

CHAPTER IV

NOISE

A. INTRODUCTION AND PURPOSE**1. State Government Code Provisions**

Section 65302 (f) of the California Government Code mandates that the General Plan for each County contain a Noise Element which is designed to identify and appraise noise problems in the community.

The State Office of Noise Control has established guidelines which require that current and projected noise levels be analyzed and quantified for the following noise sources:

- (1) Highways and freeways.
- (2) Primary arterials and major local streets.
- (3) Passenger and freight on-line 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 noise sources identified by local agencies as contributing to the community noise environment.

Noise contours are required for these sources, stated in terms of the community noise equivalent level (CNEL) or day-night average level (Ldn), and may be used as a guide for establishing a pattern of land uses that minimizes the exposure of county residents to excessive noise. (The reader should reference the Appendix for a complete definition of all acoustical terminology used in this Chapter.)

2. Related State Regulations

Other State laws and regulations regarding noise control are directed towards aircraft, motor vehicles and noise in general. California Administrative Code, Title 21, Subchapter 6, establishes noise level criteria for civilian airports in California. These regulations apply to the airport owner, and are enforced by the county in which the airport is located. A noise impact boundary based upon the 65 dBA CNEL contour is established, and measures are specified to attain land use compatibility with respect to aircraft/airport noise.

The California Vehicle Code sets noise emission standards for new vehicles,

including autos, trucks, motorcycles and off-road vehicles. Performance standards are also applied to vehicles operated on public streets and roadways. Section 216 of the Streets and Highways Code regulates traffic noise as received at schools near freeways. The Harbors and Navigation Code regulates noise emissions from new motorboats and those operated in or upon inland waters.

Title 24 of the California Administrative Code regulates interior noise levels within multiple-occupancy dwellings affected by noise from traffic, aircraft operations, railroads and industrial facilities. The State Penal Code (Section 415) prohibits loud and unusual noise that disturbs the peace, while the Civil Code defines public nuisances which may be caused by noise. The California Environmental Quality Act includes noise as one of the factors in determining environmental impacts.

3. Purpose/Relationship to Other General Plan Chapters

The purposes of the Noise Chapter of the General Plan are to provide mechanisms to reduce and/or eliminate existing conflicts between land uses and noise, and further to ensure that future noise and land use conflicts are minimized. This Chapter is distinct from a noise ordinance in that it is a pro-active policy document which is directed at minimizing future noise/land use conflicts. A noise ordinance, on the other hand, is a regulatory tool directed at resolving existing conflicts between land use and noise. A local noise ordinance (if adopted) should generally be consistent with the adopted goals, objectives and policies of this chapter.

The Noise Chapter is the portion of the General Plan oriented to addressing the State requirements previously described. As one of seven General Plan Chapters, several issues and policy concerns overlap with other chapters. The Noise Chapter is most related to the Land Use and Circulation Chapters. Its relationship to the Land Use Chapter is direct in that the implementation of either chapter has the potential to result in the creation or elimination of a noise conflict between differing land uses. The Land Use Chapter is consistent with the Noise Chapter, by discouraging the development of incompatible adjacent land uses, limiting impacts upon noise sensitive uses and avoiding encroachment upon existing noise-producing facilities.

B. NOISE CHAPTER POLICY ISSUES

1. Existing and Future Noise Environments

a. Overview

There are several potentially significant primary sources of community noise within the County. These sources include traffic on major roadways and highways, railroad operations, airports and industrial/ agricultural activities. In order to identify and analyze these sources, the County retained the services of Brown-

Buntin Associates, Inc. (BBA), which is an acoustical consulting firm. This firm conducted all field noise survey work and performed the technical studies contained in this Chapter. Analytical noise modeling techniques and noise measurements have been used by BBA to develop generalized Ldn noise contours for these sources for existing (1988) and future (2000) conditions with the exception of airports, where existing noise exposure information was utilized.

Analytical noise modeling techniques make use of source-specific data including average levels of activity, hours of operation, seasonal fluctuations and average levels of noise from source operations. Analytical methods have been developed for a number of environmental noise sources including roadways, railroad line operations, railroad yard operations, airports and industrial plants. Such methods will produce reliable results as long as data inputs and assumptions are valid for the sources being studied. The analytical methods used in this chapter closely follow recommendations made by the State Office of Noise Control, and were supplemented where appropriate by field-measured noise level data to account for local conditions. It should be noted that the noise exposure contours presented in this chapter are based upon annual average conditions, and are not intended to be site-specific where local topography, vegetation or intervening structures may significantly affect noise exposure at a particular location. A community noise survey was conducted to describe existing noise levels in noise-sensitive areas so that noise level performance standards could be developed to maintain an acceptable noise environment.

b. Roadways

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to develop Ldn contours for all State Highways and major County roadways in Merced County. The FHWA Model is the analytical method presently favored for traffic noise prediction by most state and local agencies, including Caltrans. The FHWA Model is based upon reference energy emission levels for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver and the acoustical characteristics of the site. The FHWA Model was developed to predict hourly Leq values for free-flowing traffic conditions, and is generally considered to be accurate within 1.5 dBA. To predict Ldn values it is necessary to determine the hourly distribution of traffic for a typical 24-hour day and adjust the traffic volume input data to yield an equivalent hourly traffic volume.

Traffic data representing annual average traffic volumes for existing and future conditions were obtained from Caltrans and the Merced County Planning Department. The day/night distribution of traffic and the truck mix were based upon Caltrans information and BBA file data for similar roadways. Using this traffic information and the FHWA methodology, traffic noise levels as defined by Ldn were calculated for existing (1988) and projected future (2000) traffic volumes.

Distances from the center of the roadway to the 60 and 65 dBA Ldn contour values along with input data are summarized in Table IV-1. Noise contour maps are included in Appendix C of this chapter. It is possible to calculate the distance to the 60 or 65 dBA Ldn contours for a roadway segment listed in Table I based on hypothetical increases in traffic. To do this for a 25%, 50% or 100% increase in traffic volumes (all other variables remaining the same), multiply the appropriate Ldn contour distance in Table I by 1.16, 1.31 or 1.58, respectively.

It should be noted that since calculations did not take into consideration shielding caused by local buildings or topographical features, the distances reported in Table I should be considered as worst-case estimates of noise exposure along roadways in the County.

Typically, noise exposure behind the first row of homes or other buildings will be reduced by 5-15 dBA.

c. Railroads

Railroad operations in Merced County consist of high speed mainline operations on the Atchison, Topeka and Santa Fe (AT&SF) Railway and on the Southern Pacific Transportation Company (S.P.) railroad along State Route 99. A low speed S.P. branchline operation occurs in the west side of the County through the communities of South Dos Palos and Volta.

Noise levels from railroad operations within Merced County were quantified using the analytical methods developed in 1973 by Wyle Laboratories (Wyle Laboratories Report WCR-73-5). The Wyle methodology calculates noise exposure based upon reference noise level data for various types of trains under different operating conditions, distance from the tracks, speed and the characteristics of the track the trains are passing over.

