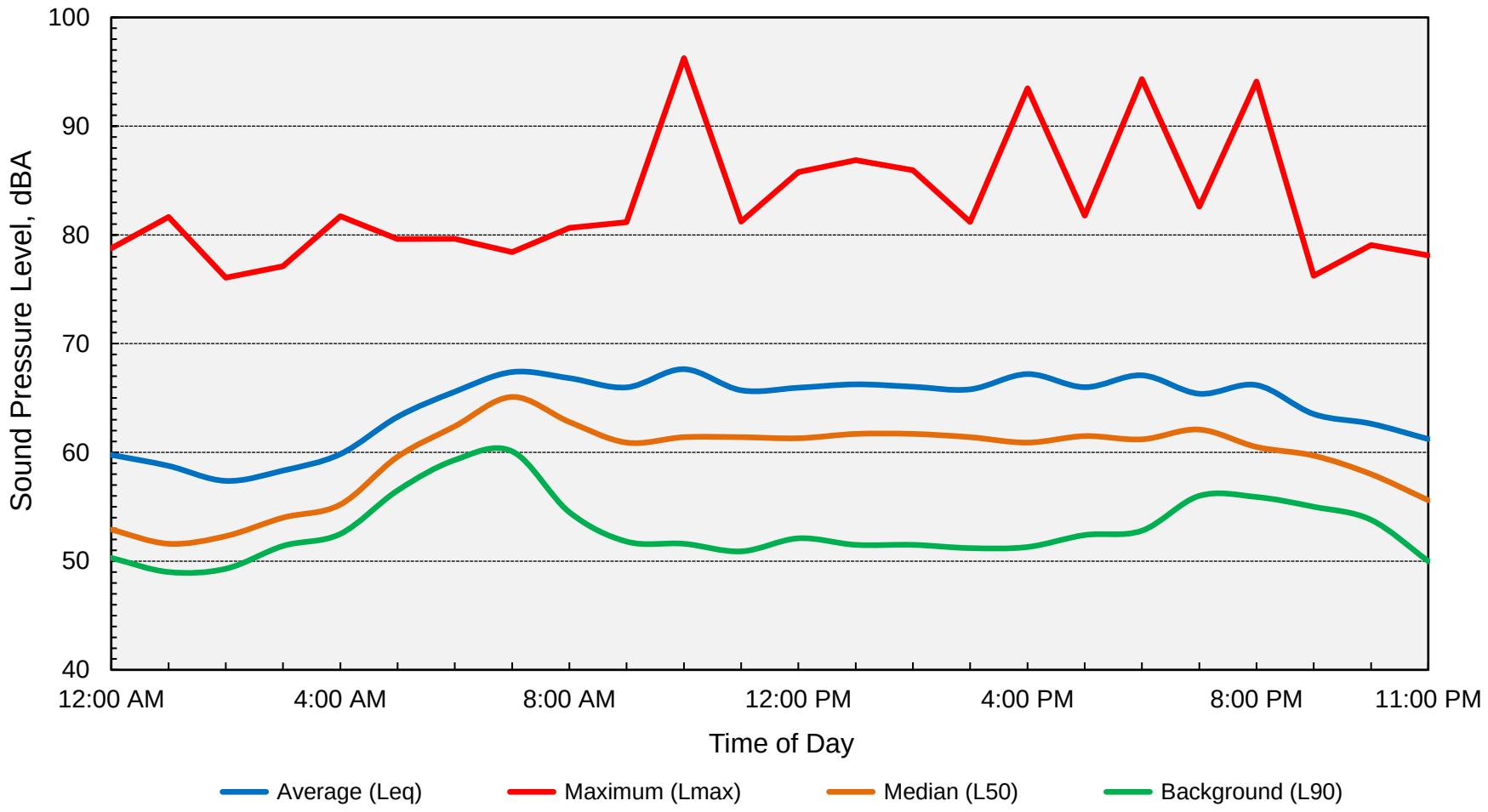
**Appendix C-38**
**Long-Term Ambient Noise Monitoring Results - Site 17**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 29, 2021**




