# NOISE ELEMENT

# I. INTRODUCTION

The purpose of the *Noise Element* is to identify the existing and projected future noise environment in Kings County, and provide policy direction and implementation efforts to protect County residents from exposure to excessive noise levels. This element provides the basis for comprehensive local policies to control and abate environmental noise from stationary and mobile noise sources, and reduce conflicts between noise and noise-sensitive land uses.

The fundamental objectives of the *Noise Element* is to provide sufficient information concerning the community noise environment so that noise may be effectively considered in the land use planning process; develop strategies for abating excessive noise exposure through cost-effective mitigation measures in combination with appropriate zoning to avoid incompatible land uses; protect those existing regions of the planning area where noise environments are deemed acceptable and also those locations throughout the community deemed "noise sensitive"; and protect existing noise-producing agricultural, commercial, and industrial uses in the County of Kings from encroachment by noise-sensitive land uses.

## A. Overview of Noise Environment in Kings County

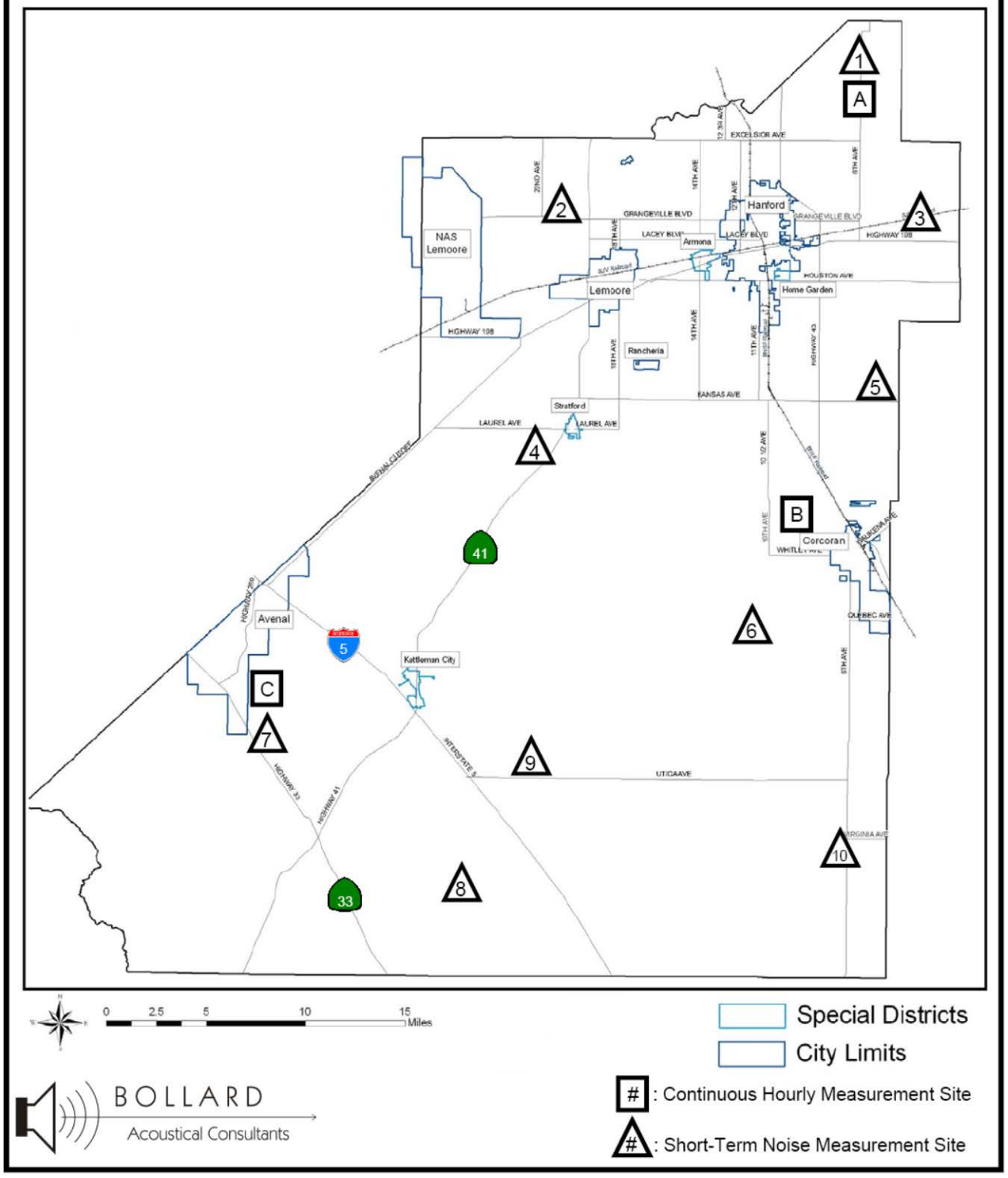
The study area of the *Noise Element* covers the entire area of Kings County, with primary focus on major noise sources in the unincorporated territory of the County, and to a lesser extent noise sources in Cities that may pose potential conflicts with County land use. The ambient noise environment in Kings County is defined by traffic on Highways and County roadways, commercial and industrial uses, agricultural uses, railroad operations on the Burlington Northern Santa Fe (BNSF) Railroad and the San Joaquin Valley Railroad, and aircraft. Eight airports operate in Kings County and affect the County noise environment. Military aircraft operating out of Lemoore Naval Air Station represents the largest significant change in noise contours since the previous general plan update in 1993.

## B. *Noise Element* Requirements

A noise element shall identify and appraise noise problems in the community. The noise element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:

1. Highways and freeways.
2. Primary arterials and major local streets.
3. Passenger and freight railroad operations and ground rapid transit systems.
4. Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.
5. Local industrial plants, including, but not limited to, railroad classification yards.
6. Other ground stationary sources identified by local agencies as contributing to the community noise environment.

Figure N-1
Kings County General Plan Update
Kings County, California



## C. Fundamentals of Noise

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 hence are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

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), 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 levels (dB) correspond closely to human perception of relative loudness. Figure 2 shows examples of noise levels for several common noise sources and environments.

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 weighing the frequency response of a sound level meter by means of the standardized A-weighing 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 document 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 ($L_{eq}$), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The $L_{eq}$ is the foundation of the composite noise descriptor, $L_{dn}$, and shows very good correlation with community response to noise.

The Day-Night Average Level ($L_{dn}$) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because $L_{dn}$ represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Noise in the community has often been cited as being a health problem, not in terms of actual physiological damages such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities such as sleep, speech, recreation, and tasks demanding concentration or coordination. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases; and the acceptability of the environment for people decreases. This decrease in acceptability and the threat to public well-being are the bases for land use planning policies preventing exposures to excessive community noise levels.

To control noise from fixed sources, which have developed from processes other than zoning or land use planning, many jurisdictions have adopted community noise control ordinances. Such ordinances are intended to abate noise nuisances and to control noise from existing sources. They may also be

used as performance standards to judge the creation of a potential nuisance, or potential encroachment of sensitive uses upon noise-producing facilities. Community noise control ordinances are generally designed to resolve noise problems on a short-term basis (usually by means of hourly noise level criteria), rather than on the basis of 24-hour or annual cumulative noise exposures.

In addition to the A-weighted noise level, other factors should be considered in establishing criteria for noise sensitive land uses. For example, sounds with noticeable tonal content such as whistles, horns, droning or high-pitched sounds may be more annoying than the A-weighted sound level alone suggests. Many noise standards apply a penalty, or correction, of 5 dBA to such sounds. The effects of unusual tonal content are generally more of a concern at nighttime, when residents may notice the sound in contrast to low levels of background noise.

Because many rural residential areas experience very low noise levels, residents may express concern about the loss of "peace and quiet" due to the introduction of a sound which was not audible previously. In very quiet environments, the introduction of virtually any change in local activities will cause an increase in noise levels. A change in noise level and the loss of "peace and quiet" is the inevitable result of land use or activity changes in such areas. Audibility of a new noise source and/or increases in noise levels within recognized acceptable limits are not usually considered to be significant noise impacts, but these concerns should be addressed and considered in the planning and environmental review processes.

## D. Scope and Organization

This Element is organized into sub-sections that provide more detailed information on Noise Sources, Community Noise Survey, and Noise Mitigation Options (Sections II thru VII). Section VIII contains all *Noise Element* Goals, Objectives and Policies.

This element is organized into the following sections:

**II. Street & Highway Noise –** Traffic Noise Methodology, and Existing Traffic Noise Conditions.

**III. Rail Transportation Noise –** Existing Rail Transport, Existing Rail Noise Conditions.

**IV. Aviation Noise –** Naval Air Station Lemoore, Hanford Municipal Airport, Corcoran Airport, Avenal Airport, Airfields.

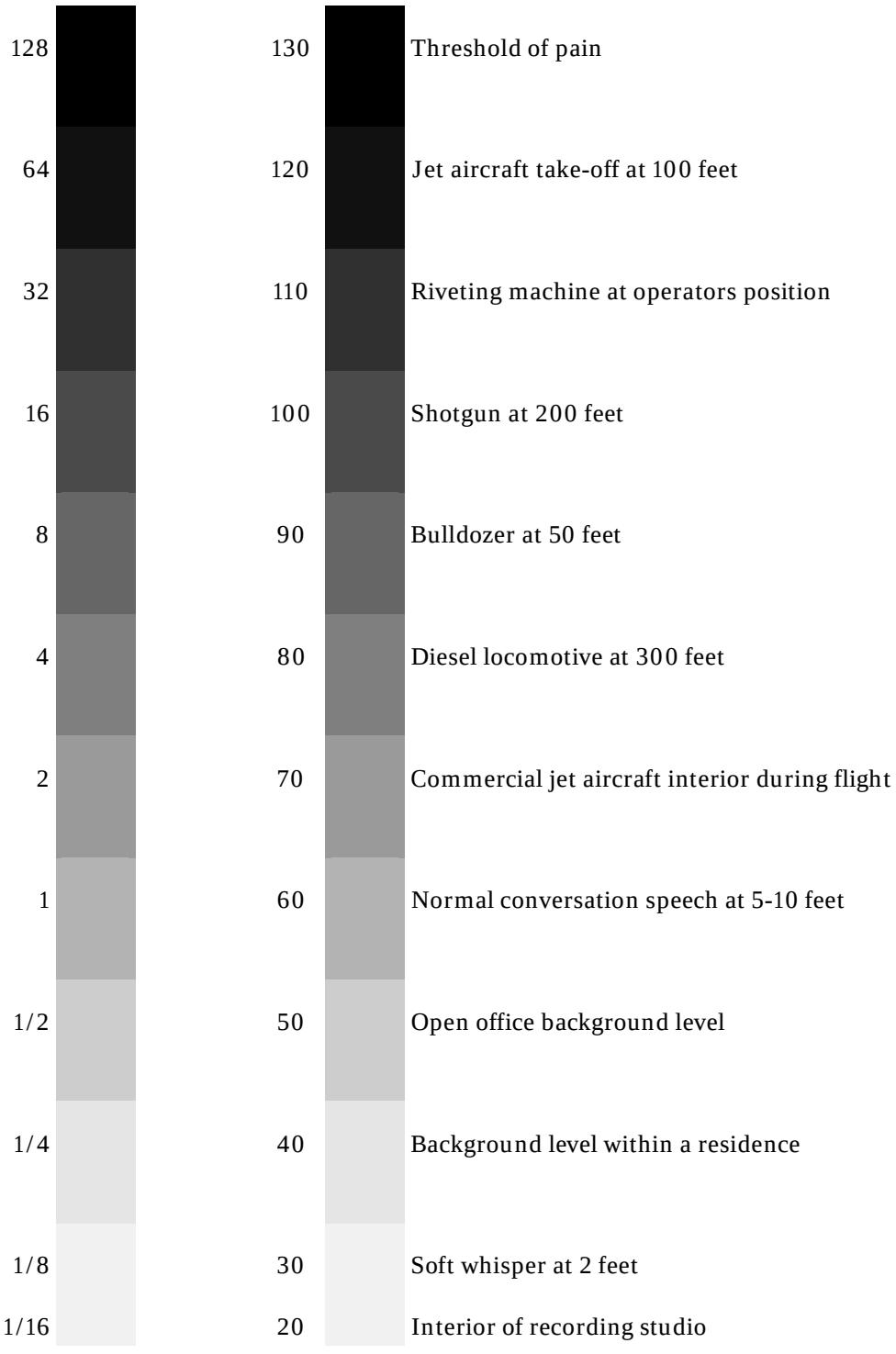
**V. Non-Transportation Noise –** Fixed Noise Sources.