TABLE IV-1

**TRAFFIC AND NOISE LEVEL DATA
STATE HIGHWAYS AND MAJOR LOCAL STREETS
MERCED COUNTY, CALIFORNIA**

Roadway Description	AADT 1988	D/N 2000	Split	Speed		Distance (Feet)* to Ldn contours				
				%MT	%HT	1988 (MPH)	2000 65 dB	60 dB	65 dB	60 dB

State Highways										
I-5										
Fresno CL to SR 33	19,500	32,000	84/16	2	28	65	431	929	600	1292
SR 33 to Stanislaus CL SR 99	17,700	31,000	84/16	4	21	65	362	780	526	1134
Madera CL to SR 140	31,000	48,500	75/25	4	21	55	544	1172	728	1569
SR 140 to Livingston	35,000	58,000	75/25	3	17	55	533	1149	747	1609
Livingston to Stanislaus CL SR 33	29,000	47,700	75/25	4	23	55	543	1169	756	1629
Fresno CL to SR 152	4,700	7,800	85/15	4	10	50	84	180	117	253
SR 152 to SR 140	3,400	5,300	85/15	3	15	50	78	169	105	227
SR 140 to Stanislaus CL SR 59	5,800	9,100	85/15	5	8	50	90	195	122	263
Madera CL to Sandy Mush	3,500	7,400	87/13	5	7	55	66	142	109	234
Sandy Mush to Merced	6,800	14,300	87/13	5	7	55	103	221	168	363
Merced to Oakdale Rd. SR 140	5,100	10,700	87/13	5	7	55	85	182	139	299
I-5 to Gustine CL	3,700	12,800								
SR 33 to SR 165	2,400	4,300	93/7	3	9	55	81	174	119	256
SR 165 to SR 59	1,900	3,600	93/7	3	9	55	38	82	58	125
SR 59 to Planada	6,300	9,900	93/7	3	9	55	85	182	114	246
Planada to Mariposa CL SR 152 (Nth)	2,800	4,100	93/7	3	9	55	49	106	63	137
Santa Clara CL to SR 33	14,500	34,900	87/13	4	26	55	257	554	462	996
SR 33 (N) to SR 33 (S)	12,700	26,033	87/13			55				
SR 33 (S) to Madera CL SR 165	11,500	23,000	87/13	3	16	55	189	407	300	647
I-5 to SR 140	3,450	5,250	93/7	2	10	50	55	117	75	162
SR 140 to Williams	4,700	7,800	93/7			50				
Williams to Stanislaus CL	11,500	21,700	93/7			45-50				

TABLE IV-1 (CONTINUED)

Roadway Description	AADT 1988	D/N 2000	Split	Distance (Feet)* to Ldn contours						
				Speed %MT	1988 %HT	2000 (MPH)	65 dB	60 dB	65 dB	60 dB

County Roads										
Yosemite Ave.										
Gardner to Arboleda	2,800	7,300	90/10	1	2	40	23	50	44	95
Childs Rd.										
Tower to Ivett	1,900	5,300	90/10	2	4	45	25	55	50	90
Ashby Rd.										
Buhach to Merced CL	5,200	11,600	90/10	0.5	1.5	35	27	58	46	99
Santa Fe Dr.										
Stanislaus CL to Winton	3,000	6,300	90/10	1	2	50	34	74	56	121
Winton to Shaffer	7,000	13,800	90/10	2	3	45	57	122	89	192
Shaffer to Castle AFB	12,000	22,000	90/10	0.5	1.5	55	97	208	105	311
Castle AFB to SR 59	19,000	35,200	90/10	0.5	1.5	55	131	282	198	426
Walnut Ave.										
Winton to Livingston	3,900	10,400	90/10	2	4	40	35	76	68	147
River Rd.										
Kelly to Stanislaus CL	1,700	5,200	90/10	2	4	45	24	51	50	107
Vincent Rd.										
El Capitan to Stanislaus CL	2,300	7,000	90/10	3	4	45	30	64	62	134
Lincoln Bl.										
Liberty to SR 140	2,100	4,600	90/10	3	6	50	35	76	60	129
Ingomar Grade										
SR 152 to Malta	2,200	5,500	90/10	2	4	50	32	70	60	129

AAADT = Annual Average Daily Traffic

D/N Split = Day/Night

% MT = Medium Trucks

% HT = Heavy Trucks

*Distances are from center of roadway

Sources: Caltrans

Merced County Planning Department

Brown-Buntin Associates, Inc.

Santa Fe Railroad:

Mainline operations on the AT & SF Railway in Merced County affect the communities of Le Grand, Planada, Winton, Cressey and Ballico. According to the Chief Dispatcher's office in Fresno, there are presently an average of 22 freight and 4 passenger trains per day in this area. Estimates of future operations were not available from the railroad, although Amtrack is proposing to add 2 more daily passenger trains per day along this line. Maximum speed is 70 mph for freights and 79 mph for passenger trains. Freight trains may occur at any time during the day or night, and passenger trains generally operate during the daytime (7:00 a.m. - 10:00 p.m.) hours.

According to the Wyle methodology, the above-described type and frequency of operations will result in noise exposures of 65 and 60 dBA Ldn at approximately 345 and 650 feet, respectively, from the center of the tracks. Noise levels in the vicinity of grade crossings are somewhat higher than this due to the use of the warning horn. If it is assumed that operations may increase by 15%, the distances to the 65 and 60 dBA Ldn contours would be approximately 375 and 700 feet from the tracks.

Source: Chief Dispatcher, AT&SF Railway, Fresno, California

Southern Pacific Railroad:

Mainline operations on the S.P. Railroad in Merced County affect the cities of Merced, Atwater and Livingston, and the communities of Franklin/Beachwood and Delhi. According to the Trainmaster's office in Sacramento, there are presently about 20 freight train operations per day in the Merced County area. Passenger trains presently do not operate on S.P. tracks in Merced County. Estimates of future operations were not available from the railroad. Train speeds on the mainline are generally 45-65 mph, and train movements may occur at any time during the night or day. According to the Wyle methodology, the above-described type and frequency of operation results in noise exposures of 65 and 60 dBA Ldn at approximately 335 and 630 feet, respectively, from the center of the tracks. Noise levels in the vicinity of grade crossings are somewhat higher than this due to the use of the warning horn. A hypothetical 15% increase in operations would place the 65 and 60 dBA Ldn contours at 360 and 675 feet from the tracks.

A branchline operation on the S.P. Railroad in Merced County affects the City of Los Banos, and the communities of South Dos Palos and Volta. Operations on the branchline presently occur four times per day. Train movements may occur at any time of the day or night. Speeds are generally 25-35 mph. According to the Wyle methodology, the above-described type and frequency of operation results in noise exposures of 65 and 60 dBA Ldn at approximately 110 and 280 feet, respectively, from the center of the tracks. Noise levels in the vicinity of grade crossings would

be higher due to use of the warning horn. A hypothetical 15% increase in operations would place the 65 and 60 dBA Ldn contours at 150 and 325 feet from the tracks.

Source: Trainmaster's Office, S.P. Railway, Sacramento, California

d. Industrial and Other Major Noise Sources

The production of noise is an inherent part of many industrial, commercial and agricultural processes, even when the best available noise control technology is applied. Noise production within an industrial, commercial or agricultural facility is controlled by Federal and State employee health and safety regulations (OSHA and Cal-OSHA), but exterior noise emissions from such operations have the potential to exceed locally acceptable standards at noise sensitive land uses.