**Computed DNL = 70 dB**

BOLLARD
Acoustical Consultants

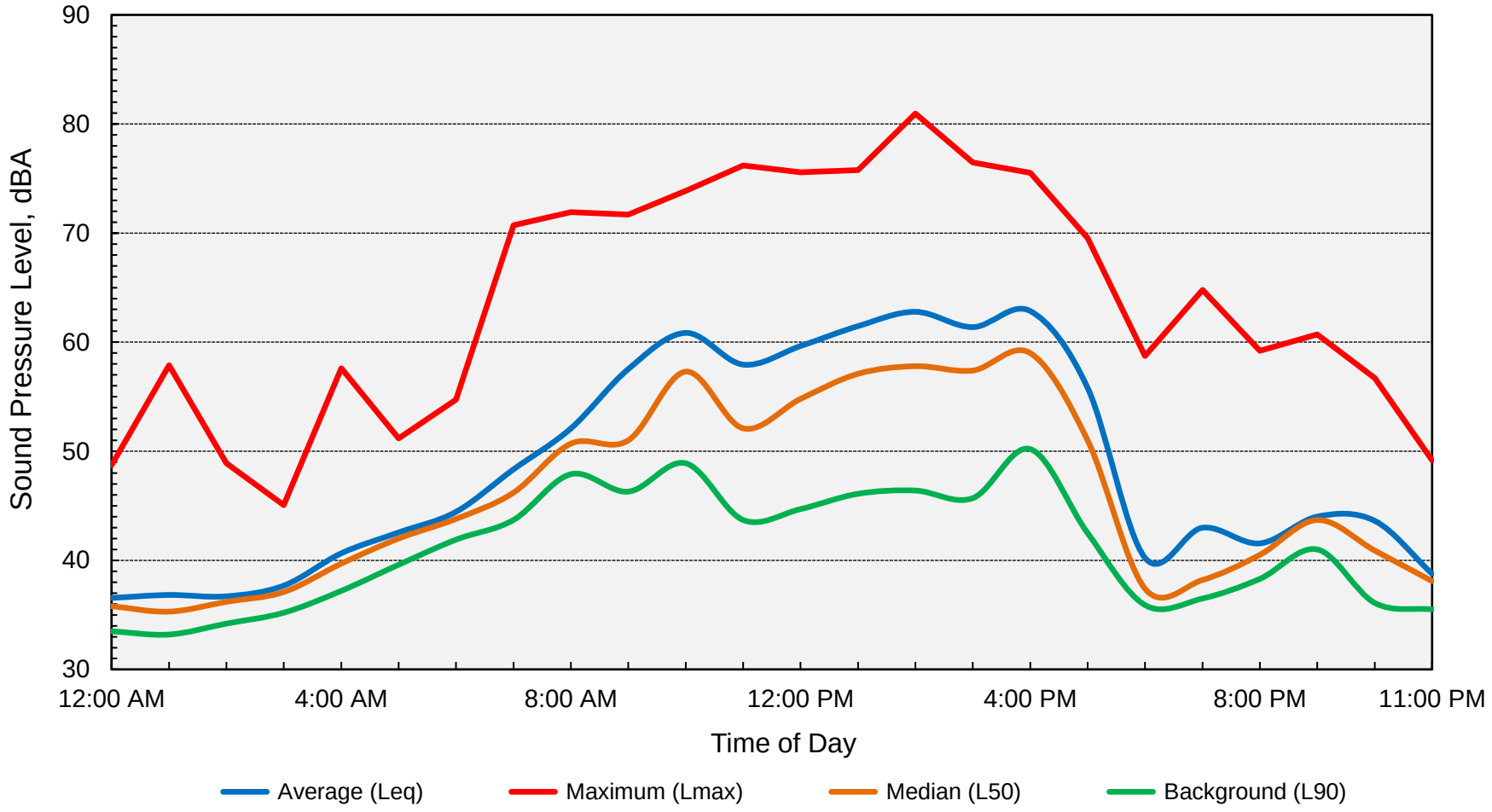
**Appendix C-39**
**Long-Term Ambient Noise Monitoring Results - Site 17**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 30, 2021**




**Computed DNL = 69 dB**

BOLLARD
Acoustical Consultants

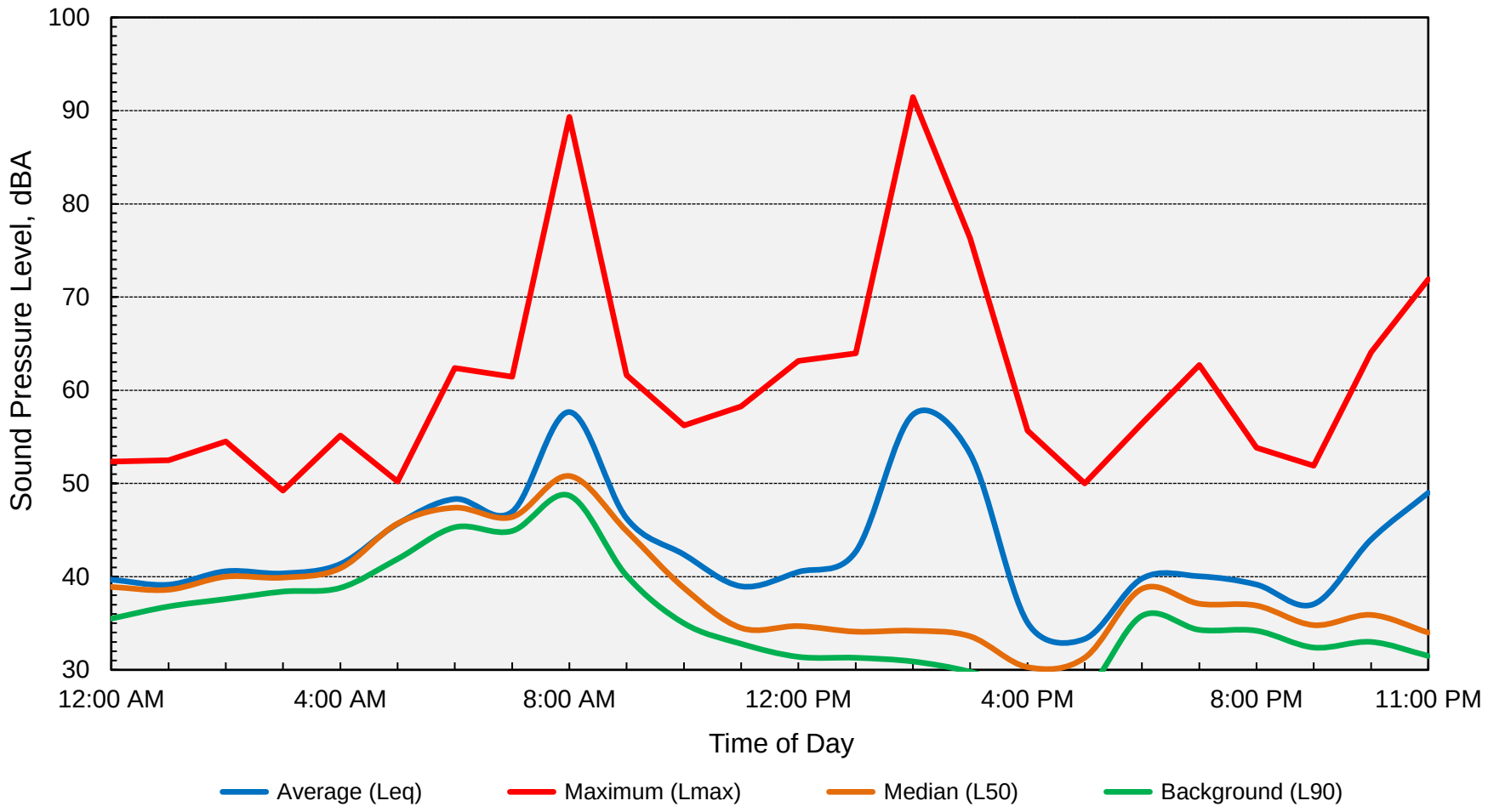
**Appendix C-40**
**Long-Term Ambient Noise Monitoring Results - Site 18**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 29, 2021**