**VI. Community Noise Survey –** Community Noise Survey Results.

**VII. Noise Mitigation Options –** Noise Control Techniques.

**VIII. Noise Policies –** Transportation Noise Protection, Non-Transportation Noise Protection, and Excessive Noise Prevention.

*Figure N-2 Typical A-Weighted Sound Levels of Common Noise Sources*



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# II. STREET & HIGHWAY NOISE

Streets and Highways throughout the County are identified as the most extensive source of mobile noise in the County. The County has one Interstate and three well traveled State Routes traversing the County. Three of the four unincorporated Community Districts are bisected by a State Route, with State Route 198 crossing through Armona, and State Route 41 crossing through both Stratford and Kettleman City. Many of the County maintained Avenues are also used by cross traffic between cities and communities. Home Garden has 10th Avenue crossing through and Houston Avenue bordering along the south edge of the community. This section considers the existing noise levels along these and other roadways to provide information for identifying areas of potential incompatible land use.

## A. Traffic Noise Methodology

*Figure N -3. Highway Noise*

The Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) with the Calveno vehicle noise emission curves was used to predict existing and future traffic noise levels within the Kings County Limits. The FHWA Model is the traffic noise prediction model currently preferred by the Federal Highway Administration, the State of California Department of Transportation (Caltrans), and most county and city governments, for use in traffic noise assessment. Although the FHWA Model has been updated with the more sophisticated TNM traffic noise prediction model, the use of RD-77-108 is still considered acceptable for the development of General Plan traffic noise predictions.

*Figure N -4. Interstate 5 Noise*

The FHWA Model was used with existing and future traffic data to develop $L_{dn}$ contours for the major highways and roadways within Kings County. The distances from the centerline of the major roadways to the 60, 65 and 70 dB $L_{dn}$ contours are also summarized in Tables N-1 and N-2 for existing and future conditions, respectively. It is recognized that vehicle speeds vary on the highways and roadways in Kings County, and while the modeling effort generally attempted to account for such variation, it is not feasible to precisely identify vehicle speeds on each roadway segment at the General Plan level. The contour distances should also be considered conservative in that they do not account for local topographic shielding.

## B. Existing Traffic Noise Conditions

Existing and projected noise levels for streets and highways are provided in the tables below. Table N-1 includes existing 2006 noise levels, while Table N-2 has 2035 projected noise levels.

## Table N-1 Traffic Noise Levels and Distances to 70, 65, & 60 dB $L_{dn}$ Contours Existing (2006) Conditions

| Segment | Roadway Name | Segment Location | $L_{dn}$ @ 100 feet | Distance to $L_{dn}$ Contours, feet 70 dB | 65 dB | 60 dB |
|---|---|---|---|---|---|---|
| 1 | Interstate 5 | Kern Co. Line ▪ Utica Avenue | 77 | 284 | 612 | 1318 |
| 2 | Interstate 5 | Utica Avenue ▪ State Route 41 | 77 | 290 | 625 | 1346 |
| 3 | Interstate 5 | State Route 41 ▪ Fresno Co. Line | 77 | 302 | 650 | 1400 |
| 4 | State Route 33 | Kern Co. Line ▪ State Route 41 | 60 | 21 | 45 | 97 |
| 5 | State Route 33 | State Route 41 ▪ 7th Avenue | 60 | 20 | 44 | 95 |
| 6 | State Route 33 | 7th Avenue ▪ State Route 269 | 60 | 20 | 44 | 95 |
| 7 | State Route 33 | State Route 269 ▪ Fresno Co. Line | 59 | 20 | 43 | 92 |
| 8 | State Route 41 | Kern Co. Line ▪ State Route 33 | 66 | 56 | 121 | 262 |
| 9 | State Route 41 | State Route 33 ▪ Interstate 5 | 66 | 52 | 113 | 243 |
| 10 | State Route 41 | Interstate 5 ▪ Bernard Drive | 67 | 66 | 142 | 306 |
| 11 | State Route 41 | Bernard Drive ▪ Quail Avenue | 66 | 54 | 117 | 252 |
| 12 | State Route 41 | Quail Avenue ▪ Nevada Avenue | 67 | 60 | 130 | 280 |
| 13 | State Route 41 | Nevada Avenue ▪ Jackson Avenue | 67 | 61 | 132 | 284 |
| 14 | State Route 41 | Jackson Avenue ▪ State Route 198 | 68 | 69 | 148 | 318 |
| 15 | State Route 41 | State Route 198 ▪ Bush Street | 69 | 83 | 179 | 386 |
| 16 | State Route 41 | Bush Street ▪ Houston Avenue | 70 | 97 | 210 | 452 |
| 17 | State Route 41 | Houston Avenue ▪ Hanford ▪ Armona Rd | 70 | 97 | 210 | 452 |
| 18 | State Route 41 | Hanford-Armona Road ▪ Grangeville Blvd | 71 | 116 | 250 | 538 |
| 19 | State Route 41 | Grangeville Boulevard ▪ Fresno Co. Line | 71 | 108 | 233 | 502 |
| 20 | State Route 43 | Tulare Co. Line ▪ Railroad Drive | 67 | 62 | 134 | 289 |
| 21 | State Route 43 | State Route 137 ▪ Corcoran Bypass | 66 | 51 | 110 | 238 |
| 22 | State Route 43 | Corcoran Bypass ▪ Kansas Avenue | 65 | 50 | 108 | 232 |
| 23 | State Route 43 | Kansas Avenue ▪ Houston Avenue | 65 | 45 | 97 | 209 |
| 24 | State Route 43 | Houston Avenue ▪ State Route 198 | 68 | 74 | 160 | 346 |
| 25 | State Route 43 | State Route 198 ▪ Lacey Boulevard | 68 | 78 | 167 | 360 |
| 26 | State Route 43 | Lacey Boulevard ▪ Grangeville Boulevard | 68 | 73 | 157 | 339 |
| 27 | State Route 43 | Grangeville Boulevard ▪ 10th Avenue | 68 | 71 | 152 | 328 |
| 28 | State Route 43 | 10th Avenue ▪ Excelsior Avenue | 68 | 73 | 157 | 339 |
| 29 | State Route 43 | Excelsior Avenue ▪ Fresno Co. Line | 68 | 75 | 162 | 350 |
| 30 | State Route 137 | State Route 43 ▪ Tulare Co. Line | 61 | 25 | 54 | 116 |
| 31 | State Route 198 | Fresno Co. Line ▪ LNAS | 66 | 50 | 108 | 233 |
| 32 | State Route 198 | LNAS ▪ Avenal Cutoff Road | 68 | 77 | 166 | 358 |
| 33 | State Route 198 | Avenal Cutoff Road ▪ State Route 41 | 69 | 85 | 183 | 394 |
| 34 | State Route 198 | State Route 41 ▪ 18th Avenue | 70 | 95 | 204 | 440 |
| 35 | State Route 198 | 18th Avenue ▪ Houston Avenue | 70 | 95 | 204 | 439 |
| 36 | State Route 198 | Houston Avenue ▪ 14th Avenue | 71 | 114 | 246 | 531 |
| 37 | State Route 198 | 14th Avenue ▪ Hanford-Armona Road | 71 | 122 | 263 | 567 |
| 38 | State Route 198 | Hanford-Armona Road ▪ 12th Avenue | 71 | 113 | 244 | 525 |
| 39 | State Route 198 | 12th Avenue ▪ 11th Avenue | 70 | 96 | 206 | 444 |
| 40 | State Route 198 | 11th Avenue ▪ 10th Avenue | 70 | 104 | 224 | 483 |

## Table N-1 Traffic Noise Levels and Distances to 70, 65, & 60 dB $L_{dn}$ Contours
## Existing (2006) Conditions

| Segment | Roadway Name | Segment Location | $L_{dn}$ @ 100 feet | Distance to $L_{dn}$ Contours, feet 70 dB | 65 dB | 60 dB |
|---|---|---|---|---|---|---|
| 41 | State Route 198 | 10th Avenue ▪ State Route 43 | 70 | 107 | 230 | 494 |
| 42 | State Route 198 | State Route 43 ▪ 6th Avenue | 70 | 107 | 231 | 497 |
| 43 | State Route 198 | 6th Avenue ▪ Tulare Co. Line | 71 | 110 | 238 | 512 |
| 44 | State Route 269 | State Route 33 ▪ Avenal Cutoff Road | 64 | 39 | 83 | 180 |
| 45 | State Route 269 | Avenal Cutoff Road ▪ Seventh Avenue | 62 | 28 | 61 | 131 |
| 46 | Avenal Cutoff | State Route 269 ▪ Nevada Avenue | 61 | 26 | 55 | 119 |
| 47 | Avenal Cutoff | Nevada Avenue ▪ State Route 198 | 63 | 37 | 79 | 170 |
| 48 | Excelsior Avenue | 22nd Avenue ▪ State Route 41 | 58 | 16 | 35 | 75 |
| 49 | Excelsior Avenue | State Route 41 ▪ 19th Avenue | 60 | 21 | 45 | 96 |
| 50 | Excelsior Avenue | 19th Avenue ▪ 14th Avenue | 62 | 27 | 59 | 126 |
| 51 | Excelsior Avenue | 14th Avenue ▪ 12 1/2 Avenue | 62 | 28 | 61 | 131 |
| 52 | Excelsior Avenue | 12 1/2 Avenue ▪ 12th Avenue | 63 | 34 | 73 | 157 |
| 53 | Excelsior Avenue | 12th Avenue ▪ State Route 43 | 61 | 26 | 57 | 122 |
| 54 | Excelsior Avenue | State Route 43 ▪ 6th Avenue | 55 | 11 | 23 | 49 |
| 55 | Flint Avenue | 6th Avenue ▪ State Route 43 | 58 | 15 | 33 | 71 |
| 56 | Flint Avenue | State Route 43 ▪ 11th Avenue | 60 | 23 | 49 | 105 |
| 57 | Flint Avenue | 11th Avenue ▪ State Route 41 | 60 | 21 | 46 | 99 |
| 58 | Fremont Avenue | State Route 41 ▪ 22nd Avenue | 55 | 11 | 23 | 49 |
| 59 | Grangeville Boulevard | Grangeville Bypass ▪ 22nd Avenue | 61 | 26 | 57 | 122 |
| 60 | Grangeville Boulevard | 22nd Avenue ▪ State Route 41 | 63 | 34 | 73 | 157 |
| 61 | Grangeville Boulevard | State Route 41 ▪ 18th Avenue | 63 | 36 | 77 | 165 |
| 62 | Grangeville Boulevard | 18th Avenue ▪ 12th Avenue | 64 | 37 | 80 | 173 |
| 63 | Grangeville Boulevard | Hanford City Limits ▪ 6th Avenue | 61 | 26 | 56 | 121 |
| 64 | Grangeville Boulevard | 6th Avenue ▪ Tulare Co. Line | 61 | 26 | 57 | 122 |
| 65 | Grangeville Bypass | Grangeville Boulevard ▪ Fresno Co. Line | 61 | 26 | 56 | 121 |
| 66 | Houston Avenue | 17th Avenue ▪ 14th Avenue | 66 | 55 | 117 | 253 |
| 67 | Houston Avenue | 14th Avenue ▪ 12th Avenue | 60 | 20 | 43 | 93 |
| 68 | Houston Avenue | 12th Avenue ▪ 10th Avenue | 62 | 30 | 65 | 139 |
| 69 | Houston Avenue | 10th Avenue ▪ State Route 43 | 62 | 28 | 61 | 132 |
| 70 | Houston Avenue | State Route 43 ▪ 2nd Avenue | 63 | 33 | 71 | 152 |
| 71 | Jackson Avenue | State Route 198 ▪ 18th Avenue | 58 | 15 | 33 | 71 |
| 72 | Jackson Avenue | 18th Avenue ▪ State Route 43 | 55 | 10 | 20 | 44 |
| 73 | Kansas Avenue | State Route 41 ▪ 18th Avenue | 58 | 15 | 33 | 71 |
| 74 | Kansas Avenue | 18th Avenue ▪ 15th Avenue | 62 | 29 | 63 | 136 |
| 75 | Kansas Avenue | 15th Avenue ▪ 10th Avenue | 60 | 21 | 44 | 96 |
| 76 | Kansas Avenue | 10th Avenue ▪ State Route 43 | 63 | 36 | 78 | 167 |
| 77 | Kansas Avenue | State Route 43 ▪ Tulare Co. Line | 61 | 27 | 58 | 126 |
| 78 | Lacey Boulevard | 13th Avenue ▪ 18th Avenue | 65 | 50 | 107 | 230 |
| 79 | Lacey Boulevard | 18th Avenue ▪ State Route 41 | 58 | 17 | 37 | 79 |



