

## Noise Element



## **SECTION 7 NOISE ELEMENT**

### **7.1            INTRODUCTION**

#### **7.1.1         SCOPE OF ELEMENT**

The state requirements governing noise elements are the most specific in terms of required content and the methods used in the analysis and preparation. Noise elements must contain a thorough analysis of the existing noise environment and project future noise levels based on buildout. Finally, the goals and policies contained in the noise element are concerned with protecting residents from noise that might affect their health and welfare.

This noise element includes a comprehensive program for including noise control and related concerns in the planning process. This element will be used by planners to achieve and maintain land use compatibility with environmental noise levels. The noise element identifies noise sensitive land uses and noise sources, and defines areas of noise impact for the purpose of developing programs to ensure that Maywood residents will be protected from excessive noise intrusion. In addition, the noise element requires the consideration of any possible adverse impacts related to noise in future decision-making concerning future development. For this reason, the goals and policies in the noise element must be considered when implementing policies outlined in the land use element.

The noise element follows the recently revised state guidelines in the State Government Code Section 65302.1(f) and Section 46050.1 of the Health and Safety Code. Government Code, Section 65302.1(f) states that a noise element should be prepared according to guidelines established by the Office of Noise Control in the State Department of Health Services. The government code further requires that the noise element contain an analysis and quantification "to the extent practicable," of existing and projected noise levels for the following:

- Highways and freeways.
- Primary arterials and major local streets.
- Passenger and freight on-line railroad operations and ground rapid transit systems.
- Commercial, general aviation, helicopter, and military airport operations; aircraft overflights; jet engine test stands; and all other ground facilities and maintenance functions related to airport operation.

- Local industrial plants, including, but not limited to, railroad classification yards.
- Other ground stationary noise sources identified by local agencies as contributing to the community noise environment.

In addition, the government code, as amended January 1, 1986, provides some specific direction in the preparation of noise elements. Section 65302.1(f) states:

"Noise contours shall be shown for all of the sources and stated in terms of community noise equivalent level (CNEL) or day-night average level (Ldn). The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified in paragraphs 1 to 6, inclusive.

"The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise.

"The noise element shall include implementation measures and possible solutions that address existing and foreseeable noise problems, if any. The adopted noise element shall serve as a guidelines for compliance with the state's noise insulation standards."

### **7.1.2 ISSUES**

A number of major issues related to noise in the city are identified in the background report and are the focus of noise mitigation policy and programs:

- The major mobile noise sources include vehicles operating on the two major arterials that serve the city: Atlantic Boulevard and Slauson Avenue. Noise levels along these streets are much greater during daytime hours due to the number of trucks that use these roadways.
- The Long Beach Freeway at its closest point to the city (1/4 mile) is elevated and contributes to ambient noise levels in the city.
- Residential areas located near Atlantic and Slauson avenues and near the industrial areas are exposed to traffic noise that exceeds 60 dBA in many areas.
- In those areas where industrial operations are located in close proximity to homes, there is a potential for noise impacts from machinery, work activities, and truck traffic.

## **7.2**            **GOALS AND POLICIES**

### **7.2.1**        **ISSUE: NOISE CONTROL**

The city has established one general goal for the noise element that is directed toward protecting the public from excessive and offensive noises. The policies reinforce the city's noise ordinance as the main implementation measure of the noise element goal. The city also encourages Caltrans to build sound walls to help reduce excessive noise levels from vehicles on the nearby freeway.

**GOAL 1:**     Prohibit any unnecessary, excessive, offensive noises, or increase in noise levels over acceptable levels, which are detrimental to the public health and welfare.

#### **Policies**

- 1.1**     Implement criteria and guidelines established in this noise element for use in setting standards for the control and abatement of noise emission, transmission, and exposure as set forth in the noise element.
- 1.2**     Control any sounds which exceed community accepted levels at their source through enforcement.
- 1.3**     Provide assistance to all persons, groups, or organizations engaged in developing and implementing noise abatement procedures and/or programs.
- 1.4**     Prevent any increase in acceptable ambient levels of sound in the residential areas of the community by implementing local noise standards.
- 1.5**     Where appropriate, require sound attenuation walls to separate commercial and industrial uses from noise-sensitive land uses, such as schools and homes.
- 1.6**     Encourage Caltrans to build a sound wall along the Long Beach Freeway.
- 1.7**     Control the following noise sources through increased enforcement: (1) excessive amplification of stereo and radios; (2) car alarms; (3) autobody and other similar fabrication; (4) some industrial activities related to residential areas. This problem shall be controlled by local authority.