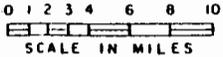
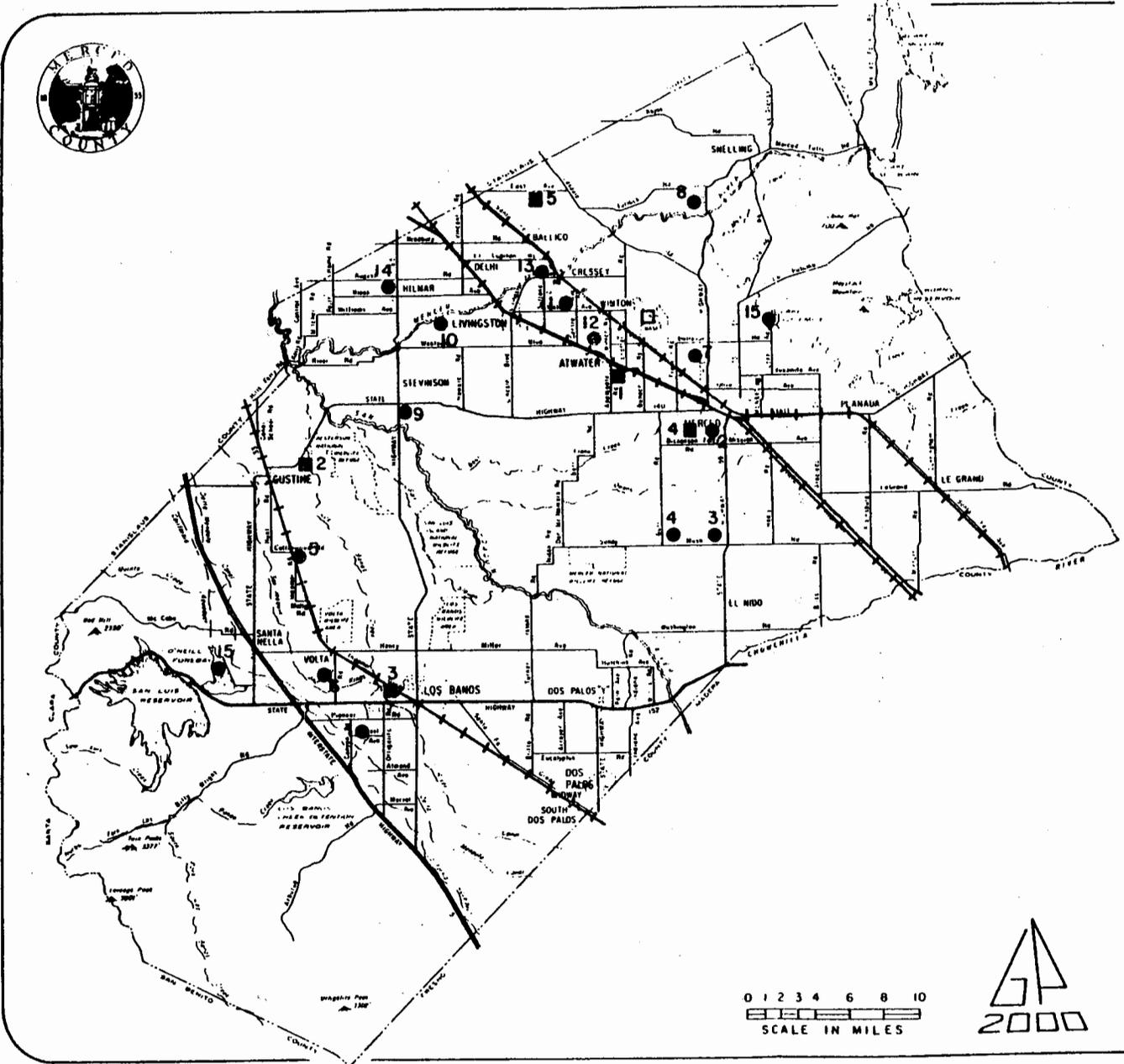
From a land use planning perspective, industrial noise control issues focus upon two objectives: to prevent the introduction of new noise generating uses in a noise sensitive area, and to prevent encroachment of noise sensitive uses upon existing noise generating facilities. The first objective can be achieved by applying noise performance standards to proposed new noise generating uses. The second objective can be met by requiring that new noise sensitive uses in proximity to existing noise generating facilities include mitigation measures to ensure compliance with noise performance standards.

It should be recognized that the propagation of noise is dependent on atmospheric conditions. Atmospheric turbulence, temperature, humidity and other conditions, which change from day to night and season to season, will result in noise level fluctuations. This phenomenon is most apparent at distances greater than a few hundred feet from a noise source. Since many sensitive receiver locations in Merced County are 1/2 mile or more from noise sources, it is probable that noise level measurements conducted at different seasons and under different atmospheric conditions will produce different results.

The following descriptions of existing industrial and other major noise sources in Merced County are intended to be representative of the relative noise impacts of such uses, and to identify specific noise sources which should be considered in the review of development proposals in their environs. The locations of these sources are shown in Map 8, and are identified by specific numbers.

Los Banos Gravel Company: (1)

The Los Banos Gravel Company is located near Sunset Avenue and Creek Road about five miles southwest of Los Banos. Significant noise producing equipment at the facility include a concrete batch plant, jaw and cone crushers, a screening plant, Euclid haul trucks and other trucks. The concrete batch plant typically operates 5 days per week, and the sand and gravel plant generally operates 2 - 2 1/2 times per



Major Noise Sources

LEGEND:

- 1. LOS BANOS GRAVEL COMPANY
 - 2. FORREST FREEZE TRUCKING
 - 3. CALIFORNIA AGRICULTURAL POWER COMPANY (CAPCO)
 - 4. FOSTER FARMS CHICKEN FARM
 - 5. INGOMAR PACKING
 - 6. PACIFIC FLYAWAY DOG KENNEL
 - 7. INDUSTRIAL AREA, SR 99 AND BELCHER AVENUE
 - 8. WESTERN STONE PRODUCTS
 - 9. VALLEY AUTO WRECKERS
 - 10. E & J GALLO WINERY
 - 11. ROGERS
 - 12. JR. WOOD
 - 13. MONTE CRISTO PACKING COMPANY
 - 14. DAIRY
 - 15. LAKE YOSEMITE, O'NEILL FOREBAY
- PUBLIC USE AIRPORTS
 - 1. ATWATER
 - 2. GUSTINE
 - 3. LOS BANOS
 - 4. MERCED
 - 5. TURLOCK
 - CASTLE AIR FORCE BASE
 - +—+—+—+— RAILROADS

SOURCE: Brown-Burtin Associates, Inc. February 1989

MAP 8
MERCED COUNTY
YEAR 2000 GENERAL PLAN

week. Operating hours of the sand and gravel plant are generally 6:30 a.m. to 2:00 p.m. during the summer, and 7:30 a.m. to 4:00 p.m. during the winter. The concrete batch plant generally starts at about 5:30 a.m. during the summer. Noise level measurements were conducted within the plant and at the nearest residence north of the plant on January 27, 1989. At a location about 100 feet from the cone crusher, jaw crushers and screening plant, noise levels ranged from 80-81 dBA. At 50 feet in front of a Euclid truck, noise levels at high idle ranged from 87-90 dBA, depending on which muffler was installed. At the nearest residence (22236 Sunset Ave.), the maximum level from the Euclid was 76 dBA. The median level (L50) from all sources at this location was about 60 dBA. The location of the generalized hourly 55 dBA Leq contour for summer operations is shown in Appendix D of this chapter.