## Table N-1 Traffic Noise Levels and Distances to 70, 65, & 60 dB $L_{dn}$ Contours Existing (2006) Conditions

| Segment | Roadway Name | Segment Location | $L_{dn}$ @ 100 feet | Distance to $L_{dn}$ Contours, feet 70 dB | 65 dB | 60 dB |
|---|---|---|---|---|---|---|
| 80 | Laurel Avenue | 18th Avenue ▪ State Route 41 | 55 | 10 | 22 | 47 |
| 81 | Laurel Avenue | State Route 41 ▪ Avenal Cutoff | 56 | 12 | 25 | 54 |
| 82 | Nevada Avenue | Fresno Co. Line ▪ Avenal Cutoff | 60 | 23 | 49 | 106 |
| 83 | Nevada Avenue | Avenal Cutoff ▪ State Route 41 | 52 | 7 | 14 | 30 |
| 84 | Nevada Avenue | 22nd Avenue ▪ Tulare Co. Line | 54 | 9 | 19 | 41 |
| 85 | Pueblo Avenue | 19th Avenue ▪ 10th Avenue | 50 | 5 | 11 | 23 |
| 86 | Utica Avenue | 25th Avenue ▪ 14th Avenue | 55 | 10 | 21 | 45 |
| 87 | Utica Avenue | 14th Avenue ▪ 12th Avenue | 54 | 8 | 18 | 38 |
| 88 | Utica Avenue | 12th Avenue ▪ 6th Avenue | 54 | 8 | 18 | 38 |
| 89 | Whitley Avenue | 6th Avenue ▪ 10th Avenue | 57 | 13 | 27 | 59 |
| 90 | 6th Avenue | Utica Avenue ▪ Kern Co. Line | 52 | 6 | 13 | 27 |
| 91 | 6th Avenue | Plymouth Avenue ▪ Utica Avenue | 56 | 11 | 24 | 52 |
| 92 | 6th Avenue | Houston Avenue ▪ State Route 198 | 49 | 4 | 8 | 17 |
| 93 | 6th Avenue | State Route 198 ▪ Fargo Avenue | 56 | 12 | 26 | 57 |
| 94 | 6th Avenue | Fargo Avenue ▪ Tulare Co. Line | 56 | 11 | 23 | 50 |
| 95 | 10th Avenue | Kansas Avenue ▪ Idaho Avenue | 55 | 11 | 23 | 50 |
| 96 | 10th Avenue | Idaho Avenue ▪ Houston Avenue | 58 | 15 | 33 | 70 |
| 97 | 10th . Avenue | Utica Avenue ▪ Nevada Avenue | 59 | 19 | 41 | 89 |
| 98 | 10th . Avenue | Nevada Avenue ▪ Niles | 58 | 15 | 32 | 70 |
| 99 | 12th Avenue | Grangeville Boulevard ▪ Fargo Avenue | 62 | 28 | 61 | 131 |
| 100 | 12th Avenue | Fargo Avenue ▪ Excelsior Avenue | 61 | 24 | 51 | 110 |
| 101 | 12 ⁄ Avenue | Excelsior Avenue ▪ Fresno Co. Line | 60 | 20 | 43 | 93 |
| 102 | 14th Avenue | Excelsior Avenue ▪ Flint Avenue | 55 | 11 | 23 | 49 |
| 103 | 14th Avenue | Flint Avenue ▪ Grangeville Boulevard | 60 | 20 | 43 | 94 |
| 104 | 14th Avenue | Grangeville Boulevard ▪ Houston Avenue | 62 | 31 | 66 | 143 |
| 105 | 14th Avenue | Houston Avenue ▪ Kansas Avenue | 58 | 17 | 37 | 79 |
| 106 | 18th Avenue | Flint Avenue ▪ Grangeville Boulevard | 53 | 8 | 17 | 37 |
| 107 | 18th Avenue | Grangeville Boulevard ▪ Lacey Boulevard | 59 | 19 | 42 | 90 |
| 108 | 18th Avenue | State Route 198 ▪ Jackson Avenue | 63 | 32 | 69 | 148 |
| 109 | 18th Avenue | Jackson Avenue ▪ Laurel Avenue | 57 | 13 | 29 | 62 |
| 110 | 22nd Avenue | Grangeville Boulevard ▪ Excelsior Avenue | 56 | 11 | 24 | 52 |

Source: Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) with inputs from the project traffic consultant, Caltrans, and Bollard Acoustical Consultants, Inc.

## Table N-2 Traffic Noise Levels and Distances to 70, 65, & 60 dB $L_{dn}$ Contours

## Future (2035) Conditions

| Segment | Roadway Name | Segment Location | $L_{dn}$ @ 100 feet | Distance to $L_{dn}$ Contours, feet 70 dB | 65 dB | 60 dB |
|---|---|---|---|---|---|---|
| 1 | Interstate 5 | Kern Co. Line ▪ Utica Avenue | 79 | 383 | 826 | 1779 |
| 2 | Interstate 5 | Utica Avenue ▪ State Route 41 | 79 | 402 | 865 | 1864 |
| 3 | Interstate 5 | State Route 41 ▪ Fresno Co. Line | 79 | 379 | 815 | 1757 |
| 4 | State Route 33 | Kern Co. Line ▪ State Route 41 | 62 | 29 | 63 | 136 |
| 5 | State Route 33 | State Route 41 ▪ 7th Avenue | 65 | 49 | 106 | 228 |
| 6 | State Route 33 | 7th Avenue ▪ State Route 269 | 65 | 48 | 103 | 221 |
| 7 | State Route 33 | State Route 269 ▪ Fresno Co. Line | 63 | 33 | 71 | 154 |
| 8 | State Route 41 | Kern Co. Line ▪ State Route 33 | 68 | 75 | 162 | 349 |
| 9 | State Route 41 | State Route 33 ▪ Interstate 5 | 67 | 60 | 130 | 281 |
| 10 | State Route 41 | Interstate 5 ▪ Bernard Drive | 69 | 85 | 184 | 395 |
| 11 | State Route 41 | Bernard Drive ▪ Quail Avenue | 69 | 82 | 178 | 383 |
| 12 | State Route 41 | Quail Avenue ▪ Nevada Avenue | 68 | 72 | 155 | 334 |
| 13 | State Route 41 | Nevada Avenue ▪ Jackson Avenue | 69 | 83 | 179 | 385 |
| 14 | State Route 41 | Jackson Avenue ▪ State Route 198 | 71 | 109 | 234 | 504 |
| 15 | State Route 41 | State Route 198 ▪ Bush Street | 74 | 176 | 380 | 818 |
| 16 | State Route 41 | Bush Street ▪ Houston Avenue | 72 | 137 | 294 | 634 |
| 17 | State Route 41 | Houston Avenue ▪ Hanford Armona Rd | 72 | 137 | 294 | 634 |
| 18 | State Route 41 | Hanford-Armona Road ▪ Grangeville Blvd | 73 | 157 | 338 | 727 |
| 19 | State Route 41 | Grangeville Boulevard ▪ Fresno Co. Line | 72 | 129 | 277 | 597 |
| 20 | State Route 43 | Tulare Co. Line ▪ Railroad Drive | 69 | 80 | 173 | 372 |
| 21 | State Route 43 | State Route 137 ▪ Corcoran Bypass | 70 | 101 | 218 | 470 |
| 22 | State Route 43 | Corcoran Bypass ▪ Kansas Avenue | 70 | 102 | 219 | 471 |
| 23 | State Route 43 | Kansas Avenue ▪ Houston Avenue | 68 | 77 | 166 | 357 |
| 24 | State Route 43 | Houston Avenue ▪ State Route 198 | 70 | 98 | 210 | 453 |
| 25 | State Route 43 | State Route 198 ▪ Lacey Boulevard | 69 | 91 | 195 | 420 |
| 26 | State Route 43 | Lacey Boulevard ▪ Grangeville Boulevard | 69 | 89 | 191 | 412 |
| 27 | State Route 43 | Grangeville Boulevard ▪ 10th Avenue | 69 | 80 | 171 | 369 |
| 28 | State Route 43 | 10th Avenue ▪ Excelsior Avenue | 70 | 102 | 220 | 474 |
| 29 | State Route 43 | Excelsior Avenue ▪ Fresno Co. Line | 71 | 108 | 233 | 502 |
| 30 | State Route 137 | State Route 43 ▪ Tulare Co. Line | 64 | 41 | 89 | 191 |
| 31 | State Route 198 | Fresno Co. Line ▪ LNAS | 67 | 67 | 145 | 312 |
| 32 | State Route 198 | LNAS ▪ Avenal Cutoff Road | 72 | 129 | 279 | 600 |
| 33 | State Route 198 | Avenal Cutoff Road ▪ State Route 41 | 73 | 151 | 325 | 701 |
| 34 | State Route 198 | State Route 41 ▪ 18th Avenue | 74 | 180 | 388 | 837 |
| 35 | State Route 198 | 18th Avenue ▪ Houston Avenue | 74 | 182 | 393 | 846 |
| 36 | State Route 198 | Houston Avenue ▪ 14th Avenue | 75 | 201 | 432 | 931 |
| 37 | State Route 198 | 14th Avenue ▪ Hanford-Armona Road | 75 | 201 | 434 | 935 |
| 38 | State Route 198 | Hanford-Armona Road ▪ 12th Avenue | 74 | 186 | 401 | 865 |