**Computed DNL = 57 dB**

BOLLARD
Acoustical Consultants

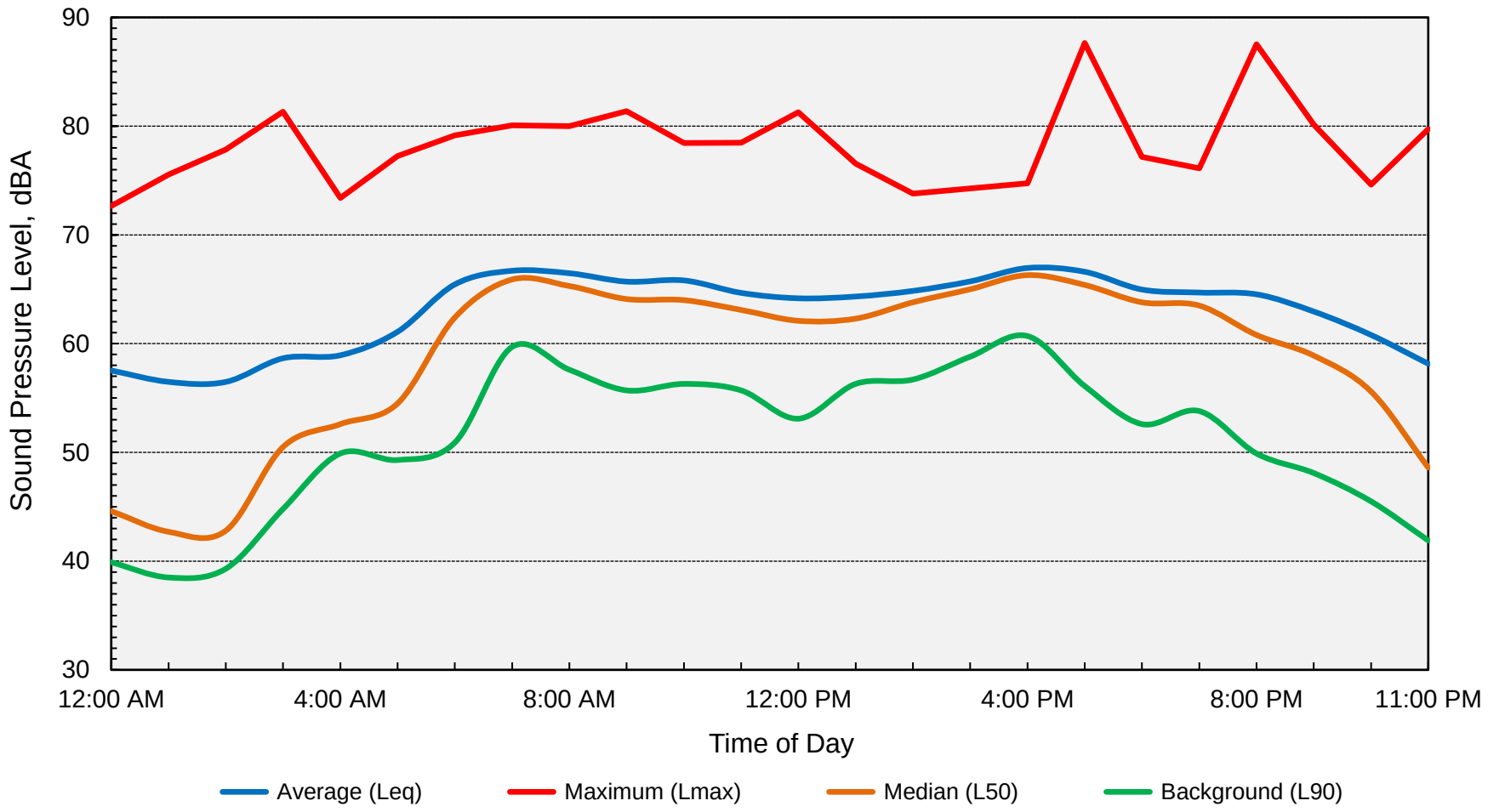
**Appendix C-41**
**Long-Term Ambient Noise Monitoring Results - Site 18**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 30, 2021**