### **7.3            NOISE MITIGATION PROGRAM**

The primary source of noise in Maywood are the two main arterial roadways, Slauson Avenue and Atlantic Boulevard, that traverse the city. Another noise source for Maywood is the I-710 (Long Beach Freeway) located northeast of the city.

The roadway and freeway traffic noise represents relatively steady constant noise sources. Another noise source is train traffic which presents periodic sources of noise for Maywood. In addition, there are short-term irritant noise generated by loud playing stereos, the operation of motorized garden equipment, and shrill sounds of a school yard full of school children.

There are local and state laws established to regulate noise sources. The Maywood Noise Ordinance is used to mitigate and protect residents from excessive noise. The California State Government has established noise insulation standards to protect multiple-family residential dwelling units from excessive and unnecessary noise.

#### **7.3.1            NOISE AND LAND USE COMPATIBILITY STANDARDS**

It has been established in this noise element the goal to protect the residents from excessive or irritating noise. The impacts from noise can be decreased through regulatory noise controls, and land use planning. These standards are used to create a more healthful environment for residents.

Several federal and state agencies have developed guidelines relative to land use and noise. These agencies include the Environmental Protection Agency, Federal Highway Administration, Department of Housing and Urban Development, American National Standards Institute, and the State of California.

These agencies standards are based upon cumulative noise criteria, such as the Community Equivalent Level (CNEL) and Day-Night Average (Ldn). These guidelines represent weighted averages of twenty-four 1-hour Leq measurements, with decibel weights assigned to the evening, night, and early morning hours.

In 1976, the California Department of Health established noise element guidelines that contained a recommended noise/land use compatibility matrix. The matrix, Exhibit 7-1, outlines acceptable levels of noise for different land uses. The matrix is a good guide for noise responsive land use planning. These standards displayed in the matrix for conditionally acceptable uses are relevant to Maywood.

#### **7.3.2            PROGRAM IMPLEMENTATION**

The primary mechanism used to implement noise policy will be the noise ordinance. The ordinance gives the city the authority to regulate noise at its source and, thereby, protect

noise sensitive land uses.

Having an established land use pattern prevents the city from using wide scale land use planning as a tool to minimize noise impacts. However, there are other noise reduction strategies that can be used to achieve acceptable noise environments for existing and new developments.

Noise reduction barriers can be constructed between noise sensitive land uses, such as residential development and incompatible land uses. For example, noise reduction barriers can reduce the exposure of residential neighborhoods to industrial noise; thus reducing the noise impact on adjacent residential developments.

The city can require new residential development to use new construction techniques and materials to achieve state standards for interior ambient noise levels. Also, the city can encourage Caltrans to install sound walls along the 1-710 Freeway near Maywood to reduce the noise generated by freeway traffic.

### **7.3.3 IMPLICATIONS FOR LAND USE**

As discussed, the primary sources of noise in Maywood are Atlantic Boulevard and Slauson Avenue, as well as the 1-710 Freeway. These noise sources impact the land uses located along these transportation routes. Residential development will contain noise sensitive uses that include senior housing. This type of use will not be a great contributor to greater noise but will be sensitive due to the type of users, as well as potential locations along Atlantic Boulevard and Slauson Avenue.

Increased traffic anticipated for Slauson Avenue and Atlantic Boulevard will result in increased noise levels along these roadway segments. Noise levels are projected to increase by 0.67 dB CNEL along Atlantic Boulevard and by 1.09 dB CNEL along Slauson Avenue. This projected increase in noise is not expected to be discernible by residents in the area. Table 7-1 indicates the distance from the roadway centerline to the noise level contours depicted in Exhibit 7-2. New development located in areas subject to high noise levels should implement mitigation measures to reduce interior noise to acceptable levels (see Exhibit 7-1).