## Table N-2 Traffic Noise Levels and Distances to 70, 65, & 60 dB $L_{dn}$ Contours
## Future (2035) Conditions

| Segment | Roadway Name | Segment Location | $L_{dn}$ @ 100 feet | Distance to $L_{dn}$ Contours, feet 70 dB | 65 dB | 60 dB |
|---|---|---|---|---|---|---|
| 39 | State Route 198 | 12th Avenue ▪ 11th Avenue | 74 | 194 | 418 | 901 |
| 40 | State Route 198 | 11th Avenue ▪ 10th Avenue | 73 | 167 | 360 | 775 |
| 41 | State Route 198 | 10th Avenue ▪ State Route 43 | 73 | 150 | 323 | 696 |
| 42 | State Route 198 | State Route 43 ▪ 6th Avenue | 73 | 162 | 348 | 750 |
| 43 | State Route 198 | 6th Avenue ▪ Tulare Co. Line | 73 | 158 | 340 | 733 |
| 44 | State Route 269 | State Route 33 ▪ Avenal Cutoff Road | 67 | 67 | 144 | 311 |
| 45 | State Route 269 | Avenal Cutoff Road ▪ Seventh Avenue | 69 | 82 | 176 | 380 |
| 46 | Avenal Cutoff | State Route 269 ▪ Nevada Avenue | 67 | 60 | 129 | 278 |
| 47 | Avenal Cutoff | Nevada Avenue ▪ State Route 198 | 67 | 59 | 128 | 275 |
| 48 | Excelsior Avenue | 22nd Avenue ▪ State Route 41 | 59 | 18 | 38 | 82 |
| 49 | Excelsior Avenue | State Route 41 ▪ 19th Avenue | 61 | 26 | 55 | 118 |
| 50 | Excelsior Avenue | 19th Avenue ▪ 14th Avenue | 62 | 30 | 64 | 138 |
| 51 | Excelsior Avenue | 14th Avenue ▪ 12 1/2 Avenue | 63 | 35 | 75 | 162 |
| 52 | Excelsior Avenue | 12 1/2 Avenue ▪ 12th Avenue | 64 | 38 | 82 | 177 |
| 53 | Excelsior Avenue | 12th Avenue ▪ State Route 43 | 65 | 47 | 101 | 217 |
| 54 | Excelsior Avenue | State Route 43 ▪ 6th Avenue | 60 | 22 | 48 | 103 |
| 55 | Flint Avenue | 6th Avenue ▪ State Route 43 | 58 | 16 | 34 | 72 |
| 56 | Flint Avenue | State Route 43 ▪ 11th Avenue | 64 | 41 | 88 | 189 |
| 57 | Flint Avenue | 11th Avenue ▪ State Route 41 | 63 | 34 | 72 | 156 |
| 58 | Fremont Avenue | State Route 41 ▪ 22nd Avenue | 60 | 23 | 50 | 108 |
| 59 | Grangeville Blvd | Grangeville Bypass ▪ 22nd Avenue | 67 | 64 | 139 | 299 |
| 60 | Grangeville Blvd | 22nd Avenue ▪ State Route 41 | 66 | 54 | 116 | 250 |
| 61 | Grangeville Blvd | State Route 41 ▪ 18th Avenue | 65 | 47 | 101 | 217 |
| 62 | Grangeville Blvd | 18th Avenue ▪ 12th Avenue | 65 | 44 | 94 | 203 |
| 63 | Grangeville Blvd | Hanford City Limits ▪ 6th Avenue | 68 | 69 | 148 | 318 |
| 64 | Grangeville Blvd | 6th Avenue ▪ Tulare Co. Line | 66 | 51 | 109 | 235 |
| 65 | Grangeville Bypass | Grangeville Boulevard ▪ Fresno Co. Line | 64 | 40 | 86 | 185 |
| 66 | Houston Avenue | 17th Avenue ▪ 14th Avenue | 66 | 58 | 124 | 268 |
| 67 | Houston Avenue | 14th Avenue ▪ 12th Avenue | 63 | 36 | 77 | 166 |
| 68 | Houston Avenue | 12th Avenue ▪ 10th Avenue | 64 | 41 | 89 | 192 |
| 69 | Houston Avenue | 10th Avenue ▪ State Route 43 | 63 | 33 | 71 | 153 |
| 70 | Houston Avenue | State Route 43 ▪ 2nd Avenue | 64 | 39 | 85 | 183 |
| 71 | Jackson Avenue | State Route 198 ▪ 18th Avenue | 66 | 54 | 115 | 249 |
| 72 | Jackson Avenue | 18th Avenue ▪ State Route 43 | 63 | 36 | 77 | 166 |
| 73 | Kansas Avenue | State Route 41 ▪ 18th Avenue | 59 | 20 | 42 | 91 |
| 74 | Kansas Avenue | 18th Avenue ▪ 15th Avenue | 63 | 35 | 75 | 161 |
| 75 | Kansas Avenue | 15th Avenue ▪ 10 . Avenue | 65 | 46 | 98 | 211 |
| 76 | Kansas Avenue | 10 . Avenue ▪ State Route 43 | 64 | 39 | 84 | 180 |
| 77 | Kansas Avenue | State Route 43 ▪ Tulare Co. Line | 62 | 27 | 59 | 126 |

## Table N-2 Traffic Noise Levels and Distances to 70, 65, & 60 dB $L_{dn}$ Contours
## Future (2035) Conditions

| Segment | Roadway Name | Segment Location | $L_{dn}$ @ 100 feet | Distance to $L_{dn}$ Contours, feet 70 dB | 65 dB | 60 dB |
|---|---|---|---|---|---|---|
| 78 | Lacey Boulevard | 13th Avenue ▪ 18th Avenue | 67 | 60 | 129 | 278 |
| 79 | Lacey Boulevard | 18th Avenue ▪ State Route 41 | 61 | 26 | 57 | 123 |
| 80 | Laurel Avenue | 18th Avenue ▪ State Route 41 | 59 | 17 | 38 | 81 |
| 81 | Laurel Avenue | State Route 41 ▪ Avenal Cutoff | 56 | 13 | 27 | 58 |
| 82 | Nevada Avenue | Fresno Co. Line ▪ Avenal Cutoff | 61 | 27 | 58 | 124 |
| 83 | Nevada Avenue | Avenal Cutoff ▪ State Route 41 | 56 | 11 | 24 | 52 |
| 84 | Nevada Avenue | 22nd Avenue ▪ Tulare Co. Line | 56 | 12 | 26 | 56 |
| 85 | Pueblo Avenue | 19th Avenue ▪ 10th Avenue | 53 | 8 | 17 | 36 |
| 86 | Utica Avenue | 25th Avenue ▪ 14th Avenue | 60 | 20 | 44 | 95 |
| 87 | Utica Avenue | 14th Avenue ▪ 12th Avenue | 59 | 19 | 40 | 86 |
| 88 | Utica Avenue | 12th Avenue ▪ 6th Avenue | 60 | 23 | 49 | 105 |
| 89 | Whitley Avenue | 6th Avenue ▪ 10th Avenue | 58 | 17 | 37 | 79 |
| 90 | 6th Avenue | Utica Avenue ▪ Kern Co. Line | 61 | 24 | 52 | 112 |
| 91 | 6th Avenue | Plymouth Avenue ▪ Utica Avenue | 59 | 19 | 41 | 88 |
| 92 | 6th Avenue | Houston Avenue ▪ State Route 198 | 55 | 10 | 20 | 44 |
| 93 | 6th Avenue | State Route 198 ▪ Fargo Avenue | 56 | 12 | 26 | 56 |
| 94 | 6th Avenue | Fargo Avenue ▪ Tulare Co. Line | 49 | 4 | 9 | 19 |
| 95 | 10th Avenue | Kansas Avenue ▪ Idaho Avenue | 57 | 13 | 29 | 62 |
| 96 | 10th Avenue | Idaho Avenue ▪ Houston Avenue | 59 | 18 | 39 | 85 |
| 97 | 10th ▪ Avenue | Utica Avenue ▪ Nevada Avenue | 61 | 25 | 53 | 115 |
| 98 | 10th ▪ Avenue | Nevada Avenue ▪ Niles | 62 | 29 | 63 | 136 |
| 99 | 12th Avenue | Grangeville Boulevard ▪ Fargo Avenue | 67 | 67 | 144 | 310 |
| 100 | 12th Avenue | Fargo Avenue ▪ Excelsior Avenue | 63 | 33 | 71 | 152 |
| 101 | 12 ▪ Avenue | Excelsior Avenue ▪ Fresno Co. Line | 62 | 31 | 66 | 143 |
| 102 | 14th Avenue | Excelsior Avenue ▪ Flint Avenue | 57 | 13 | 28 | 61 |
| 103 | 14th Avenue | Flint Avenue ▪ Grangeville Boulevard | 60 | 21 | 44 | 96 |
| 104 | 14th Avenue | Grangeville Boulevard ▪ Houston Avenue | 60 | 23 | 50 | 107 |
| 105 | 14th Avenue | Houston Avenue ▪ Kansas Avenue | 59 | 18 | 38 | 82 |
| 106 | 18th Avenue | Flint Avenue ▪ Grangeville Boulevard | 58 | 16 | 35 | 75 |
| 107 | 18th Avenue | Grangeville Boulevard ▪ Lacey Boulevard | 61 | 24 | 51 | 109 |
| 108 | 18th Avenue | State Route 198 ▪ Jackson Avenue | 67 | 60 | 130 | 280 |
| 109 | 18th Avenue | Jackson Avenue ▪ Laurel Avenue | 59 | 18 | 39 | 84 |
| 110 | 22nd Avenue | Grangeville Boulevard ▪ Excelsior Avenue | 57 | 13 | 27 | 59 |

Source: Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) with inputs from the project traffic consultant, Caltrans, and Bollard Acoustical Consultants, Inc.

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# III. RAIL TRANSPORTATON NOISE

Railroad lines throughout the County primarily travel through County agricultural lands and the three Cities of Corcoran, Hanford and Lemoore. Armona is the only unincorporated Community District with a rail line (San Joaquin Valley Railroad) traveling through it. This section describes the existing railroad noise sources in the county and provides a description of the frequency and levels of noise generated.

## A. Existing Rail Transport

*Figure N -5. SJVRR Line*

Railroad operations within the County consist of the San Joaquin Valley Railroad (SJVRR) operating along the east-west railroad line and the Burlington Northern Santa Fe (BN&SF) and Amtrak operating along the north-south railroad line. Railroad operations along the SJVRR track consist of approximately one to two trains per week. More frequent train trips occur along the north-south rail lines with daily Amtrak passenger trips, and freight trips departing from Hanford and Corcoran industrial parks. Future railroad noise is difficult to predict given the uncertainty future demand or operational use.

## B. Existing Rail Noise Conditions

Table N-3 was developed to estimate the distances to the 60dB $L_{dn}$ railroad noise contour for various numbers of future daily trains along the San Joaquin Valley Railroad. The Table N-3 data also provide an estimate of the distances to the 60 dB $L_{dn}$ railroad noise contour assuming that one of the trains could pass during nighttime hours (10 pm - 7 am). The Table N-3 data assume a mean railroad sound exposure level (SEL) of 103 dB without horns and 108 dB with horns, each at a distance of 100 feet.

**Table N-3 SJV Railroad Noise Exposure as a Function of the Number of Daily Trains**

| | Only Daytime Train Passages: | | | | Including 1 Nighttime Train Passage: | | | |
|---|---|---|---|---|---|---|---|---|
| | $L_{dn}$ at 100 feet, dB | | Distance to 60 dB $L_{dn}$ Noise Contours | | $L_{dn}$ at 100 feet, dB | | Distance to 60 dB $L_{dn}$ Noise Contours | |
| Number of daily Trains | Without Horn | With Horn | Without Horn | With Horn | Without Horn | With Horn | Without Horn | With Horn |
| 1 | 54 | 59 | ▪ | ▪ | 64 | 69 | 185' | 400' |
| 2 | 57 | 62 | ▪ | 135' | 64 | 69 | 185' | 400' |
| 3 | 58 | 63 | ▪ | 160' | 64 | 69 | 185' | 400' |
| 4 | 60 | 65 | 100' | 215' | 65 | 70 | 215' | 465' |
| 5 | 61 | 66 | 100' | 250' | 65 | 70 | 215' | 465' |

Note: The predicted distances to the $L_{dn}$ contours assume a mean railroad sound exposure level of 103 dB

without horn usage and 108 dB with horn usage at a reference distance of 100 feet from the tracks.