**Computed DNL = 52 dB**

BOLLARD
Acoustical Consultants

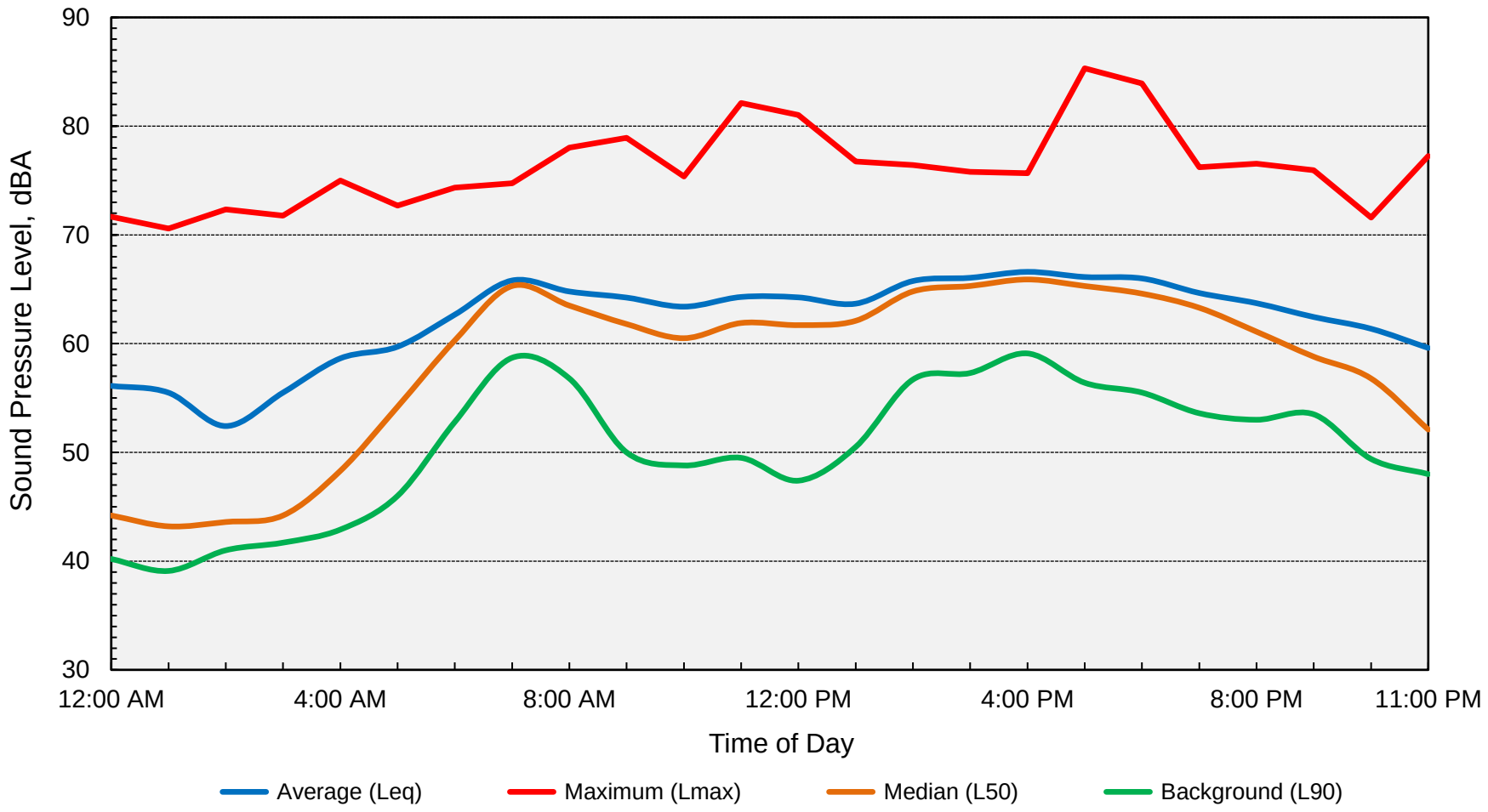
**Appendix C-42**
**Long-Term Ambient Noise Monitoring Results - Site 19**
**Upper Westside Specific Plan - Sacramento County, California**
**Tuesday, September 28, 2021**




**Computed DNL = 68 dB**

BOLLARD
Acoustical Consultants

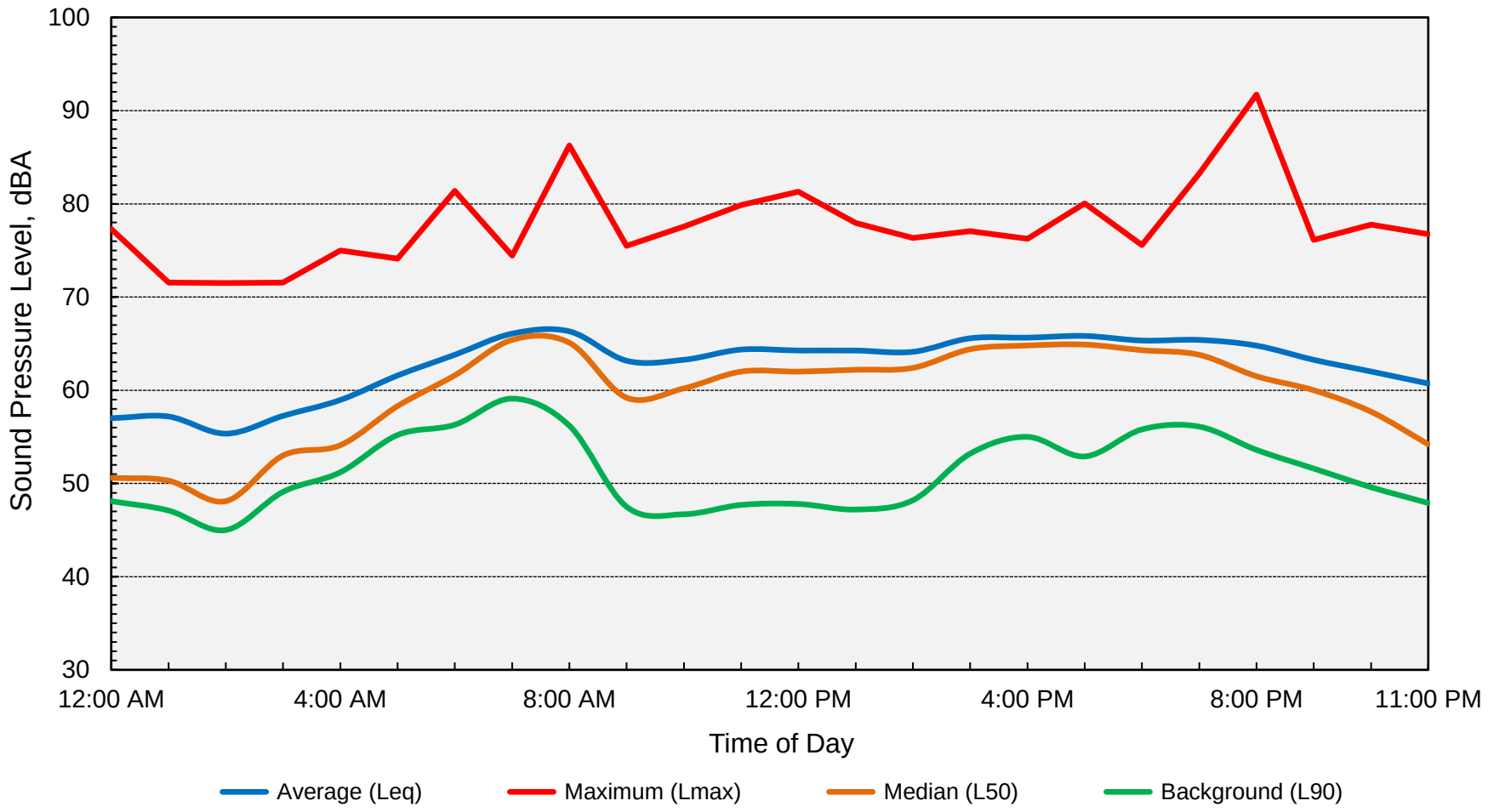
**Appendix C-43**
**Long-Term Ambient Noise Monitoring Results - Site 19**
**Upper Westside Specific Plan - Sacramento County, California**
**Wednesday, September 29, 2021**