Source: Mr. Gordon Mills, Manager

Forrest Freeze Trucking: (2)

Forrest Freeze Trucking operates a truck storage facility near the corner of Childs Avenue and Brantley Street, south of Merced. Approximately 5-10 truck trailers are stored on the property at a given time. Refrigerated trailers are not stored on the property. During the time of inspection (January 26, 1989), there were no truck movements on or off the property. BBA file date for noise levels from diesel trucks indicates that slowly moving trucks may produce a maximum level of 71-74 dBA at 100 feet, and idling trucks produce 62-63 dBA at 100 feet.

Source: Mr. Forrest Freeze

Capco: (3)

Capco operates a bio-mass electrical generating plant at the corner of Highway 59 and Sandy Mush Road. Noise producing equipment at the plant includes loaders, conveyors, fans, pumps, diesel trucks, a boiler, cooling tower and ash burner. The plant operates year-round, 24-hours a day. At the south property line of the facility, noise levels measured January 24, 1989 ranged from 63-65 dBA. The primary noise source was the ash burner, which was about 150 feet from the microphone. According to the spokesman for the facility, most of the other plant equipment was shut down at the time. Based on the measured noise levels for the ash burner and reported operating hours, the generalized hourly 55 dBA Leq contour would extend about 425 feet from the ash burner, as shown in Appendix D at the end of this chapter. When all equipment is in operation, noise contours will probably extend farther from the plant.

Source: Mr. Rodger Radcliff, Operation Supervisor

Foster Farms Chicken Farm: (4)

This chicken farm is located near Sandy Mush and Gurr Roads. The facility operates year-round, 24-hours a day. Noise sources associated with the facility are chickens, ventilation fans, motor carts and truck traffic. Noise from the chickens and fans was not noted outside the property since the buildings housing the birds are closed and appear to be well insulated. The nearest resident is 150 feet away, and reportedly has not complained about noise from the facility.

Ingomar Packing: (5)

Ingomar Packing is located off Ingomar Grade near Malta Road. The plant processes and cans tomato products from late June until mid-September. During this season, the plant operates 24-hours per day, seven days per week. Significant sources of noise at the plant are reportedly fans, boilers, cooling towers, fork lifts and trucks. Since the plant was undergoing maintenance during BBA's survey, representative noise level measurements were not possible. According to BBA's file information, a tomato processing facility near Hanford may be similar. Noise exposure from this facility ranges from 60-61 dBA at 930 feet.

Source: Mr. Ronald E. Prudhomme, Plant Manager

Pacific Flyaway Dog Kennel: (6)

This business is located between Volta and Hwy. 152 on Volta Road (14909 Volta Road). Dogs are boarded at the kennel year-round. During BBA's survey, dogs were not barking. However, BBA file data indicate that noise levels from barking dogs in an unenclosed kennel range from 65-79 dBA at a distance of 50 feet.

Industrial Area Near S.R. 59 and Belcher Avenue: (7)

This small industrial area is located about one mile north of Merced along S.R. 59, north of Belcher Avenue. Businesses located in the area include Holl Sheet Metal, Brendella Boats, Bar Brand Glass and CVC Concrete. CVC Concrete batches concrete and supplies sand and gravel, and is the only industry at this location having any apparent noise significance. Hours of operation are typically 6:00 a.m. - 3:00/4:00 p.m., five days per week. Approximately 30-40 truck loads of concrete are produced by the plant each day. At 120 feet from the batch plant, the noise level was a steady 81 dBA while a truck was being loaded. The noise level at the south property line of the business was a steady 63 dBA.

Source: Mr. Harold Neal, Manager

Western Stone Products, Inc.: (8)

Western Stone Products is a sand and gravel extraction and processing operation located off S.R. 59 near the Merced River, about five miles west of Snelling. Operating hours are typically 7:00 a.m. - 3:30 p.m. (6:00 a.m. - 5:30 p.m. during the summer), Monday through Friday. Significant noise producing equipment include cone and jaw crushers, a screening plant, concrete batch plant and two asphalt plants. Noise levels produced by the plant were measured January 25, 1989 near the screening plant, and at the nearest residential location located at the south side of the Merced River about one mile south of the plant. At about 250 feet from the screening plant and crushers, noise levels were a steady 79-80 dBA. At the nearest residence, levels ranged from about 42-43 dBA. It was noted during the measurements that the concrete and asphalt plants were not in operation. When this equipment is in operation, noise levels may be higher at adjoining residential locations. BBA has file information on facilities near Fresno and Visalia which may be similar. The Fresno operation produced noise levels from 46-48 dBA at about 2,000 feet; at the Visalia facility, the noise produced was 60 dBA at about 1,400 feet.

Source: Mr. Gerald Coburn, Jr., Plant Superintendent

Valley Auto Wreckers: (9)

Located at 1330 No. Lander, near the intersection of S.R. 165 and S.R. 140, Valley Auto Wreckers dismantles and repairs automobiles. Operating hours are 8:00 a.m. - 5:00 p.m., Monday through Saturday. Noise producing equipment at the business consist of a crusher, tractors and idling engines on test stands. The crusher reportedly operates about one hour/week. None of the equipment was operating during BBA's survey. BBA has measured a car crusher and loader located near Fresno, California. Noise level measurements of this equipment at 100 feet from the crusher resulted in levels of 75-87 dBA, with the crusher alone producing levels from 76-78 dBA.

Source: Mr. Al Romero, Owner

E. & J. Gallo Winery: (10)

The E. & J. Gallo Winery is located at 18000 River Road, about three miles west of Livingston. Peak activity at the winery is during the crushing season (September-October). Principle noise sources at the plant are pumps, refrigeration equipment, motors and cooling towers. All equipment operates 24-hours per day. Trucks enter and leave the plant from about 8:00 a.m. - 10:00 p.m. during the crushing season. Noise level measurements were made along the perimeter of the plant on January 26, 1989. On the south perimeter, noise levels ranged from 64-65 dBA. The noise source was cooling towers. Noise levels ranged from 44-45 dBA on the east side.

The source appeared to be distant pumps. On the north side of the plant, no plant noise was audible. Noise levels ranged from 55-56 dBA near the west side. The source was the cooling towers. The generalized hourly 55 dBA Leq contour is shown in Appendix D of this chapter.