The BNSF north-south railroad line is the more heavily traveled railroad line in the County. In order to quantify train activity and the associated noise levels along the BNSF tracks, continuous noise monitoring of railroad activity on the BNSF tracks was conducted. The SEL (Sound Exposure Level) of individual trains were recorded along with the duration and maximum noise level during the monitoring program. The monitoring location was along a section of track that was between grade crossings, and therefore, trains were not sounding warning horns. In general, train noise exposure levels along areas where trains sound warning horns (near grade crossings) are 5 decibels louder than areas where there is no horn usage. Therefore, in order to predict levels in the vicinity of grade crossings, Bollard Acoustical Consulting, Inc. (BAC) added 5 dB to the levels that were measured. The results of the monitoring indicated that approximately 28 railroad operations occurred on these tracks over a 24-hour period. The Mean SEL for railroad operations was used with the number of daily operations to compute the train noise levels at a distance of 100 feet from the center of the tracks and the approximate distances to the railroad contours for the BNSF tracks in Kings County. The results of this analysis are reported in Table N-4.

**Table N-4 BNSF Railroad Noise Exposure and Distances to Railroad Noise Contours**

| | Ldn @ 100' (dB) | | 60 dB Ldn Noise Contour (feet) | |
|---|---|---|---|---|
| Daily Operations | Without Horn | With Horn | Without Horn | With Horn |
| 28 | 73 | 78 | 750 | 1,600 |

Note: The predicted distances to the $L_{dn}$ contours assume a mean railroad sound exposure level of 104 dB without horn usage and 109 dB with horn usage at a reference distance of 75 feet from the tracks.
Source: Bollard Acoustical Consultants, Inc. 2007

# IV. AVIATION NOISE

The airports and aircraft used throughout the County include public, private and military operations. This section provides a description of the five main operators. Existing airport facilities within the county include the Hanford Municipal Airport and Lemoore Naval Air Station, several private airstrips and agricultural cropduster airstrips. This section provides a discussion of the types of aviation facilities and their locations within the County. Noise contours for military aircraft operations and flight paths originating from the Lemoore Naval Air Station have been updated to reflect current F/A-18 aircraft operations.

## A. Naval Air Station Lemoore

*Figure N -6. Military Aircraft Noise*

The Lemoore Naval Air Station (LNAS) is one of four Navy master jet bases in the United States, and is the home port for all active-duty, light-attack aircraft squadrons assigned to the Pacific Fleet. The station is located in the western sections of Kings and Fresno Counties. LNAS occupies 18,784 acres and controls an additional 10,020 acres in air space. The airfield consists of two offset parallel runways, each 13,500 feet by 200 feet, with a separation of 4,600 feet. From 2002-2006, aircraft operations Lemoore NAS totaled an average of 210,000 operations per year.

NAS Lemoore is the Navy's newest and largest master jet air station. The Pacific Strike Fighter Wing with its supporting facilities are home ported here. The primary aircraft based at NAS Lemoore is the F/A-18 Hornet Strike Fighter. In November, 1999, NAS Lemoore received its first F/A-18 E/F Super Hornets, which will eventually replace the F-14 Tomcat in fleet service as an air superiority fighter as well as assume, in a different configuration, the role of older F/A-18 Strike Fighters. Currently, there are a total of 175 Hornets and Super Hornets home-based at NAS Lemoore operating from two Fleet Replacement [training] Squadrons and ten Fleet [operational] Squadrons. In addition to the Hornet and Super Hornet population, NAS Lemoore also operates three UH-1N Search and Rescue Helicopters and hosts the UC-12B logistics aircraft. The noise exposure contours for NAS Lemoore are shown by Figure N-8. These newly updated noise contours represent the largest and most significant noise change since the previous general plan update adoption in 1993.

## B. Hanford Municipal Airport

Serving the majority of aviation demand is the Hanford Municipal Airport. Hanford Municipal Airport is the only city-owned air facility in the County and will remain the most active public use, public airport for the foreseeable future. There is one air charter service available and approximately 70 aircraft are based at the airport. Several crop dusters are also based at the airport though these planes cannot land at the airport while carrying chemicals used for agricultural spraying due to environmental restrictions regarding chemical dumping.

Hanford Municipal Airport is located on 295 acres at 9th Avenue and Hanford Armona Road. The City of Hanford acquired the site in 1950 by using Federal Aviation Administration (FAA) and State Department of Airports grants, and developed the location as Hanford's airport. Today, the facility

consists of one runway that is 5,180 feet in length; a 75-foot wide paved taxiway; several conventional hangers and tee shelters; and medium-intensity runway lights. All types of General Aviation aircraft use the facility including recreation and business aircraft. As of 2004, jet fuel is available. The average annual aircraft operations in 2005 were approximately 7,600 with 30% of those being single-engine propeller aircraft and 70% being itinerant operations. Annual operations are forecasted to be 13,800 and the number of based aircraft is expected to be 128 by the year 2025. The city of Hanford released an updated master plan in May 2007. That document, which is incorporated by reference, contains noise exposure contours for the facility.

## C. Corcoran Airport

The airfield is located on the west side of the City of Corcoran on Whitley Avenue and occupies 220 acres, which includes agricultural acreage. The airport has an asphalt runway with a parallel taxiway. Under private ownership of Lakeland Dusters Inc., the airfield is used primarily by a fleet of chemical application aircraft. Approximately 5,000 operations originate from the field at present. Single engine propeller aircraft traffic will increase to 8,100 and the number of based aircraft is expected to be 33 by the year 2020, according to Caltrans forecasts. The distribution of aircraft operations by aircraft type will be 50 percent crop dusters, 45 percent single-engine propeller aircraft, and five percent twin-engine propeller aircraft by the year 2020. Low-intensity runway lighting is available upon request and all aircraft operate in daylight hours from 7:00 a.m. to 7:00 p.m. There are accommodations for a total of 20 aircraft to be parked at the airport.

## D. Avenal Airport

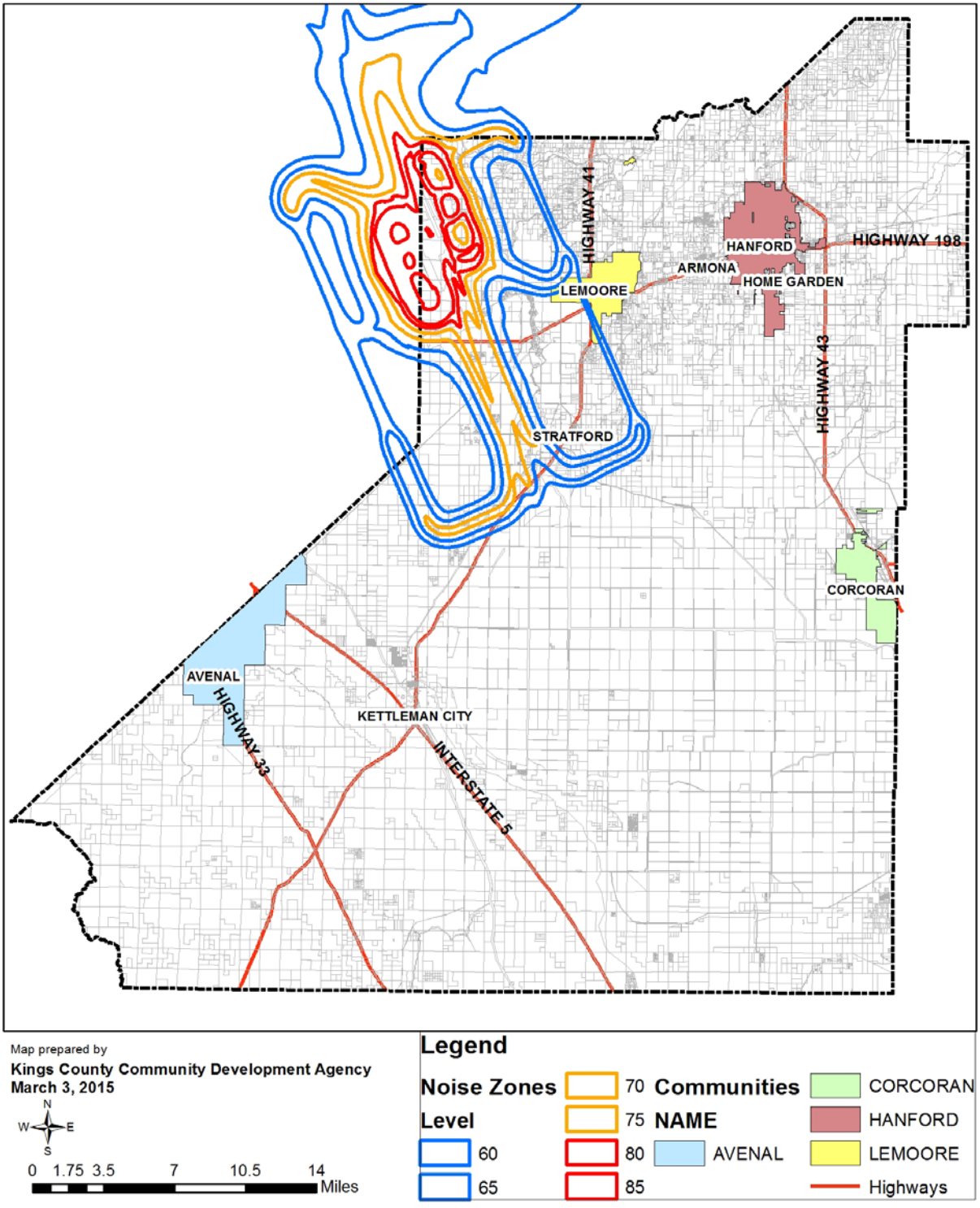
Located adjacent to the city off of State Route 33, the Avenal Airport is operated by the Central Valley Soaring Club. Prior permission is required for public use of the facility. Avenal Airport encompasses 83 acres, which includes one runway consisting of compacted earth with some stabilization. Two planes are based at the airport as well as several gliders owned by members of the soaring club. Noise impacts are not considered a problem at Avenal Airport as daily aircraft operations are too infrequent to contribute significantly to any airport noise problems for residents in the area.

## E. Airfields

*Figure N -7. Crop Duster Noise*

There are several airfields used by crop dusters and personal aircraft throughout the County. These facilities range in size from 1,000-foot unnamed and unpaved landing strips, to somewhat larger airfields with asphalt and lighted runways. Noise generated by crop-dusting activities varies, depending on the type of aircraft used and the proximity of the receiver to the operating aircraft. Noise generated by small aircraft activity significantly contributes to the ambient noise environment in the vicinity of these airfields, and should be considered where new noise-sensitive uses are proposed nearby.

**Figure N-8**
**Kings County General Plan - NAS Lemoore Noise Contours**



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# V. NON-TRANSPORTATION NOISE

Non-Transportation noise sources relate to agricultural operations, commercial and industrial facilities, and recreational activities within Kings County. The extent of these operations, facilities and activities throughout the County are limited and widely dispersed due largely to the predominant rural nature of the County.

The production of noise is a result of many processes and activities, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by Federal and State employee health and safety regulations (OSHA), but exterior noise levels may exceed locally acceptable standards. Commercial, recreational and public service facility activities can also produce noise, which affects adjacent sensitive land uses.