**Computed DNL = 67 dB**

BOLLARD
Acoustical Consultants

**Appendix C-44**
**Long-Term Ambient Noise Monitoring Results - Site 19**
**Upper Westside Specific Plan - Sacramento County, California**
**Thursday, September 30, 2021**




**Computed DNL = 68 dB**

BOLLARD
Acoustical Consultants

**Appendix D**

**Federal Highway Administration Highway Traffic Noise Prediction Model Inputs (FHWA-RD-77-108)**

**Upper Westside Specific Plan Project**

**Nearest Off-Site, Noise-Sensitive Receptor Locations**

BOLLARD Acoustical Consultants

| | | | | Average Daily Traffic Volume (ADT) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Existing | Existing + | Cumulative | Cumulative | % Distribution | | Truck % | | | | Barrier |
| # | Roadway | From | To | No Project | Project | No Project | + Project | Day | Night | Medium | Heavy | Speed | Distance | Offset |
| 1 | Arena Blvd | El Centro Rd | Stemmler Dr | 7600 | 17600 | 14200 | 24000 | 75 | 25 | 2 | 1 | 45 | 80 | |
| 2 | Arena Blvd | Stemmler Dr | Duckhorn Dr | 10700 | 19800 | 18100 | 26900 | 75 | 25 | 2 | 1 | 45 | 80 | |
| 3 | Arena Blvd | Duckhorn Dr | Interstate 5 | 26900 | 35600 | 35700 | 41700 | 75 | 25 | 2 | 1 | 45 | 0 | |
| 4 | Arena Blvd | Interstate 5 | E Commerce Way | 24300 | 25400 | 48900 | 52800 | 75 | 25 | 2 | 1 | 45 | 0 | |
| 5 | Arena Blvd | E Commerce Way | Truxel Rd | 20800 | 22400 | 33500 | 36600 | 75 | 25 | 2 | 1 | 45 | 80 | |
| 6 | Azevedo Dr | West El Camino | San Juan Rd | 12700 | 12500 | 14600 | 14500 | 75 | 25 | 2 | 1 | 40 | 70 | |
| 7 | Del Paso Rd | Power Line Rd | Hovnanian Dr | 2200 | 2200 | 3300 | 3400 | 75 | 25 | 2 | 1 | 60 | 70 | -5 |
| 8 | Del Paso Rd | Hovnanian Dr | Natomas Central Dr | 8700 | 8700 | 9500 | 9600 | 75 | 25 | 2 | 1 | 45 | 65 | -5 |
| 9 | Del Paso Rd | Natomas Central Dr | El Centro Rd | 10500 | 11400 | 10900 | 11400 | 75 | 25 | 2 | 1 | 45 | 65 | |
| 10 | Del Paso Rd | El Centro Rd | Interstate 5 | 22800 | 31100 | 29200 | 35000 | 75 | 25 | 2 | 1 | 45 | 95 | -5 |
| 11 | Del Paso Rd | Interstate 5 | E Commerce Way | 43200 | 47000 | 52900 | 55200 | 75 | 25 | 2 | 1 | 45 | 150 | |
| 12 | Del Paso Rd | E Commerce Way | Truxel Rd | 33400 | 35800 | 60700 | 64700 | 75 | 25 | 2 | 1 | 45 | 85 | |
| 13 | El Centro Rd | Del Paso Rd | Duckhorn Dr | 11400 | 18000 | 21900 | 33500 | 75 | 25 | 2 | 1 | 45 | 90 | |
| 14 | El Centro Rd | Duckhorn Dr | Manera Rica Dr | 8400 | 16300 | 18600 | 30100 | 75 | 25 | 2 | 1 | 45 | 100 | -5 |
| 15 | El Centro Rd | Manera Rica Dr | Arena Blvd | 8100 | 13400 | 20400 | 31700 | 75 | 25 | 2 | 1 | 50 | 65+ | -5 |
| 16 | El Centro Rd | Arena Blvd | San Juan Rd | 7900 | 27000 | 14000 | 35900 | 75 | 25 | 2 | 1 | 50 | 80 | -5 |
| 17 | El Centro Rd | San Juan Rd | W El Camino Ave | 13400 | 33000 | 23700 | 45600 | 75 | 25 | 2 | 1 | 55 | 0 | |
| 18 | El Centro Rd | West El Camino | Southern Terminus | 2000 | 17800 | 2000 | 16900 | 75 | 25 | 2 | 1 | 55 | 0 | |
| 19 | Garden Highway | Truxel Road | Natomas Park Drive | 17100 | 17100 | 20700 | 20300 | 75 | 25 | 2 | 1 | 45 | 250 | |
| 20 | Garden Highway | Natomas Park Drive | Interstate 5 | 20900 | 21400 | 21200 | 23400 | 75 | 25 | 2 | 1 | 45 | 150 | |
| 21 | Garden Highway | Interstate 5 | Gateway Oaks Drive | 16300 | 19300 | 17400 | 21700 | 75 | 25 | 2 | 1 | 45 | 200 | |
| 22 | Garden Highway | Gateway Oaks Drive | Orchard Lane | 4500 | 7400 | 4000 | 8100 | 75 | 25 | 2 | 1 | 40 | 60 | |
| 23 | Garden Highway | Orchard Ln | Interstate 80 | 1900 | 4200 | 1700 | 5000 | 75 | 25 | 2 | 1 | 50 | 125 | |
| 24 | Garden Highway | Interstate 80 | San Juan Rd | 1800 | 2400 | 1100 | 2400 | 75 | 25 | 2 | 1 | 50 | 60 | |
| 25 | Garden Highway | San Juan Rd | Powerline Road | 2300 | 4200 | 3500 | 8500 | 75 | 25 | 2 | 1 | 50 | 60 | |
| 26 | Natomas Central Dr | Del Paso Rd | El Centro Rd | 2800 | 3700 | 3400 | 3600 | 75 | 25 | 2 | 1 | 40 | 60 | |
| 27 | Power Line Rd | Garden Hwy | Del Paso Rd | 2500 | 4400 | 3200 | 8000 | 75 | 25 | 2 | 1 | 60 | 0 | |
| 28 | Power Line Rd | Del Paso Rd | Interstate 5 | 2900 | 4800 | 4700 | 9500 | 75 | 25 | 2 | 1 | 60 | 0 | |
| 29 | San Juan Rd | Garden Hwy | El Centro Rd | 2300 | 4700 | 3200 | 6200 | 75 | 25 | 2 | 1 | 60 | 60 | |
| 30 | San Juan Rd | El Centro Rd | 80/5 Interchange | 6600 | 14300 | 7700 | 15500 | 75 | 25 | 2 | 1 | 45 | 75 | |
| 31 | San Juan Rd | 80/5 Interchange | Truxel Rd | 17400 | 21100 | 25300 | 26000 | 75 | 25 | 2 | 1 | 45 | 70 | |
| 32 | W El Camino Ave | El Centro Rd | Interstate 80 | 14200 | 83300 | 26200 | 88700 | 75 | 25 | 4 | 6 | 45 | 165 | |
| 33 | W El Camino Ave | Interstate 80 | Orchard Lane | 20900 | 43800 | 24200 | 45400 | 75 | 25 | 2 | 1 | 45 | 0 | |
| 34 | W El Camino Ave | Orchard Ln | Gateway Oaks Drive | 18600 | 39400 | 20800 | 40400 | 75 | 25 | 2 | 1 | 45 | 80 | |
| 35 | W El Camino Ave | Gateway Oaks Drive | Interstate 5 | 21100 | 40400 | 24100 | 41700 | 75 | 25 | 2 | 1 | 45 | 0 | |
| 36 | W El Camino Ave | Interstate 5 | Azevedo Dr | 25800 | 29300 | 29400 | 33600 | 75 | 25 | 2 | 1 | 45 | 100 | |
| 37 | W El Camino Ave | Azevedo Dr | Truxel Rd | 14000 | 17800 | 17500 | 22100 | 75 | 25 | 2 | 1 | 45 | 90 | |