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE $L_{dn}$ OR CNEL, dB					
	55	60	65	70	75	80
RESIDENTIAL - LOW DENSITY SINGLE FAMILY, DUPLEX, MOBILE HOMES						
RESIDENTIAL - MULTIFAMILY						
TRANSIENT LODGING - MOTELS, HOTELS						
SCHOOLS, LIBRARIES, CHURCHES, HOSPITALS, NURSING HOMES						
AUDITORIUMS, CONCERT HALLS, AMPHITHEATRES						
SPORTS ARENA, OUTDOOR SPECTATOR SPORTS						
PLAYGROUNDS, NEIGHBORHOOD PARKS						
GOLF COURSES, RIDING STABLES, WATER RECREATION, CEMETERIES						
OFFICE BUILDINGS, BUSINESS COMMERCIAL AND PROFESSIONAL						
INDUSTRIAL, MANUFACTURING UTILITIES, AGRICULTURE						

## LEGEND



### NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.



### CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.



### NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.



### CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

## CONSIDERATIONS IN DETERMINATION OF NOISE-COMPATIBLE LAND USE

### A. NORMALIZED NOISE EXPOSURE INFORMATION DESIRED

Where sufficient data exists, evaluate land use suitability with respect to a "normalized" value of CNEL or  $L_{dn}$ . Normalized values are obtained by adding or subtracting the constants described in Table 1 to the measured or calculated value of CNEL or  $L_{dn}$ .

### B. NOISE SOURCE CHARACTERISTICS

The land use-noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single noise events than auto traffic but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment. The State Aeronautics Act uses 65 dB CNEL as the criterion which airports must eventually meet to protect existing residential communities from unacceptable exposure to aircraft noise. In order to facilitate the purposes of the Act, one of which is to encourage land uses compatible with the 65 dB CNEL criterion wherever possible, and in order to facilitate the ability of airports to comply with the Act,

residential uses located in Community Noise Exposure Areas greater than 65 dB should be discouraged and considered located within normally unacceptable areas.

### C. SUITABLE INTERIOR ENVIRONMENTS

One objective of locating residential units relative to a known noise source is to maintain a suitable interior noise environment at no greater than 45 dB CNEL of  $L_{dn}$ . This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

### D. ACCEPTABLE OUTDOOR ENVIRONMENTS

Another consideration, which in some communities is an overriding factor, is the desire for an acceptable outdoor noise environment. When this is the case, more restrictive standards for land use compatibility, typically below the maximum considered "normally acceptable" for that land use category, may be appropriate.

Source: California Department of Health, Guidelines for the Preparation and Content of Noise Elements of The General Plan, February, 1976

**TABLE 7-1  
FUTURE ROADWAY NOISE LEVELS**

Distance (in feet) to CNEL From Roadway Centerline<sup>a</sup>

<u>Roadway</u>	<u>70 CNEL</u>	<u>65 CNEL</u>	<u>60 CNEL</u>	<u>55 CNEL</u>	<u>CNEL at 50 Feet<sup>b</sup></u>
Atlantic	61.3	180.1	564.8	1,784.3	69.07
Slauson	61.2	179.6	563.2	1,779.4	69.05

- a Noise model does not consider any barriers or obstructions to the noise path.
- b CNEL measured in feet from centerline to near travel lane.

Note: Computer worksheets calculating noise levels are included in Appendix B of the EIR.

Source: Michael Brandman Associates, Inc., 1989.

# **Noise Element Background Report**

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MAYWOOD GENERAL PLAN

# NOISE ELEMENT BACKGROUND REPORT

## 7.4 INTRODUCTION

Maywood residents are exposed to a wide range of noise levels that are common to such an environment. Major mobile noise sources in the city include automobiles, trucks, and trains. Much of this traffic noise comes from the two major arterials that traverse the city. Automobile and truck noise from the nearby Long Beach Freeway is also apparent in the city. Noise from trains also affects those areas located along the northern, western, and eastern margins of the city. In addition, stationary noise sources within Maywood also generate noise that affects noise-sensitive uses located nearby. These stationary noise sources include a wide range of recreational, commercial, and business activities.

A number of major issues related to noise in the city are identified in this Background Report:

- The major mobile noise sources include vehicles operating on the two major arterials that serve the city: Atlantic Boulevard and Slauson Avenue. Noise levels along these streets are much greater during daytime hours due to the number of trucks that use these roadways.
- The Long Beach Freeway at its closest point to the city (1/4 mile) is elevated and contributes to ambient noise levels in the city.
- Residential areas located near Atlantic Boulevard and Slauson Avenue and near the industrial area are exposed to traffic noise that exceeds 60 dBA in many areas.
- In those areas where industrial operations are located in close proximity to homes, there is a potential for noise impacts from machinery, work activities, and truck traffic.

## 7.5

### CHARACTERISTICS OF SOUND

Before the existing noise environment can be described, there are a number of terms that need to be explained. In addition, there are a number of methods used to evaluate the loudness of a particular noise. The most commonly used units for measuring the level of noise are decibel (dB), Equivalent Noise Level (Leq), and the Community Noise Equivalent Level (CNEL).