From a land use planning perspective, fixed-source noise control issues focus upon two goals: to prevent the introduction of new noise-producing uses in noise-sensitive areas, and to prevent encroachment of noise-sensitive uses upon existing noise-producing facilities. The first goal can be achieved by applying noise performance standards to proposed new noise-producing uses. The second goal can be met by requiring that new noise-sensitive uses in proximity to noise-producing facilities include mitigation measures to ensure compliance with those noise performance standards.

## A. Fixed Noise Sources

Descriptions of existing representative fixed noise sources in and adjacent to Kings County are provided below. These uses are intended to be representative of the relative noise generation of such uses, and are intended to identify specific noise sources, which should be considered in the review of development proposals. Site-specific noise analyses should be performed where noise sensitive land uses are proposed in proximity to these (or similar) noise sources, or where similar sources are proposed to be located near noise-sensitive land uses. Some specific noise-producing uses identified through field surveys are listed below.

- Agricultural Uses
- Penny-Newman Milling Company, LLC
- Bill B. Zanola Grain & Feed
- Del Monte Foods
- Crisp Warehouse
- Waste Management Incorporation
- General Service & Light Industrial
- Heating, Ventilating and Air Conditioning (HVAC) Systems
- Lemoore Raceway
- Water Ski Lakes

## 1. Agricultural Uses

There are numerous active agricultural uses within the County protected by the County's Right-to-Farm Ordinance. Agricultural uses are the principal and favored uses of land areas designated as agriculture in the Kings County General Plan. Due to the wide array of equipment types and conditions under which that equipment is used in the agriculture industry, noise generated by agricultural processes varies.. The Ordinance recognizes that "...agricultural activities and operations, including, but not limited to, equipment and animal noise; ...are conducted on a 24-hour a day, seven-day a week basis..." in these agricultural areas of the County. Therefore, normal and usual agricultural operation creating elevated sound levels are not normally considered a nuisance.

Maximum noise levels generated by farm-related tractors typically range from 77 to 85 dB at a distance of 50 feet from the tractor, depending on the horsepower of the tractor and the operating conditions. Due to the seasonal nature of the agricultural industry, there are often extended periods of time when no noise is generated on properties, which are actively being farmed, followed by short-term periods of intensive mechanical equipment usage and corresponding noise generation. Due to this high degree of variability of agricultural activities, it is not feasible to reliably quantify the noise generation of agricultural uses in terms of noise standards commonly utilized to assess impacts of other noise sources. However, these uses generate short-term periods of elevated noise during all hours of the day and night and possess the potential to generate adverse public reaction during intensive farm-related activities.

*Figure N -9. Agriculture Noise*

Hail Cannons are used in the County by some agricultural operations in an attempt to prevent or limit damage to crops caused by hailstorms. These cannons general high noise levels with the general theory that the shock wave from the noise will prevent hail from forming in the clouds. There are differing opinions as to the effectiveness of these cannons, but they are used within the County and should be considered a significant source of noise during land use planning decisions. Hail cannons are identified as crop protection equipment and are not specifically regulated sound uses.

## 2. Penny-Newman Milling Company, LLC

*Figure N -10. Grain Milling Noise*

Penny-Newman Milling Company is located at 10188 Kansas Avenue south of Hanford. According to Plant personnel, the company produces livestock feed 24 hours a day 7 days a week. The facility reportedly generates 168 (one-way) truck trips per day. Noise producing equipment at the facility include: 2 boilers, feed blending mixers, tractors, and skip loaders. In addition, the facility reportedly has railcars delivered and picked up 4 to 6 times per week. Currently, the facility is significantly set-back from any neighboring properties. However, noise generated by the facility should be considered if noise-sensitive uses were to be proposed nearby.

### 3. Bill B. Zanola Grain & Seed

*Figure N -11. Grain Processing Noise*

Bill B. Zanola Grain & Seed is located at 19702 Railroad Street in Stratford. According to the company President, Gary Zanola, the company stores wheat and barley seed. Typical on site noise producing equipment include a loader forklift and grain cleaner. The company operates between the hours of 7 am to 4 pm. From June to July the company generates 20 truck trips per day and from October to November, the company generates 10 truck trips per day. There are no plans for expansion.

The noise generation of the facility was quantified through a series of noise level measurements on September 11, 2007. During the noise level tests, the facility was assumed to be in normal seasonal operation. Directly east of the facility, noise measurements yielded an average noise level of 53 dBA at an approximate distance of 225 feet from what appeared to be the center of noise generation. South of the facility, noise measurements yielded an average noise level of 45 dBA at an approximate distance of 550 feet from what appeared to be the center of noise generation.

### 4. Del Monte Foods

*Figure N -12. Industrial Noise*

Del Monte Foods is located at 10652 Jackson Avenue just south of the Hanford City Limits. This facility is considered to be a significant noise-producing industry within the County. The company produces canned tomatoes. Seasonal operating hours were reported as 24-hours per day, 7 days per week from July through October during the on season and 6 am to 5 pm Monday through Friday during the off-season. Noise-producing equipment used at this facility includes steam boilers, evaporators, forklifts, trucks, refrigeration trailers, and tractors. During the on season, the facility reportedly generates approximately 290 truck trips per day and 35 truck trips per day during the off-season. In addition, the facility uses the railroad to ship and receive Monday through Friday usually from 2 pm to 5 pm.

The noise generation of the Del Monte Foods facility was quantified through a series of noise level measurements on September 11, 2007. During the noise level tests, the facility was assumed to be in normal seasonal operation. The noise generation of this industry was observed to be highest near the southern and eastern portions of the site, where most of the processing equipment is located (cooling towers, boilers, pumps, condensers, fans, etc.). At the property just south of the facility, noise measurements yielded an average noise level of 64 dBA at an approximate distance of 615 feet from what appeared to be the center of noise generation. At the property just east of the facility, noise measurements yielded an average noise level of 63 dBA at an approximate distance of 700 feet from what appeared to be the center of noise generation.

## 5. Crisp Warehouse

*Figure N -13. Warehouse Noise*


Crisp Warehouse is located at 20500 Main Street in Stratford. According to the Owner, Jim Crisp, the company offers Agricultural commodity storage, seed processing, and grain sales. Typical on site noise producing equipment include augers, conveyors, elevators, and cleaners. Peak operations are during the summer months with truck trip generations of 150-300 per day. There are no plans for expansion, however, the business may be sold in the near future.

## 6. Waste Management Incorporated

*Figure N -14. Raceway Noise*


Waste Management Incorporated is located at 35251 Old Skyline Road 3.5 miles west of Kettleman City's residential area. Typical hours of operation at this facility are from 8 am to 6 pm Monday through Friday. The landfill is surrounded by mostly undeveloped rolling terrain. Significant noise sources at this location include bulldozers, backup warning devices, compactors, excavators, garbage trucks, and private and commercial traffic using the landfill. The facility generates approximately 175 truck trips per day. Noise measurements were not conducted at this facility. However, measurements conducted at a similar landfill yielded an average noise level of 71 dBA at a distance of 100 feet from the main landfill activity area.

## 7. General Service Commercial and Light Industrial Uses

Noise sources associated with service commercial uses such as automotive repair facilities, wrecking yards, tire installation centers, car washes, loading docks, etc., are found at various locations within Kings County. The noise emissions of these types of uses are dependent on many factors, and are therefore, difficult to quantify precisely. Nonetheless, noise generated by these uses contribute to the ambient noise environment in the immediate vicinity of these uses, and should be considered where either new noise-sensitive uses are proposed nearby or where similar uses are proposed in existing residential areas.

## 8. Heating, Ventilating and Air Conditioning (HVAC) Systems

HVAC noise sources include fans, pumps, cooling towers, compressors, condensers, and boilers. HVAC equipment is associated with virtually every type of inhabited structure, including residential, commercial, and industrial uses. Large HVAC components are often housed in mechanical equipment rooms, which reduce the transmitted noise. However, HVAC equipment must sometimes be located outdoors to provide adequate ventilation or heat exchange.

## 9. Lemoore Raceway

*Figure N -15. Raceway Noise*

The Lemoore Raceway is located in the southeast corner of State Route 41 (19th Avenue) and Idaho Avenue within the City of Lemoore. The Raceway facility includes a 1/6 mile, semi-banked, midget car clay oval track. Racing typically takes place on Saturday nights. Maximum noise levels associated with raceways such as the Lemoore Raceway can register between 100 and 120 dBA within the vicinity of the track. As mentioned, the raceway is located within the Lemoore City Limits. However, adjacent properties are located within the County's jurisdiction, and noise generated by the raceway could significantly contribute to the ambient noise environment at these properties, and should be considered if new noise-sensitive uses are proposed nearby.

## 10. Water Ski Lakes

*Figure N -16. Water Ski Lake Noise*

There are three water ski lakes located throughout Kings County. One such facility, Sunrise Water Ski Park, is located at 18556 Jackson Avenue, approximately 2 miles south of the City of Lemoore. Significant noise sources at this type of facility include water ski boats and personal watercraft (jet skis). Bollard Acoustical Consultants, Inc. (BAC) file data indicate that water ski boat passbys produce a sound exposure level (SEL) of 80 dB and a maximum noise level ($L_{max}$) of 70 dB can typically be expected at a distance of 100 feet from the boat passage. Based on a SEL of 80 dB per boat passage, and an assumed 40 passages per hour, the average hourly noise level at a reference distance of 100 feet would be approximately 60 dB $L_{eq}$. BAC file data for modern personal watercraft (jet ski) passbys indicates that a sound exposure level (SEL) of 73 dB and a maximum noise level ($L_{max}$) of 66 dB can typically be expected at a distance of 100 feet from the point of passage. Based on a SEL of 73 dB per jet ski passage, and an assumed 60 passages per hour, the average hourly noise level at a reference distance of 100 feet would be approximately 55 dB $L_{eq}$.

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# VI. COMMUNITY NOISE SURVEY

A Community Noise Survey was performed at various locations within the County to quantify existing noise levels. The community noise survey consisted of ten short-term noise measurement locations and three 24-hour continuous noise measurement locations. The results of the short-term measurements are provided in Table N-5, and the results of the 24-hour continuous measurements are provided in Table N-6. The locations of all of the measurement sites are shown on Figure N-1.