**Appendix D (continued)**

**Federal Highway Administration Highway Traffic Noise Prediction Model Inputs (FHWA-RD-77-108)**

**Upper Westside Specific Plan Project**

**Nearest Off-Site, Noise-Sensitive Receptor Locations**

BOLLARD Acoustical Consultants

| | | | | Average Daily Traffic Volume (ADT) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Roadway | From | To | Existing No Project | Existing + Project | Cumulative No Project | Cumulative + Project | % Distribution Day | % Distribution Night | Truck % Medium | Truck % Heavy | Speed | Distance | Barrier Offset |
| 38 | I-80 | Yolo County | W El Camino Ave | 89000 | 109000 | 133500 | 153500 | 75 | 25 | 4 | 6 | 65 | 150 | -10 |
| 39 | I-80 | West El Camino | I-5 | 83000 | 103000 | 124500 | 144500 | 75 | 25 | 5 | 6 | 65 | 175 | -10 |
| 40 | I-5 | I-80 | Arena Boulevard | 156000 | 171000 | 220000 | 235000 | 75 | 25 | 2 | 6 | 65 | 300 | |
| 41 | I-5 | Arena Blvd | Del Paso | 139000 | 149000 | 180000 | 190000 | 75 | 25 | 2 | 6 | 65 | 350 | |
| 42 | I-5 | Del Paso | Hwy 99 | 122500 | 130000 | 160000 | 167500 | 75 | 25 | 2 | 6 | 65 | 235 | |
| 43 | I-5 | Hwy 99 | Airport Blvd | 74000 | 79000 | 90600 | 95600 | 75 | 25 | 2 | 6 | 65 | 180 | |

BOLLARD
Acoustical Consultants

Appendix E-1
Short-Term Vibration Locations
Upper Westside Specific Plan – Sacramento County, CA

BOLLARD
Acoustical Consultants

Appendix E-2
Short-Term Vibration Locations
Upper Westside Specific Plan – Sacramento County, CA