A decibel is a unit used for measuring the intensity of sound. A scale of 0 to 140 is used in which zero represents the lowest sound that can be heard by humans and 140 is the rupture point of the eardrum. The Leq measure represents the average of the sound level energy for a 1-hour period and employs an A-weighted decibel correction which corresponds to the optimal frequency response of the human ear. The CNEL is based upon 24 1-hour Leq measurements. The average noise levels for the late evening and early morning hours (the period between 10 p.m. and 7 a.m.) are weighted 10 decibels.

Intermittent or occasional noise, such as noise associated with stationary noise sources, is not of sufficient volume to exceed community noise standards, based on a time averaged scale such as the CNEL scale. The Percent-Noise Level (L percent) method is used to characterize and evaluate intermittent noise. This method gauges the percentage of time that intermittent noise exceeds the average decibel level during the measurement period.

Noise ordinances are typically specified in terms of the percent noise levels. These ordinances are designed to protect people from non-transportation-related noise sources such as music, machinery, and traffic on private property. Noise ordinances do not apply to motor vehicle noise on public streets or other transportation-related noise sources that are preempted by the state or federal governments.

#### 7.5.1 NOISE AND LAND USE COMPATIBILITY

Noise/land use guidelines have been produced by a number of state and federal agencies including the Federal Highway Administration, the Environmental Protection Agency, the Department of Housing and Urban Development, the American National Standards Institute, and the State of California. These guidelines, presented in the following paragraphs, are all based upon cumulative noise criteria such as Leq, Ldn, or CNEL.

- **Environmental Protection Agency (EPA)**. In March 1974, the EPA published a very important document entitled "Information on Levels of Environmental Noise Required to Protect Public Health and Welfare with an Adequate Margin of Safety" (EPA 550/9-74-004). According to this publication 55 LDN is described on the required level with an adequate margin of safety for areas with outdoor uses including residences and recreational areas. The EPA "levels document" does not contribute a standard, specification or regulation, but identifies safe levels of environmental noise exposure without

consideration for economic cost for achieving these levels.

- **Federal Highway Administration (FHWA).** The FHWA has adopted and published noise abatement criteria for highway construction projects. The FHWA noise abatement criteria basically establishes an exterior noise goal for residential land uses of 67 Leq and an interior goal for residences of 52 Leq. The noise abatement criteria applies to private yard areas and assumes that typical wood frame homes with windows open can achieve 10 dB noise reduction with windows closed.
- **State of California.** The state requires every city and county to adopt noise elements as part of their general plans. Such noise elements must contain a Noise/Land Use compatibility matrix. A recommended (but not mandatory) matrix is presented in the "Guidelines for the Preparation and Content of Noise Elements and the General Plan," (Office of Noise Control, California Department of Health, February 1976).