Source: Mr. Tom Benton, Administrative Coordinator

Rogers Foods: (11)

Rogers Foods is a garlic and onion processing plant located near the intersection of Cressey Way and Walnut Avenue, about two miles east of Livingston. From about May 15-November 1, the plant dehydrates onions and garlic, and from November 1-December 20 the plant mills the dried products. The plant operates 24-hours per day, seven days per week during the above-noted dates. Significant noise producing equipment includes motors, fans, pumps, conveyors and compressors. During the dehydration phase, approximately 20 trucks per day enter and leave the plant. During BBA's survey of the plant on January 26, 1989, no noise was produced from the plant since it was shutdown for maintenance. Though it has no file information on this specific type of facility, BBA has indicated it may produce noise levels similar to a tomato processing plant in Hanford. This tomato plant has produced noise levels ranging from 60-61 dBA at a location 930 feet from the plant with the major noise source being cooling towers.

Source: Mr. Allan Sietsema, Production Supervisor

J. R. Wood, Inc.: (12)

Located at 7916 Bellevue Road, J.R. Wood, Inc. ("Wood Fruit") processes fruits and vegetables. The company operates 12 months a year. During the peak season (June-October), the plant typically operates 6 days a week from 7:00 a.m. to 2:00 a.m. Stationary noise sources in the plant include refrigeration equipment, cooling towers, hydraulic pumps and a methane gas compressor. Mobile noise sources include tractors, trucks (some with refrigeration units) and fork lifts. Noise levels measured September 4 and 12, 1986 along the plant boundaries ranged from 53 to 67 dBA. According to the spokesman for the plant, no change in the stationary noise sources or hours of operation have occurred since 1986. The generalized hourly 55 dBA Leq noise exposure contour for peak season operations is shown in Appendix D at the end of this chapter.

Source: Mr. Mike Wiley, Chief Engineer

Monte Cristo Packing Company: (13)

Located near the intersection of Mercedes and Monte Cristo Roads, the Monte Cristo Packing Company hulls, shells and packs almonds and walnuts. The plant

operates year round, but shelling generally takes place between September and March. Shelling occurs 24 hours a day for about the first month of the season but decreases to 12 hours a day during the remainder of the season. Significant noise sources at the plant are the huller-sheller and sheller located near the west end of the plant, and the boiler, air compressor and burner located at the south end of the plant. Noise levels from the sheller and huller-sheller were about 70-71 dBA 100 feet west of building that encloses the equipment. When the screw conveyors were started, the level increased to 78-79 dBA at the same location. On the south side of the plant, levels from the boiler and air compressor ranged from 65-66 dBA at 100 feet. At the same distance from the burner, levels ranged from 60-61 dBA. The boiler, air compressor and burner operate all year except during July and August. Truck traffic is also a significant noise source. During the peak season, about 75-100 trucks per day enter and leave the facility. During the off season, the number of trucks diminishes to 10-20 per day. The generalized hourly 55 dBA Leq contour is shown in Appendix D at the end of this chapter.

Source: Mr. Bill Fiesig, General Manager, Mr. James A. Hart, Director of Operations, Purchasing & Safety, and Mr. Larry Morris, Manufacturing Manager

Dairies: (14)

Based on surveys at the A. Amaral & Sons, Byron, Silveira and Double I dairies near Hilmar during February 1989, it was determined that the significant noise sources at dairies are water well and sump pumps, tractors, loaders and hay and milk trucks. An idling tractor at the Double I Dairy produced levels ranging from 55 to 58 dBA at 100 feet. No operating pumps or truck traffic were observed during the survey, but BBA file data indicate that a water well powered by a 50 h.p. electric motor produces a steady 57 dBA at 25 feet and slowly moving diesel trucks produce maximum levels of 71-74 dBA at 100 feet.

Source: Mr. Frank Silveira

Lake Yosemite and O'Neill Forebay Recreational Boating: (15)

Although recreational boating on Lake Yosemite and O'Neill Forebay was not evident during BBA's survey of January 1989, noise level measurements of recreational motor boats have been conducted by BBA at Lake Kaweah, located east of Visalia. Table IV-2 is a summary of that data.

Merced County Fairgrounds Racing:

During BBA's survey, no racing events were scheduled. However, noise levels from BBA files for representative racing events are shown in Table IV-3.

e. Airports

There are five public use airports and in Merced County: Castle Airport, Gustine Airport, Los Banos Municipal Airport, Merced Municipal Airport, Turlock Municipal Airport. Noise contours for these airports are shown in their respective master plans and the latest adopted Airport Land Use Commission Plan.

Current Merced County Airport Land Use Commission policy indicates that new residential land uses exposed to aircraft noise levels less than 65 dBA CNEL/Ldn are acceptable if air conditioning or mechanical ventilation is provided in homes. Above 65 dBA CNEL/Ldn, new land uses are subject to case by case review and will be approved if it is determined that interior noise levels are satisfactory, and if "the aircraft noise level for the new land use is suitable to the interests of public health and safety."

Noise contours for public use airports and Castle Airport are shown in Appendix E of this chapter. The location of these facilities is illustrated on Map 4 in Chapter II (Circulation).

Gustine Airport:

Gustine Airport is located about 1.5 miles east of the City of Gustine, and is owned and operated by the City. One 3,200 foot-long runway is located at the airport. According to the City Manager's office, about 6-12 operations per day occur at the airport. Other information, such the number of night operations, was not available. During the survey, three aerial application and one single-engine propeller aircraft were seen. Hanger space for about 15 aircraft is located at the airport. Land uses on either end of the runway are agricultural, with a few homes located southwest of the airport.

Based on BBA's experience with aerial application aircraft, it is not practical, nor representative of perceived noise impacts, to express noise impacts from these aircraft in terms of CNEL/Ldn noise contours.

The main reason for this is that typical aerial application operations consist of following the shortest possible route to the application site at a minimal altitude, meaning that there are no typical flight tracks. Typical "ferry" altitudes range from 75-300 feet. Since these aircraft produce maximum noise levels of 90-105 dBA during direct overflights at these altitudes, with resulting SEL values of up to 110 dBA, the 60 dBA CNEL contour would follow the aircraft from the airport to the application site for each flight by the noisier types of aircraft. Surprisingly, one of the most effective noise mitigation measures which may be used by aerial application aircraft operators is a low ferry altitude which minimizes the lateral spreading of noise levels. As long as operators are able to avoid direct overflights, single event impacts at homes located near airports with these types of aircraft

operations may be minimized.

Los Banos Municipal Airport:

Located near the western edge of the City of Los Banos, the Los Banos Municipal Airport consists of one 3,000 foot-long runway. Aircraft operations generally occur in a south to north direction on Runway 32. According to the Master Plan completed for the airport in 1975, annual aircraft operations for the 1985 were forecast to be approximately 22,700. Of these, about 21,000 were expected to be single-engine aircraft. By 1995, annual operations are expected to be about 28,000. Aerial application aircraft use the airport but are not allowed to fly loaded into or out of the facility. The 60 dBA CNEL contour for projected 1995 operations is included in the City's most recent revision of the Noise Element of the General Plan.

Merced Municipal Airport:

The Merced Municipal Airport is located near the intersection of Grogan Way and West Avenue, in the City of Merced. The one runway (30-12) at the airport is 5,904 feet long. About 103 total aircraft, consisting of 92 single-engine and 11 twin-engine aircraft are based at the airport. No helicopters, aerial application or jet aircraft are based at the airport, although transient business jets often use the airport. According to the airport manager, there are currently about 50,000 annual operations at the airport. United Express currently provides commuter service at the airport with seven daily flights using Embraer Bandeirante twin-engine turbo-prop aircraft. Runway 30 is used for about 98% of operations, and almost all aircraft depart or land between 7 a.m. to 10 p.m. The airport is generally surrounded by agricultural and industrial land uses.