**Appendix F**

**Federal Highway Administration Highway Traffic Noise Prediction Model Inputs (FHWA-RD-77-108)**

**Upper Westside Specific Plan Project**

**Internal Roadways / Roadways Affecting Project Development**

BOLLARD Acoustical Consultants

| # | Roadway | From | To | Existing + Project | Cumulative + Project | % Distribution Day | % Distribution Night | Truck % Medium | Truck % Heavy | Speed | Distance | Barrier Offset |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Bryte Bend Rd | Radio Head | San Juan Rd | 5100 | 5100 | 75 | 25 | 2 | 1 | 35 | 100 | |
| 2 | Bryte Bend Rd | San Juan Rd | Street 7 | 5400 | 7300 | 75 | 25 | 2 | 1 | 35 | 75 | |
| 3 | Bryte Bend Rd | Street 7 | Farm Rd | 6300 | 8500 | 75 | 25 | 2 | 1 | 35 | 70 | |
| 4 | Bryte Bend Rd | Farm Rd | Street 10 | 2200 | 3500 | 75 | 25 | 2 | 1 | 35 | 75 | |
| 5 | Bryte Bend Rd | Street 10 | W El Camino Ave | 3700 | 4700 | 75 | 25 | 2 | 1 | 35 | 75 | |
| 6 | Bryte Bend Rd | West El Camino | Street 8 | 2600 | 3200 | 75 | 25 | 2 | 1 | 35 | 75 | |
| 7 | Bryte Bend Rd | Street 8 | Street 2 | 1700 | 2600 | 75 | 25 | 2 | 1 | 35 | 75 | |
| 8 | Bryte Bend Rd | Street 2 | Street 1 | 2600 | 3700 | 75 | 25 | 2 | 1 | 35 | 70 | |
| 9 | Bryte Bend Rd | Street 1 | Garden Highway | 2100 | 2900 | 75 | 25 | 2 | 1 | 35 | 70 | |
| 10 | El Centro Rd | Arena | Radio Head | 27000 | 35900 | 75 | 25 | 2 | 1 | 35 | 100 | |
| 11 | El Centro Rd | Radio Head | San Juan Rd | 23000 | 33000 | 75 | 25 | 2 | 1 | 35 | 100 | |
| 12 | El Centro Rd | San Juan Rd | Street 7 | 28100 | 42100 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 13 | El Centro Rd | Street 7 | Farm Rd | 33000 | 45600 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 14 | El Centro Rd | Farm Rd | Street 6 | 43000 | 54300 | 75 | 25 | 2 | 3 | 35 | 90 | |
| 15 | El Centro Rd | Street 6 | Street 5 | 51200 | 61000 | 75 | 25 | 2 | 3 | 35 | 90 | |
| 16 | El Centro Rd | Street 5 | W El Camino Ave | 52600 | 62100 | 75 | 25 | 2 | 3 | 35 | 90 | |
| 17 | El Centro Rd | W El Camino Ave | Street 4 | 21700 | 20900 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 18 | El Centro Rd | Street 4 | Street 3 | 17800 | 16900 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 19 | El Centro Rd | Street 3 | Street 2 | 9100 | 8200 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 20 | El Centro Rd | Street 2 | Street 1 | 900 | 900 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 21 | Farm Road | Street F | Bryte Bend Rd | 2900 | 3100 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 22 | Farm Road | Bryte Bend Rd | Street D | 5900 | 6200 | 75 | 25 | 2 | 1 | 35 | 75 | |
| 23 | Farm Road | Street D | Street C | 7200 | 7200 | 75 | 25 | 2 | 1 | 35 | 65 | |
| 24 | Farm Road | Street C | Street B | 8900 | 9200 | 75 | 25 | 2 | 1 | 35 | 65 | |
| 25 | Farm Road | Street B | Street A | 10100 | 11300 | 75 | 25 | 2 | 1 | 35 | 65 | |
| 26 | Farm Road | Street A | El Centro Rd | 11800 | 13500 | 75 | 25 | 2 | 1 | 35 | 65 | |
| 27 | Farm Road | El Centro Rd | Street H | 15600 | 16300 | 75 | 25 | 2 | 5 | 35 | 15 | |
| 28 | Garden Highway | San Juan Rd | Street 9 | 1900 | 2400 | 75 | 25 | 2 | 1 | 35 | 1300 | |
| 29 | Garden Highway | Street 9 | Bryte Bend Rd | 2400 | 2400 | 75 | 25 | 2 | 1 | 35 | 950 | |
| 30 | Orchard Lane | San Juan Rd | Street 7 | 2700 | 2500 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 31 | Radio Head | Garden Highway | Street 12 W | 1300 | 4300 | 75 | 25 | 2 | 1 | 35 | 75 | |
| 32 | Radio Head | Street 12 W | Bryte Bend Rd | 800 | 1000 | 75 | 25 | 2 | 1 | 35 | 75 | |
| 33 | Radio Head | Bryte Bend Rd | Street 12 E | 3800 | 4300 | 75 | 25 | 2 | 1 | 35 | 75 | |
| 34 | Radio Head | Street 12 E | El Centro Rd | 17000 | 17100 | 75 | 25 | 2 | 1 | 35 | 75 | |
| 35 | San Juan Rd | Garden Highway | Bryte Bend Rd | 4700 | 6200 | 75 | 25 | 2 | 1 | 35 | 75 | |
| 36 | San Juan Rd | Bryte Bend Rd | El Centro Rd | 8400 | 9600 | 75 | 25 | 2 | 1 | 35 | 130 | |
| 37 | San Juan Rd | El Centro Rd | Orchard Lane | 13900 | 15600 | 75 | 25 | 2 | 1 | 35 | 130 | |
| 38 | Street 1 | Street C | Bryte Bend Rd | 1000 | 1100 | 75 | 25 | 2 | 1 | 35 | 60 | |