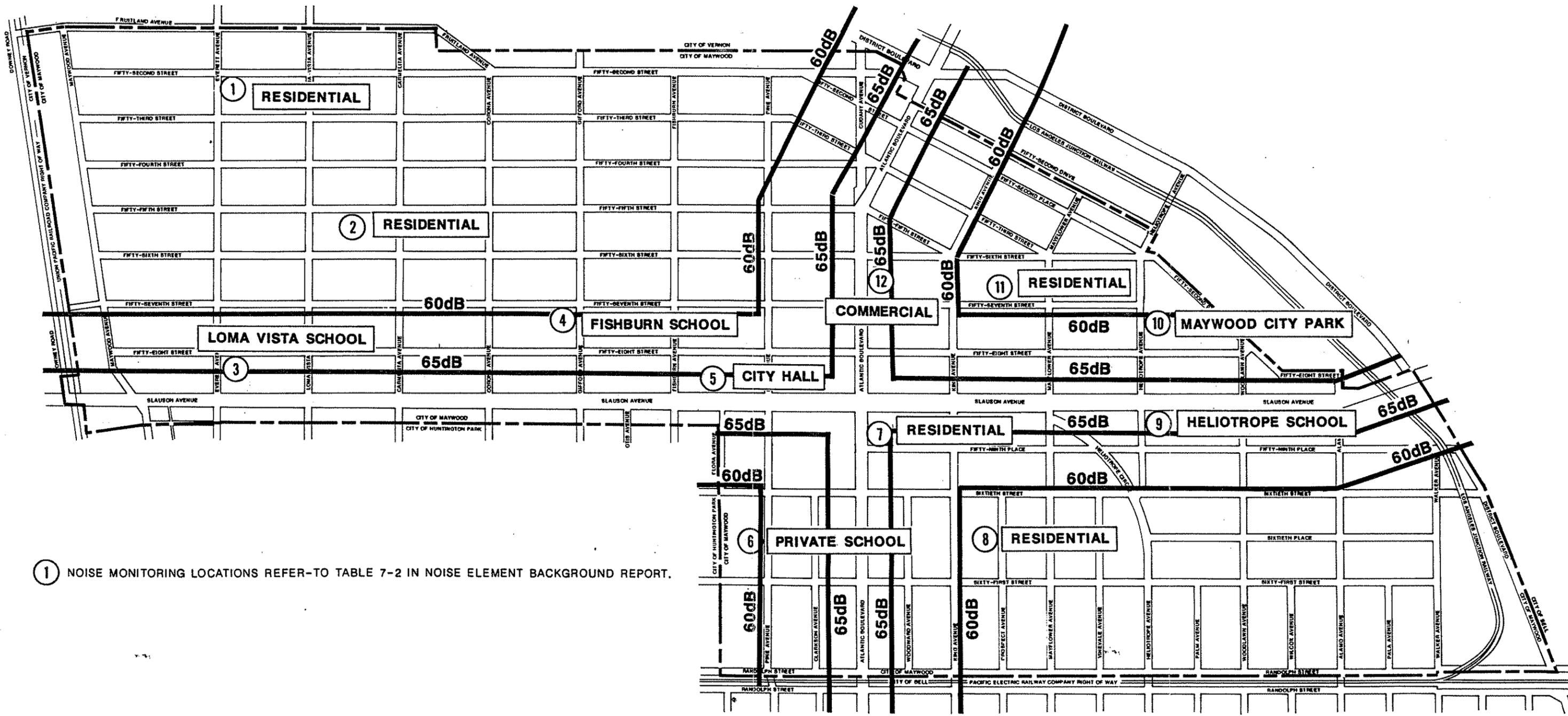
## **7.6            ANALYSIS OF EXISTING NOISE ENVIRONMENT**

This general plan considers a wide range of land use and development types as noise sensitive. Noise sensitive land uses include residences, both single- and multi-family, schools, medical facilities, and certain types of businesses that use precision equipment that could be impacted by excessive noise and vibration.

### **7.6.1            RESULTS OF NOISE SURVEY**

A noise study was conducted by Michael Brandman Associates, Inc. (MBA) in December 1988, to document the existing noise environment in the city. This analysis consisted of three primary tasks: (1) identification of noise sensitive land uses such as schools; (2) measuring noise levels at selected locations in the city; and (3) computerized modeling of ambient traffic noise levels along major roadways in the city.

The noise measurement program was conducted in December 1988 at 12 locations throughout the city. The results are depicted in Table 7-2. Each site was monitored for a minimum of 15 minutes. The locations are indicated in Exhibit 7-3. The quantities measured were the CEQ and the L percent. L percent is a method used to characterize ambient noise. For example, L90 is the noise level exceeded 90 percent, L50 is the level exceeded 50 percent, and L10 is the level exceeded 10 percent of the time. L90 represents the background or minimum noise level, L50 represents the average noise level, and L10 the peak or intrusive noise levels.



① NOISE MONITORING LOCATIONS REFER-TO TABLE 7-2 IN NOISE ELEMENT BACKGROUND REPORT.

Existing Noise Environment  
Maywood General Plan

North

0 250 500 FEET

Michael Brandman Associates

**TABLE 7-2**  
**NOISE MEASUREMENT SURVEY RESULTS**

	<u>Location</u>	<u>LEQ</u>	<u>LMAX</u>	<u>L10</u>	<u>L50</u>	<u>L90</u>
1.	Southeast corner of Everett and 52nd Street	58.0	83.0	62.5	51.5	470
2.	Between Loma Vista and Carmelita on 55th Street	49.0	77.5	62.0	50.0	440
3.	Southeast corner of Everett and 58th Street	44.0	74.5	61.5	52.5	480
4.	Southwest corner of Gifford and 57th Street	46.5	72.5	62.0	55.0	515
5.	4319 Slauson (Maywood City Hall) northside between Fishburn and Pine	74.0	94.5	77.0	69.0	610
6.	6019 Pine (west side) between 69th and 61st Streets	54.0	81.5	64.5	52.0	465
7.	Eastside of Atlantic between Slauson and 59th Place	66.5	87.5	73.5	68.0	640
8.	6035 Prospect (west side) between 60th and 61st Streets	42.5	74.5	49.5	46.5	
9.	Heliotrope School - southeast corner of Heliotrope and Slauson	71.5	86.5	77.0	69.0	605
10.	Maywood Park, 57th and Heliotrope northside of Heliotrope	47.5	74.0	59.0	54.0	575
11.	Northside of 57th Street 4637 East 57th Street between King and Mayflower	41.0	71.0	53.5	46.5	445
12.	Atlantic and 56th Street east of mid-block	67.0	84.0	74.5	69.0	620

Source: Michael Brandman Associates, 1988.