Source: Mr. Dan Oates, Airport Manager

Turlock Municipal Airport:

The Turlock Municipal Airport is owned by the City of Turlock. The FBO is Areo Vista, Inc. One 3,000 foot-long runway (30-12) is located at the airport. The FBO estimates annual aircraft operations to be about 4,000. Sixty single-engine and five twin-engine aircraft are based at the facility. No helicopters, aerial application or jet aircraft are based at the facility. Ninety percent of operations occur on Runway 30, and almost all (>95%) aircraft depart or land between 7 a.m. and 10 p.m. The airport is surrounded by agricultural land.

Source: Mr. Otis A. Mercer, Areo Vista, Inc.

TABLE IV-2

SUMMARY OF MOTOR BOAT NOISE LEVELS

<u>Description</u>	<u>Approximate Distance</u>	<u>Noise Level</u>
Houseboat w/small Outboard Motor	300'	50-52 dBA
Fishing Boat w/large Outboard Motor	500'	60-62 dBA
Ski Boat w/Inboard Motor	100'	65-67 dBA
Ski Boat w/"Big Block" Chevy V-8 Engine at Constant Cruising Speed	1000'	65-67 dBA
Ski Boat w/"Small Block" V-8 Engine at Constant Cruising Speed	1000'	62-65 dBA

Source: Brown-Buntin Associates, Inc.

TABLE IV-3

SUMMARY OF REPRESENTATIVE RACING EVENT NOISE LEVELS

<u>Raceway</u>	<u>Distance</u>	<u>Vehicle Type</u>	<u>Maximum Level</u>
Sears Point	50'	Alcohol Dragster	120 dBA
Sears Point	50'	Roadster (Drag Race)	109 dBA
Sunset Raceway	575'	Top Fuel Dragster	106 dBA
Sunset Raceway	575'	Funny Car Dragster	103 dBA
Madera Speedway	100'	Unmuffled Superstock	94 dBA
Madera Speedway	100'	Superstock	90 dBA
Madera Speedway	100'	Limited Modified	88 dBA
Bakersfield Speedway	750'	Midgets	81 dBA

Source: Brown-Buntin Associates, Inc.

Castle Airport –Aviation and Development Center:

Located about five miles northwest of the City of Merced and just north of the City of Atwater, Castle consists of about 2,800 acres of land. The primary mission of the former Air Force Base was to conduct long-range bombardment operations and crew training for B-52 Stratofortress and KC-135 Stratotanker aircraft. Since base closure, the Castle Joint Powers Authority (JPA) has adopted a Reuse Plan which promotes the introduction of air cargo and transit operations to reuse the extensive aviation facilities of the former military base. The projected noise impact of full civilian reuse, with corresponding 65 CNEL contours for the Year 2015, is identified in the Castle Airport Master Plan, December 1994, adopted by the JPA (See Appendix E for a copy of this diagram). This area affects approximately three square miles of primarily agricultural territory.

f. Community Noise Survey

As required by the Office of Noise Control Guidelines, a community noise survey was conducted to document noise exposure in areas of the County containing noise-sensitive land uses. For that purpose, noise-sensitive lands uses were considered to include residential areas, schools and hospitals.

Noise monitoring sites were selected to be representative of typical conditions in areas of the community where such uses are located. Short-term noise monitoring was conducted during two periods of the daytime (7 a.m.-10 p.m.) and one period of the nighttime (10 p.m.- 7 a.m.), during January, 1989 so that reasonable estimates of the Ldn could be prepared. Four (4) long-term noise monitoring sites were established to record the variation of noise levels through 24 hours. The data collected included the Leq and other statistical descriptors. Noise monitoring sites, measured noise levels and estimated Ldn values at each site are summarized in Table IV-4. Hourly variations in noise levels at the four long-term monitoring sites are shown in Figure IV-1. Monitoring site locations are shown by Map 9.

Community noise monitoring equipment consisted of a Larson-Davis Laboratories (LDL) Model 700B integrating sound level meter equipped with a Bruel & Kjaer Type 4176 1/2" microphone, a B&K Type 2218 Precision integrating sound level meter equipped with a B&K Type 4165 1/2" microphone, and a Metrosonics dB604 environmental noise analyzer equipped with a B&K Type 4176 1/2" microphone. The measurement systems were calibrated in the field prior to use with a B&K Type 4230 acoustical calibrator, and comply with all pertinent requirements of the American National Standards Institute (ANSI) for Type I (Precision) sound level meters.

The community noise survey results indicate that typical noise levels in noise sensitive areas of Merced County are in the range of 37 dBA to 67 dBA Ldn. Noise from traffic on state and local roadways and aircraft from Castle Air Force Base are

the controlling factors for background noise levels in the County. In general, the areas of Merced County which contain noise sensitive uses away from these sources are relatively quiet.

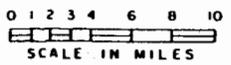
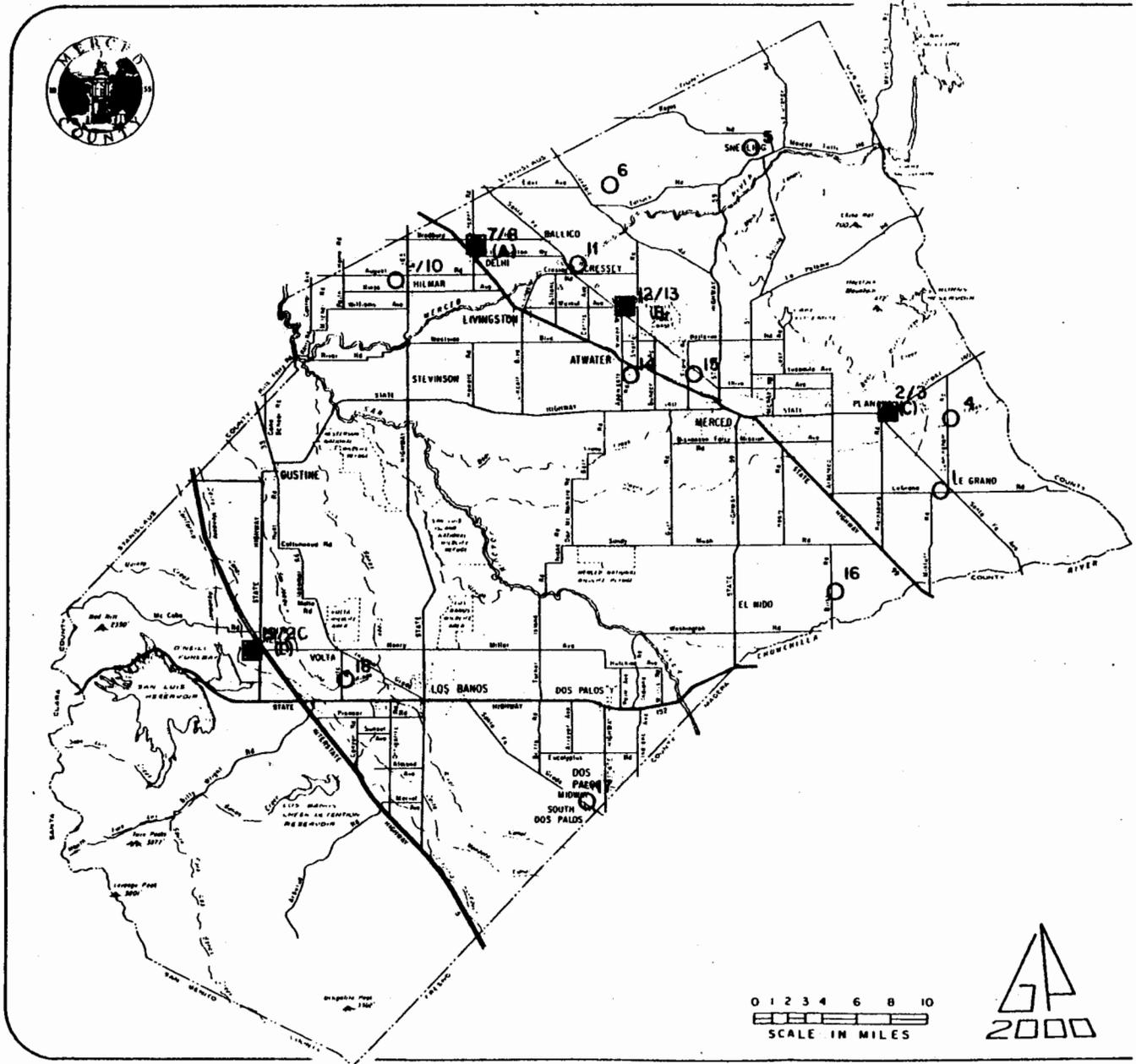
2. LAND USE COMPATIBILITY CRITERIA