**Table N-5 Kings County Short-Term Ambient Noise Survey Results**

| Site | Location | Dates | Period | Leq | Lmax | Estimated Ldn | Sources |
|---|---|---|---|---|---|---|---|
| 1 | Barstow Ave. & N. 5th Ave. | 8/6/07<br>8/6/07 | Morning<br>Afternoon<br>Nighttime | 52<br>38<br>47 | 73<br>52<br>51 | 53 | Natural sounds, Local Traffic |
| 2 | South end of 21 ½ Ave. | 8/6/07<br>8/6/07 | Morning<br>Afternoon<br>Nighttime | 41<br>39<br>42 | 48<br>45<br>49 | 48 | Distant local traffic, wind gusts, Natural Sounds, Distant aircraft takeoff |
| 3 | 2nd Ave. between SR 198 & Grangeville Blvd. | 8/6/07<br>8/6/07 | Morning<br>Afternoon<br>Nighttime | 49<br>44<br>42 | 63<br>55<br>44 | 49 | Natural Sounds, Distant Traffic |
| 4 | 22nd Ave. between SR 41 & Laurel Ave. | 8/6/07<br>8/6/07 | Morning<br>Afternoon<br>Nighttime | 35<br>37<br>34 | 46<br>48<br>40 | 40 | Natural Sounds, Distant Traffic |
| 5 | 5th Ave. between Kent Ave. & Kansas Ave. | 8/6/07<br>8/6/07 | Morning<br>Afternoon<br>Nighttime | 38<br>36<br>40 | 46<br>46<br>42 | 46 | Natural Sounds, Wind, Distant Agricultural Equipment |
| 6 | North of Redding Ave., just west of 10th Ave. | 8/6/07<br>8/6/07 | Morning<br>Afternoon<br>Nighttime | 38<br>35<br>50 | 54<br>45<br>52 | 56 | Natural Sounds, Aircraft flyover, Distant Agricultural Equipment |
| 7 | West of SR 33 at Tehama Ave. | 8/6/07<br>8/6/07 | Morning<br>Afternoon<br>Nighttime | 35<br>33<br>36 | 43<br>41<br>38 | 42 | Distant Traffic |
| 8 | Off Devils Den Rd. north of Xenia Ave. | 8/6/07<br>8/6/07 | Morning<br>Afternoon<br>Nighttime | 32<br>28<br>27 | 41<br>52<br>32 | 34 | Natural Sounds |
| 9 | North of Utica Ave. between 21st Ave. and 20 ½ Ave. | 8/6/07<br>8/6/07 | Morning<br>Afternoon<br>Nighttime | 34<br>34<br>23 | 47<br>44<br>34 | 34 | Natural Sounds |
| 10 | Off 6th Ave. (Dairy Ave.) South of Virginia Ave. | 8/6/07<br>8/6/07 | Morning<br>Afternoon<br>Nighttime | 33<br>37<br>27 | 45<br>50<br>36 | 36 | Distant Traffic |

Source: Bollard Acoustical Consultants, Inc. 2007

**Table N-6 Kings County 24-Hour Ambient Noise Survey Results**

| Site | Location | Dates | Period | Leq | Lmax | Estimated Ldn | Sources |
|---|---|---|---|---|---|---|---|
| A | Northeast corner of County | 8/7/07 | Day | 57 | 85 | 56 | Natural sounds, Agricultural Equipment |
| | | | Night | 44 | 75 | | |
| | | 8/8/07 | Day | 53 | 81 | 53 | |
| | | | Night | 44 | 71 | | |
| | | 8/9/07 | Day | 49 | 78 | 53 | |
| | | | Night | 46 | 74 | | |
| B | Eastern Central portion of County | 8/7/07 | Day | 47 | 69 | 52 | Natural sounds, traffic |
| | | | Night | 46 | 64 | | |
| | | 8/8/07 | Day | 56 | 93 | 55 | |
| | | | Night | 44 | 69 | | |
| | | 8/9/07 | Day | 51 | 73 | 54 | |
| | | | Night | 46 | 69 | | |
| C | Southwestern portion of County | 8/7/07 | Day | 48 | 81 | 51 | Natural sounds, Agricultural Equipment |
| | | | Night | 43 | 59 | | |
| | | 8/8/07 | Day | 56 | 97 | 55 | |
| | | | Night | 43 | 76 | | |
| | | 8/9/07 | Day | 56 | 92 | 55 | |
| | | | Night | 43 | 67 | | |

Source: Bollard Acoustical Consultants, Inc. 2007

# VII. NOISE MITIGATION OPTIONS

This section discusses noise mitigation options to reduce the exposure of County residents to excessive noise. Any noise problem may be considered as being composed of three basic elements: the noise source, a transmission path, and a receiver. The appropriate acoustical treatment for a given project should consider the nature of the noise source and the sensitivity of the receiver. The problem should be defined in terms of appropriate criteria (Ldn, Leq, or Lmax), the location of the sensitive receiver (inside or outside), and when the problem occurs (daytime or nighttime). Noise control techniques should then be selected to provide an acceptable noise environment for the receiving property while remaining consistent with local aesthetic standards and practical structural and economic limits.

## A. Noise Control Techniques

Fundamental noise control techniques for possible use as noise mitigation include the following:

### 1. Use of Setbacks

Noise exposure may be reduced by increasing the distance between the noise source and receiving use. Setback areas can take the form of open space, frontage roads, recreational areas, storage yards, etc. The available noise attenuation from this technique is limited by the characteristics of the noise source, but is generally about 4 to 6 dB per doubling of distance from the source.

### 2. Use of Barriers

Shielding by barriers can be obtained by placing walls, berms or other structures, such as buildings, between the noise source and the receiver. The effectiveness of a barrier depends upon blocking line-of-sight between the source and receiver, and is improved with increasing the distance the sound must travel to pass over the barrier as compared to a straight line from source to receiver. The difference between the distance over a barrier and a straight line between source and receiver is called the "path length difference", and is the basis for calculating barrier noise reduction.

Barrier effectiveness depends upon the relative heights of the source, barrier, and receiver. In general, barriers are most effective when placed close to either the receiver or the source. An intermediate barrier location yields a smaller path-length-difference for a given increase in barrier height than does a location closer to either source or receiver.

For maximum effectiveness, barriers must be continuous and relatively airtight along their length and height. To ensure that sound transmission through the barrier is insignificant, barrier mass should be about 4 lbs. /square foot, although a lesser mass may be acceptable if the barrier material provides sufficient transmission loss. Satisfaction of the above criteria requires substantial and well-fitted barrier materials, placed to intercept line of sight to all significant noise sources. Earth, in the form of berms or the face of a depressed area, is also an effective barrier material.

The attenuation provided by a barrier depends upon the frequency content of the source. Generally, higher frequencies are attenuated (reduced) more readily than lower frequencies. This results because a given barrier height is relatively large compared to the shorter wavelengths of high frequency sounds, while relatively small compared to the longer wavelengths of the frequency sounds. The effective center frequency for traffic noise is usually considered to be 550 Hz. Railroad engines, cars

and horns emit noise with differing frequency content, so the effectiveness of a barrier will vary for each of these sources. Frequency analyses are necessary to properly calculate barrier effectiveness for noise from sources other than highway traffic.

There are practical limits to the noise reduction provided by barriers. For highway traffic noise, a 5 to 10 dB noise reduction may often be reasonably attained. A 15 dB noise reduction is sometimes possible, but a 20 dB noise reduction is extremely difficult to achieve. Barriers usually are provided in the form of walls, berms, or berm/wall combinations. The use of an earth berm in lieu of a solid wall may provide up to 3 dB additional attenuation over that attained by a solid wall alone, due to the absorption provided by the earth. Berm/wall combinations offer slightly better acoustical performance than solid walls, and are often preferred for aesthetic reasons.

### 3. Site Design

Buildings can be placed on a project site to shield other structures or areas, to remove them from noise-impacted areas, and to prevent an increase in noise level caused by reflections. The use of one building to shield another can significantly reduce overall project noise control costs, particularly if the shielding structure is insensitive to noise. As an example, carports or garages can be used to form or complement a barrier shielding adjacent dwellings or an outdoor activity area. Similarly, one residential unit can be placed to shield another so that noise reduction measures are needed for only the building closest to the noise source. Placement of outdoor activity areas within the shielded portion of a building complex, such as a central courtyard, can be an effective method of providing a quiet retreat in an otherwise noisy environment. Patios or balconies should be placed on the side of a building opposite the noise source, and "wing walls" can be added to buildings or patios to help shield sensitive uses.

Another option in site design is the placement of relatively insensitive land uses, such as commercial or storage areas, between the noise source and a more sensitive portion of the project. Examples include development of a commercial strip along a busy arterial to block noise affecting a residential area, or providing recreational vehicle storage or travel trailer parking along the noise-impacted edge of a mobile home park. If existing topography or development adjacent to the project site provides some shielding, as in the case of an existing berm, knoll or building, sensitive structures or activity areas may be placed behind those features to reduce noise control costs.

Site design should also guard against the creation of reflecting surfaces, which may increase onsite noise levels. For example, two buildings placed at an angle facing a noise source may cause noise levels within that angle to increase by up to 3 dB. The open end of "U"-shaped buildings should point away from noise sources for the same reason. Landscaping walls or noise barriers located within a development may inadvertently reflect noise back to a noise-sensitive area unless carefully located. Avoidance of these problems while attaining an aesthetic site design requires close coordination between local agencies, the project engineer and architect, and the noise consultant.

### 4. Building Design

When structures have been located to provide maximum noise reduction by barriers or site design, noise reduction measures may still be required to achieve an acceptable interior noise environment. The cost of such measures may be reduced by placement of interior dwelling unit features. For example, bedrooms, living rooms, family rooms and other noise-sensitive portions of a dwelling can be located on the side of the unit farthest from the noise source.



Bathrooms, closets, stairwells, and food preparation areas are relatively insensitive to exterior noise sources, and can be placed on the noisy side of a unit. When such techniques are employed, noise reduction requirements for the building facade can be significantly reduced, although the architect must take care to isolate the noise-impacted areas by the use of partitions or doors.

In some cases, external building facades can influence reflected noise levels affecting adjacent buildings. This is primarily a problem where high-rise buildings are proposed, and the effect is most evident in urban areas, where an "urban canyon" may be created. Bell-shaped or irregular building facades and attention to the orientation of the building can reduce this effect.

## 5. Noise Reduction by Building Facades

When interior noise levels are of concern in a noisy environment, noise reduction may be obtained through acoustical design of building facades. Standard residential construction practices provide 10-15 dB noise reduction for building facades with open windows, and approximately 25 dB noise reduction when windows are closed. Thus, a 25 dB exterior-to-interior noise reduction can be obtained by the requirement that building design include adequate ventilation systems, allowing windows on a noise-impacted facade to remain closed under any weather condition.

Where greater noise reduction is required, acoustical treatment of the building facade is necessary. Reduction of relative window area is the most effective control technique, followed by providing acoustical glazing (thicker glass or increased air space between panes) in low air infiltration rate frames, use of fixed (non-movable) acoustical glazing, or the elimination of windows. Noise transmitted through walls can be reduced by increasing wall mass (using stucco or brick in lieu of wood siding), isolating wall members by the use of double- or staggered- stud walls, or mounting interior walls on resilient channels. Noise control for exterior doorways is provided by reducing door area, using solid-core doors, and by acoustically sealing door perimeters with suitable gaskets. Roof treatments may include the use of plywood sheathing under roofing materials.

Whichever noise control techniques are employed, it is essential that attention be given to installation of weather-stripping and caulking of joints. Openings for attic or subfloor ventilation may also require acoustical treatment; tight-fitting fireplace dampers and glass doors may be needed in aircraft noise-impacted areas.

Design of acoustical treatment for building facades should be based upon analysis of the level and frequency content of the noise source. The transmission loss of each building component should be defined, and the composite noise reduction for the complete facade calculated, accounting for absorption in the receiving room. A one-third octave band analysis is a definitive method of calculating the A-weighted noise reduction of a facade.

A common measure of transmission loss is the Sound Transmission Class (STC). STC ratings are not directly comparable to A-weighted noise reduction, and must be corrected for the spectral content of the noise source. Requirements for transmission loss analyses are outlined by Title 24 of the California Code of Regulations.

## 6. Use of Vegetation

Trees and other vegetation are often thought to provide significant noise attenuation. However, approximately 100 feet of dense foliage (so that no visual path extends through the foliage) is required to achieve a 5 dB attenuation of traffic noise. Thus, the use of vegetation as a noise barrier should not be considered a practical method of noise control unless large tracts of dense foliage are part of the existing landscape.

Vegetation can be used to acoustically "soften" intervening ground between a noise source and receiver, increasing ground absorption of sound and thus increasing the attenuation of sound with distance. Planting of trees and shrubs is also of aesthetic and psychological value, and may reduce adverse public reaction to a noise source by removing the source from view, even though noise levels will be largely unaffected. It should be noted, however, that trees planted on the top of a noise control berm can actually slightly degrade the acoustical performance of the barrier. This effect can occur when high frequency sounds are diffracted (bent) by foliage and directed downward over a barrier.