**Appendix F (continued)**

**Federal Highway Administration Highway Traffic Noise Prediction Model Inputs (FHWA-RD-77-108)**

**Upper Westside Specific Plan Project**

**Internal Roadways / Roadways Affecting Project Development**

BOLLARD Acoustical Consultants

| # | Roadway | From | To | Existing + Project | Cumulative + Project | % Distribution Day | % Distribution Night | Truck % Medium | Truck % Heavy | Speed | Distance | Barrier Offset |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 39 | Street 1 | Street C | Street B | 900 | 900 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 40 | Street 1 | Street B | El Centro Rd | 900 | 900 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 41 | Street 2 | Bryte Bend Rd | Street 3 | 3700 | 3300 | 75 | 25 | 2 | 1 | 35 | 70 | |
| 42 | Street 2 | Street D | Street C | 4700 | 4100 | 75 | 25 | 2 | 1 | 35 | 70 | |
| 43 | Street 2 | Street C | Street B | 5600 | 4900 | 75 | 25 | 2 | 1 | 35 | 70 | |
| 44 | Street 2 | Street B | Street A | 5800 | 5000 | 75 | 25 | 2 | 1 | 35 | 70 | |
| 45 | Street 2 | Street A | El Centro Rd | 6200 | 5300 | 75 | 25 | 2 | 1 | 35 | 70 | |
| 46 | Street 3 | Street 2 | Street C | 50 | 100 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 47 | Street 3 | Street B | Street A | 4400 | 4300 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 48 | Street 3 | Street A | El Centro Rd | 4900 | 4700 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 49 | Street 4 | Street E | Street D | 700 | 700 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 50 | Street 4 | Street D | Street C | 1100 | 1100 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 51 | Street 4 | Street B | Street A | 800 | 800 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 52 | Street 4 | Street A | El Centro Rd | 4200 | 4200 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 53 | Street 5 | Street E | Street D | 400 | 300 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 54 | Street 5 | Street D | Street C | 1400 | 6400 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 55 | Street 5 | Street B | El Centro Rd | 2800 | 2600 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 56 | Street 6 | Street E | Street C | 100 | 200 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 57 | Street 6 | Street D | Street C | 300 | 300 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 58 | Street 6 | Street B | Street A | 2100 | 1800 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 59 | Street 6 | El Centro Rd | Street A | 1800 | 1500 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 60 | Street 7 | Bryte Bend Rd | Street C | 100 | 100 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 61 | Street 7 | Street C | Street B | 200 | 300 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 62 | Street 7 | Street B | El Centro Rd | 2300 | 1500 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 63 | Street 7 | El Centro Rd | Orchard Lane | 3900 | 3400 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 64 | Street 7 | Orchard Lane | Street H | 900 | 1000 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 65 | Street 8 | Street F | Bryte Bend Rd | 900 | 900 | 75 | 25 | 2 | 1 | 35 | 50 | |
| 66 | Street 8 | Street F | Street G | 800 | 1000 | 75 | 25 | 2 | 1 | 35 | 50 | |
| 67 | Street 8 | Street G | Bryte Bend Rd | 800 | 1000 | 75 | 25 | 2 | 1 | 35 | 50 | |
| 68 | Street 10 | Bryte Bend Rd | Street F | 1800 | 800 | 75 | 25 | 2 | 1 | 35 | 50 | |
| 69 | Street 10 | Street F | Street G | 120 | 100 | 75 | 25 | 2 | 1 | 35 | 50 | |
| 70 | Street A | Farm Rd | Street 6 | 1600 | 2500 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 71 | Street A | Street 6 | Street5 | 2200 | 3000 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 72 | Street A | Street 5 | W El Camino Ave | 6800 | 7100 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 73 | Street A | W El Camino Ave | Street 4 | 3900 | 3900 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 74 | Street A | Street 4 | Street 3 | 300 | 300 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 75 | Street A | Street 3 | Street 2 | 200 | 300 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 76 | Street B | Street 7 | Farm Rd | 600 | 1700 | 75 | 25 | 2 | 1 | 35 | 60 | |

**Appendix F (continued)**

**Federal Highway Administration Highway Traffic Noise Prediction Model Inputs (FHWA-RD-77-108)**

**Upper Westside Specific Plan Project**

**Internal Roadways / Roadways Affecting Project Development**

BOLLARD Acoustical Consultants

| # | Roadway | From | To | Existing + Project | Cumulative + Project | % Distribution Day | % Distribution Night | Truck % Medium | Truck % Heavy | Speed | Distance | Barrier Offset |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 77 | Street B | Farm Rd | Street 6 | 1700 | 2100 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 78 | Street B | Street 6 | Street 5 | 1900 | 2200 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 79 | Street B | Street 5 | W El Camino Ave | 900 | 1000 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 80 | Street B | W El Camino Ave | Street 4 | 1100 | 1200 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 81 | Street B | Street 4 | Street 3 | 700 | 800 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 82 | Street B | Street 3 | Street 2 | 200 | 100 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 83 | Street B | Street 2 | Street 1 | 400 | 300 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 84 | Street C | Street 7 | Farm Rd | 800 | 800 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 85 | Street C | Farm Rd | Street 6 | 2000 | 2300 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 86 | Street C | Street 6 | Street 5 | 1300 | 1600 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 87 | Street C | Street 5 | W El Camino Ave | 3800 | 1500 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 88 | Street C | W El Camino Ave | Street 4 | 3300 | 3200 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 89 | Street C | Street 4 | Street 3 | 700 | 800 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 90 | Street C | Street 3 | Street 2 | 400 | 400 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 91 | Street C | Street 2 | Street 1 | 1300 | 1200 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 92 | Street D | Farm Rd | Street 6 | 1200 | 1300 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 93 | Street D | Street 6 | Street 5 | 1300 | 1400 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 94 | Street D | Street 5 | W El Camino Ave | 2700 | 1200 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 95 | Street D | W El Camino | Street 4 | 3300 | 2900 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 96 | Street D | Street 4 | Street 3 | 200 | 200 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 97 | Street D | Street 3 | Street 2 | 100 | 100 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 98 | Street E | Street 5 | W El Camino Ave | 500 | 100 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 99 | Street E | W El Camino | Street 4 | 900 | 1400 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 100 | Street E | Street 4 | Street 3 | 100 | 200 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 101 | Street F | Street 8 | Bryte Bend Rd | 600 | 1100 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 102 | Street F | Farm Rd | Street 10 | 1100 | 1200 | 75 | 25 | 2 | 1 | 35 | 60 | |
| 103 | Street G | Street 9 | Street 10 | 100 | 100 | 75 | 25 | 2 | 1 | 35 | 100 | |
| 104 | Street H | Street 7 | Farm Rd | 1000 | 900 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 105 | W El Camino Ave | Bryte Bend Rd | Street E | 4500 | 4700 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 106 | W El Camino Ave | Street E | Street D | 4500 | 2700 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 107 | W El Camino Ave | Street D | Street C | 7200 | 6400 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 108 | W El Camino Ave | Street C | Street B | 12800 | 11600 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 109 | W El Camino Ave | Street B | Street A | 12200 | 11000 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 110 | W El Camino Ave | Street A | El Centro Rd | 20100 | 18800 | 75 | 25 | 2 | 1 | 35 | 15 | |
| 111 | W El Camino Ave | El Centro Rd | Interstate 80 | 83300 | 88700 | 75 | 25 | 2 | 1 | 35 | 90 | |
| 112 | I-80 | Yolo County | W El Camino Ave | 109000 | 153500 | 75 | 25 | 4 | 6 | 65 | 220 | |
| 113 | I-80 | West El Camino | I-5 | 103000 | 144500 | 75 | 25 | 5 | 6 | 65 | 220 | |