In general, commercial land uses predominate along both Atlantic Boulevard and Slauson Avenue; however, a few residential homes and apartments are located along Slauson Avenue. The noise survey table indicates that the noise measurement sites on these major streets contained Leq readings above 65 dB.

For residential land uses, the noise level of 65 dB is generally used by a number of federal agencies as the dividing line between acceptable and unacceptable noise environment. For many noise sensitive land uses, such as schools, churches, hospitals, etc., 65 dB is also used as the dividing line between acceptable and unacceptable noise environment. The residents located along Slauson Avenue are exposed to noise levels greater than the acceptable noise environment. Noise measurement sites located within residential areas contained Leq calculations lower than 65 dB.

Two of the three public elementary school sites contained Leq measurements lower than 65 dB. These schools, Fishburn Elementary and Loma Vista Elementary, are located within residential neighborhoods away from the major roadways. Heliotrope Elementary School, however, is located along Slauson Avenue and is exposed to a high Leq measurement of 75 dB. The three private elementary schools are all located in residential neighborhoods with acceptable noise levels.

Pinecrest Convalescent Hospital located on Pine Avenue between 60th Street and 61st Street is another noise-sensitive location. This site contained an Leq measurement of 54 dB, which is an acceptable noise level.

## **7.6.2 ROADWAY NOISE STUDY**

The dominant noise source in Maywood is roadway traffic from Atlantic Boulevard (north-south street) and Slauson Avenue (east/west street). Additional noise sources include adjacent rail lines that surround the city along the western, southern, eastern, and northeastern sections of the city. The 1-710 (the Long Beach Freeway) located to the northeast and east of the city in close proximity, is also a noise source for Maywood.

Noise levels along Atlantic Boulevard and Slauson Avenue are affected by a number of traffic characteristics. These factors include the average daily traffic, the percentage of trucks, vehicle speed, the time distribution of traffic, and the gradient of the road. Both Atlantic Boulevard and Slauson Avenue contain a significant volume of truck traffic traveling through the city. This is due in part to the intense industrial uses located in neighboring jurisdictions. Additionally, these roadways provide direct access for the industries to the I-710 Freeway and the I-5 (the Santa Ana Freeway) in Commerce.

Existing traffic noise along the major roadways was calculated using the Federal Highway Administration's Highway Traffic Noise Prediction Model (FHWA-RD-77-108), December 1978. This model was modified to general CNEL values. Model input data was derived from the traffic consultant and field observations, which included average daily traffic levels,

day/night percentages of autos, medium and heavy trucks, vehicle speeds, ground attenuation factors, and roadway widths.

The distances from existing roadway centerlines to the 55, 60, 65, and 70 dB CNEL contour lines and the CNEL at 50 feet from the centerline of the near travel lane are provided in Table 7-3 and depicted in Exhibit 7-3. The noise contour distances describe worst-case conditions since they do not take into account any obstructions to the noise path (i.e., walls, buildings, etc.). The roadways that were analyzed include Slauson Avenue, Atlantic Boulevard, Maywood Avenue, Fruitland Avenue, and Randolph Street.

**TABLE 7-3  
EXISTING ROADWAY NOISE LEVELS**

<u>Roadway Segment</u>	<u>Distance (in Feet) to CNEL From Roadway Centerline<sup>a</sup></u>				<u>CNEL at 50 Feet<sup>b</sup></u>
	<u>70 CNEL</u>	<u>65 CNEL</u>	<u>60 CNEL</u>	<u>55 CNEL</u>	
Atlantic Boulevard	0.0	154.8	484.3	1,529.6	68.40
Slauson Avenue	0.0	140.3	437.8	1,382.6	67.96

- a Does not consider any obstructions to the noise path.
- b CNEL measured in feet from centerline of near travel lane.

Note: Computer worksheets calculating noise levels are included in Appendix B of the EIR.

Source: Michael Brandman Associates, 1989.