The State Office of Noise Control (ONC) "Guidelines for the Preparation and Content of Noise Elements of the General Plan," include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The ONC guidelines contain a land use compatibility table which describes the compatibility of different land uses with a range of environmental noise levels in terms of Ldn or CNEL.

Figure IV-2 was derived from the ONC Guidelines, and is provided as a guide to the sensitivity of different land uses to their noise environment. It is intended to illustrate the range of noise levels which will allow the full range of activities normally associated with a given land use. For example, exterior noise levels below 60 dBA Ldn are generally considered acceptable for residential uses, since these levels will usually allow normal indoor and outdoor activities such as sleep and communication to occur without interruption. Industrial facilities, however, can be relatively insensitive to noise and may often be located in a noise environment of up to 80 dBA Ldn without significant adverse effects.

Noise compatibility criteria based upon Ldn values should be applied to proposed noise-sensitive land uses which may be impacted by preempted transportation noise sources such as traffic on public roadways, railroads and airports. The applicability of Ldn-based criteria for such sources has been well documented in terms of expected public response and legal responsibilities. Hourly Leq-based criteria should be applied as performance standards for proposed industrial and commercial land uses, and for other land uses involving new locally-regulated noise sources, which may affect noise-sensitive land uses. Similarly, these performance standards should be applied to determine whether a proposed noise-sensitive use is compatible with an existing locally-regulated noise source.

Approximately three square miles of land in Merced County are expected to be exposed to noise levels exceeding 65 CNEL from operations at Castle Airport. In contrast to other noise sources, such as roadways and railroads, there is no practical way to reduce exterior noise exposure from aircraft over a significant land area. To account for this, land use compatibility policies must either prohibit new noise-sensitive land uses in areas exposed to aircraft noise levels exceeding 65 dBA Ldn CNEL, or apply criteria that tolerate such exterior exposures but require an acceptable noise environment within interior living spaces. Outside of the influence of public airports, railroad and highway rights-of-way, which includes most of the unincorporated area of the County, ambient noise levels are generally below 60 dBA Ldn, and may be characterized as very quiet. (See Table IV-5)



Community Noise Survey Monitoring Sites

LEGEND

-  24 HOUR MONITORING
 - A. MAHOGANY ST., DELHI
 - B. ANNE ST., WINTON
 - C. STANFORD ST., PLANADA
 - D. FIRE STATION, SANTA NELLA
-  INTERMITTENT MONITORING

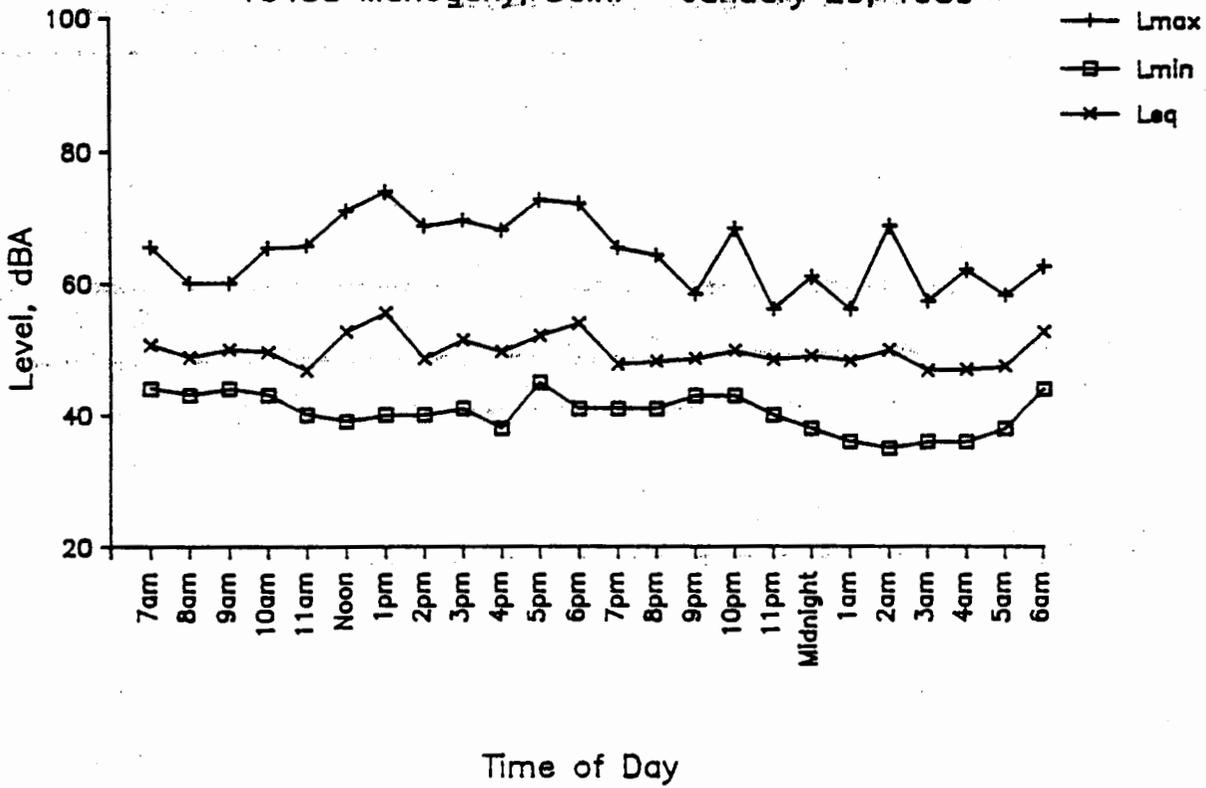
SOURCE: Brown-Buntin Associates, Inc. February 1989