In summary, the effects of vegetation upon noise transmission are minor, and are primarily limited to increased absorption of high frequency sounds and to reducing adverse public reaction to the noise by providing aesthetic benefits.

# VIII. NOISE POLICIES

The *Noise Element* establishes central goals, objectives and policies to guide planning decisions throughout the County unincorporated areas in a manner that limits and reduces the exposure of County residents and noise sensitive land uses from excessive noise levels. These goals, objectives and policies are drawn from and are consistent with other General Plan Elements, and the four unincorporated Community Plans.

## A. Transportation Noise Protection

**N GOAL A1** **Protect existing and future residents of Kings County from the harmful effects of exposure to excessive noise. More specifically, to protect existing noise-sensitive land uses from new uses that would generate noise levels which are incompatible with those uses, and to discourage new noise-sensitive land uses from being developed near sources of high noise levels.**

**N OBJECTIVE A1.1**
***Reduce the exposure of County residents and noise-sensitive land uses to excessive noise generated from Traffic and Railroad Noise Sources.***

**N Policy A1.1.1:** **Appropriate noise mitigation measures shall be included in a proposed project design when the proposed new use(s) will be affected by traffic or railroad noise sources and exceed the County's "Noise Standards for New Uses Affected by Transportation Noise Sources" (Table N-7). Mitigation measures shall reduce projected noise levels to a state of compliance with this standard.**

**N OBJECTIVE A1.2**
***Protect County residents and noise-sensitive land uses from excessive aircraft noise, while preventing the intrusion of noise sensitive land uses in areas that are essential to the continued unobstructed operation of the County's aircraft installations.***

**N Policy A1.2.1:** **New development proposals that may be affected by aircraft noise shall be evaluated relative to the noise level standards contained in the County's "Noise Standards for New Uses Affected by Transportation Noise Sources" (Table N-7).**

**N Policy A1.2.2:** **New residential development shall be prohibited when proposed within the 70 CNEL or greater noise contours for any military airfield, airport, or helipad within Kings County. Latest available airport noise contours shall be used in determining the extent of airport noise contours. This policy**

**does not pertain to existing residential remodels, expansions or additions, and does not apply to reconstruction of previously existing residences. Noise generated from private airstrips is not applicable to this policy.**

**N Policy A1.2.3:** **New residential development proposed in airport noise environments within the 60 dB CNEL contours or greater 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. Provide disclosure statements to prospective buyers that the parcel is located in an area which may be exposed to frequent aircraft noise events (arrivals, departures, overflights, engine run-ups, etc.).**

**C. An Avigation Easement shall be recorded with the Kings County Recorder, for each newly created residential parcel or agricultural parcel less than 10 acres in size, or when a building permit is issued on an existing parcel or lot, within any area, or the 60 dB CNEL contour of the Naval Air Station, Lemoore flight patterns as shown on Figure N-8. Copies shall be filed with the County's Community Development Agency. The Avigation Easement shall be granted to the owner of the airport (i.e., City of Hanford) and acknowledge the property is located near a source of aircraft noise and grants the right of flight and unobstructed passage of all aircraft, civilian and military, into and out of the subject public use airport, emergency services heliport, or military airfield.**

**Exceptions: New accessory residential dwellings on parcels zoned Agricultural and within the 60 dB CNEL contours or greater, shall be permitted but would be subject to the conditions listed above.**

## B. Non-Transportation Noise Protection

**N GOAL B1** **Protect the economic base of Kings County by preventing the encroachment of noise-sensitive land uses into areas affected by existing noise-producing uses. More specifically, to recognize that noise is an inherent by-product of many land uses, including agriculture, and to prevent new noise-sensitive land uses from being developed in areas affected by existing noise-producing uses.**

**N OBJECTIVE B1.1**
***Reduce the potential for exposure of County residents and noise-sensitive land uses to excessive noise generated from Non-Transportation Noise Sources.***

**N Policy B1.1.1:** **Appropriate noise mitigation measures shall be included in a proposed project design when the proposed new use(s) will be affected by or include non-transportation noise sources and exceed the County's "Non-Transportation Noise Standards" (Table N-8). Mitigation measures shall reduce projected noise levels to a state of compliance with this standard within sensitive areas. These standards are applied at the sensitive areas of the receiving use.**

**N Policy B1.1.2:** **Hail cannons are considered significant noise sources in the County and any use of hail cannons shall obtain approval from the Kings County Agriculture Commissioner prior to use and/or construction of the device.**

**N Policy B1.1.3:** **Noise associated with construction activities shall be considered temporary, but will still be required to adhere to applicable County *Noise Element* standards.**

**N OBJECTIVE B1.2**
***Properly consider the potential for excessive noise generated from transportation projects within the County and seek mitigation measures where feasible to reduce the potential for sensitive land use exposure to excessive noise from transportation related projects.***

**N Policy B1.2.1:** **A noise analysis shall be prepared in accordance with the County's "Requirements for Acoustical Analyses Prepared in Kings County" (Table N-9) for capacity enhancing roadways or rail projects, or the construction of new roadways or railways. If the proposed project will result in a significant noise level increase as defined below, or the project would cause noise levels to exceed the County's noise standards (Table N-7), noise mitigation measures should be considered to reduce traffic and/or rail noise levels to a level consistent with those standards. A significant increase is defined as follows:**

| Pre-Project Noise Environment (Ldn) | Significant Increase |
|---|---|
| Less than 60 dB | 5+ dB |
| 60 - 65 dB | 3+ dB |
| Greater than 65 dB | 1.5+ dB |



**This policy requires only that noise mitigation measures be considered in cases where the significance thresholds described above would be exceeded. However, there are various factors which may affect the feasibility or reasonableness of the mitigation which should be considered during the project environmental review process, including the following:**

**A. The severity of the impact.**
**B. The cost and effectiveness of the mitigation.**
**C. The number of properties which would benefit from the mitigation.**
**D. Aesthetic, safety and engineering considerations.**

**N Policy B1.2.2:** **If noise-reducing pavement is to be utilized in conjunction with a roadway improvement project, the acoustical benefits of such pavement shall be included in the noise analysis prepared for the project.**

## C. Excessive Noise Prevention

**N GOAL C1** **Provide sufficient noise exposure information so that existing and potential noise impacts may be effectively addressed in the land use planning and project review processes, and allow flexibility in the development of infill properties which may be located in elevated noise environments.**

**N OBJECTIVE C1.1**
**Ensure the sufficient provision of project and site noise information is available along with alternative mitigation approaches to better inform County staff and land use decision makers.**

**N Policy C1.1.1:** **All noise analyses prepared to determine compliance with the noise level standards contained within this *Noise Element* shall be prepared in accordance with the County's "Requirements for Acoustical Analyses Prepared in Kings County" (Table N-9).**

**N Policy C1.1.2:** **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, prior to consideration of the use of noise barriers.**

**N Policy C1.1.3:** **Noise analyses prepared for multi-family residential projects, town homes, mixed-use, condominiums, or other residential projects where floor ceiling assemblies or party-walls are common to different owners/occupants, shall address**

compliance with the State of California Noise Insulation standards.

**N OBJECTIVE C1.2**
**Ensure consistency with other General Plan Elements by allowing flexible standards for infill development projects that may be near exterior noise sources, and allow the continued exemption of certain emergency operations, permitted activities, or normal daily operations of certain public facilities.**

**N Policy C1.2.1:** **The County shall have the flexibility to consider the application of 5 dB less restrictive exterior noise standards than those prescribed in Tables N-7 and N-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 N-7 or N-8 standards. In such cases, the rationale for such consideration shall be clearly presented and disclosure statements and noise easements should be included as conditions of project approval.**

**N Policy C1.2.2:** **The following sources of noise shall be exempt from the provisions of this *Noise Element*:**

**A. Agricultural activities, operations and facilities conducted or used for commercial agricultural purposes in a manner consistent with proper and accepted customs and standards. The Kings County Right To Farm Ordiance establishes this exemption for agricultural land use protection within the County.**

**B. 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, equipment or generators shall be exempt provided such testing occurs during daytime hours and does not occur for periods of more than one hour per week.**

**C. Activities at public schools, parks or playgrounds, provided such activities occur during daytime hours.**

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

**E. In the event of an emergency involving an agricultural activity which requires prompt action to protect crops or equipment, the County's Emergency Services Director, or his or her designee, can exempt noise generated by such action from the provisions of this Element.**



**Table N-7 Noise Standards for New Uses Affected by Transportation Noise Sources**

| New Land Use | Sensitive[1] Outdoor Area - CNEL | Sensitive Interior[2] Area - CNEL | Notes |
|---|---|---|---|
| Residential | 60 | 45 | 5 |
| Residences in Ag. Zones | 65 | 45 | 6 |
| Transient Lodging | 65 | 45 | 3,5 |
| Hospitals & Nursing Homes | 60 | 45 | 3, 4, 5 |
| Theaters & Auditoriums | --- | 35 | 3 |
| Churches, Meeting Halls | 60 | 40 | 3 |
| Schools, Libraries, etc. | 60 | 40 | 3 |
| Office Buildings | 65 | 45 | 3 |
| Commercial Buildings | 65 | 50 | 3 |
| Playgrounds, Parks, etc. | 70 | --- | |
| Industry | 65 | 50 | 3 |

Notes:

1. Sensitive areas are defined 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 or aircraft noise, a maximum (Lmax) noise level standard of 70 dB shall be applied to all sleeping rooms with windows closed to reduce the potential for sleep disturbance during nighttime noise events.
6. Due to the noise-generating nature of agricultural activities, it is understood that residences constructed on agriculturally-designated land uses may be exposed to elevated noise levels. As a result, a 65 dB CNEL exterior noise level standard is applied to noise-sensitive outdoor areas of these uses.

**Table N-8 Non-Transportation Noise Standards**
**Average (Leq) / Maximum (Lmax)[1]**

| | Outdoor Area[2] | | Interior[3] | |
|---|---|---|---|---|
| Receiving Land Use | Daytime | Nighttime | Day & Night | Notes |
| All Residential | 55 / 75 | 50 / 70 | 35 / 55 | |
| Transient Lodging | 55 / 75 | --- | 35 / 55 | 4 |
| Hospitals & Nursing Homes | 55 / 75 | --- | 35 / 55 | 5, 6 |
| Theaters & Auditoriums | --- | --- | 30 / 50 | 6 |
| Churches, Meeting Halls, Schools, Libraries, etc. | 55 / 75 | --- | 35 / 60 | 6 |
| Office Buildings | 60 / 75 | --- | 45 / 65 | 6 |
| Commercial Buildings | 55 / 75 | --- | 45 / 65 | 6 |
| Playgrounds, Parks, etc. | 65 / 75 | --- | --- | 6 |
| Industry | 60 / 80 | --- | 50 / 70 | 6 |

Notes:

1. The Table N-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 N-8, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.
2. Sensitive areas are defined acoustic terminology section.
3. Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
4. Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.
5. 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.
6. The outdoor activity areas of these uses (if any), are not typically utilized during nighttime hours.

**Table N-9 Requirements for Acoustical Analyses Prepared in Kings County**

An acoustical analysis prepared pursuant to the *Noise Element* shall:

A. Be the responsibility of the applicant.

B. Be prepared by qualified persons experienced in the fields of environmental noise assessment and architectural acoustics.

C. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.

D. Estimate projected future (20 year) noise levels in terms of the Standards of Tables N-7 and N-8, and compare those levels to the adopted policies of the *Noise Element*.

E. Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the *Noise Element*.

F. Estimate interior and exterior noise exposure after the prescribed mitigation measures have been implemented.

# IX. IMPLEMENTATION

**A. Noise Program 1:**

Apply noise standards identified in this element to all permits approved through zoning and land division activities in Kings County.