MAP 9

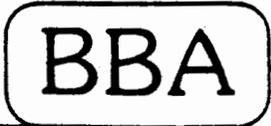
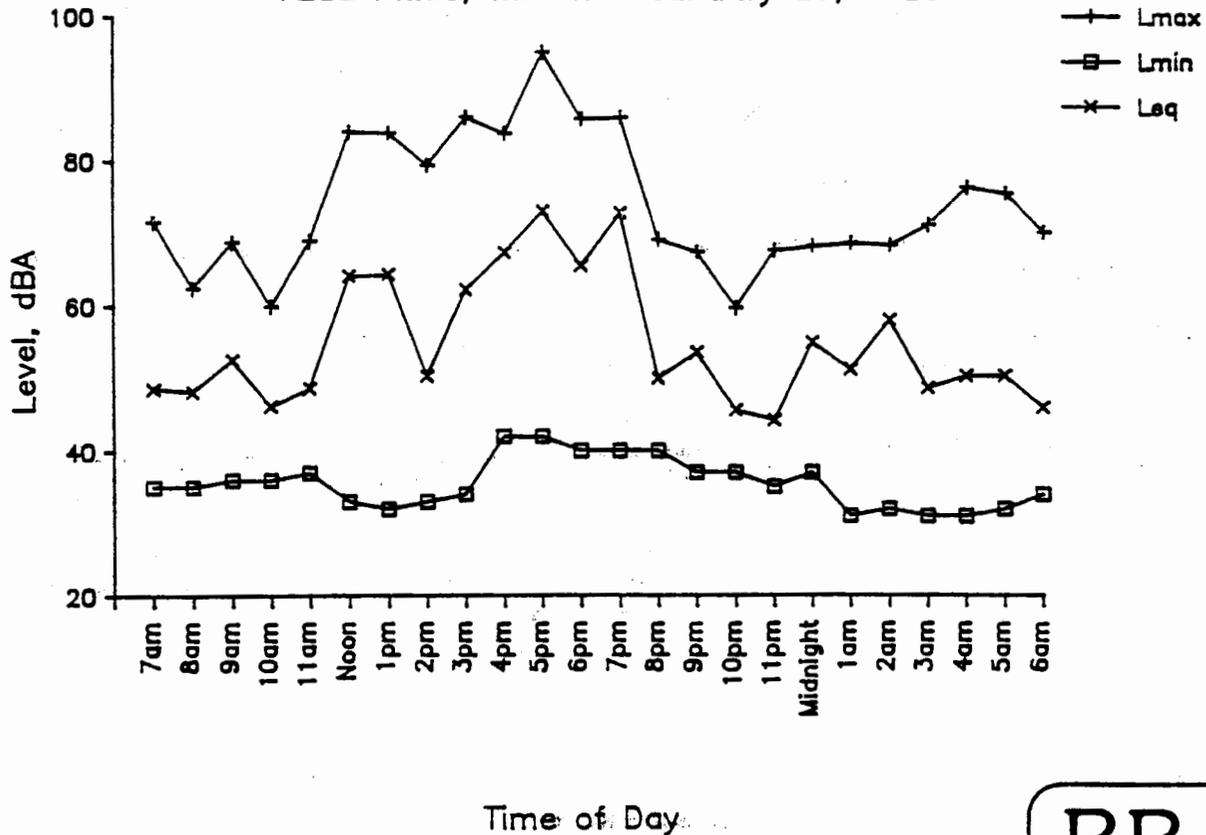
MERCED COUNTY
YEAR 2000 GENERAL PLAN

24-HOUR NOISE LEVELS

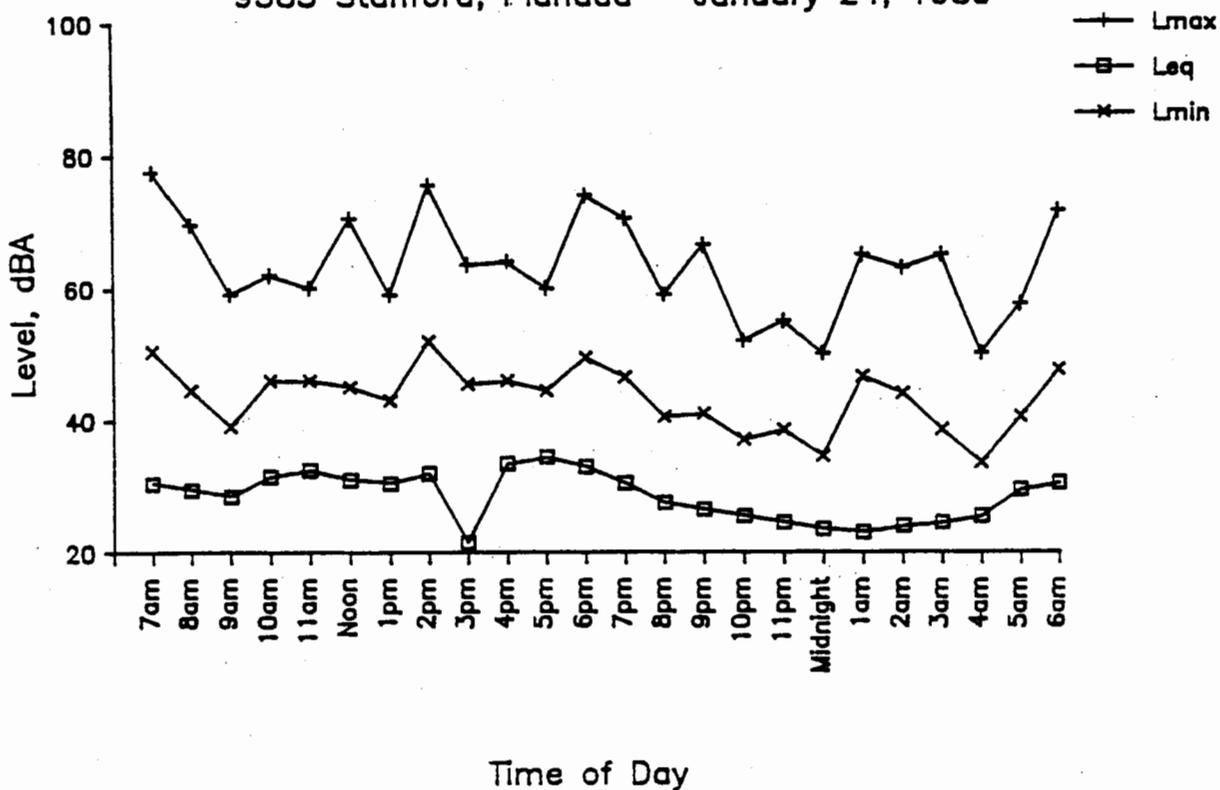
16458 Mahogany, Delhi - January 20, 1989



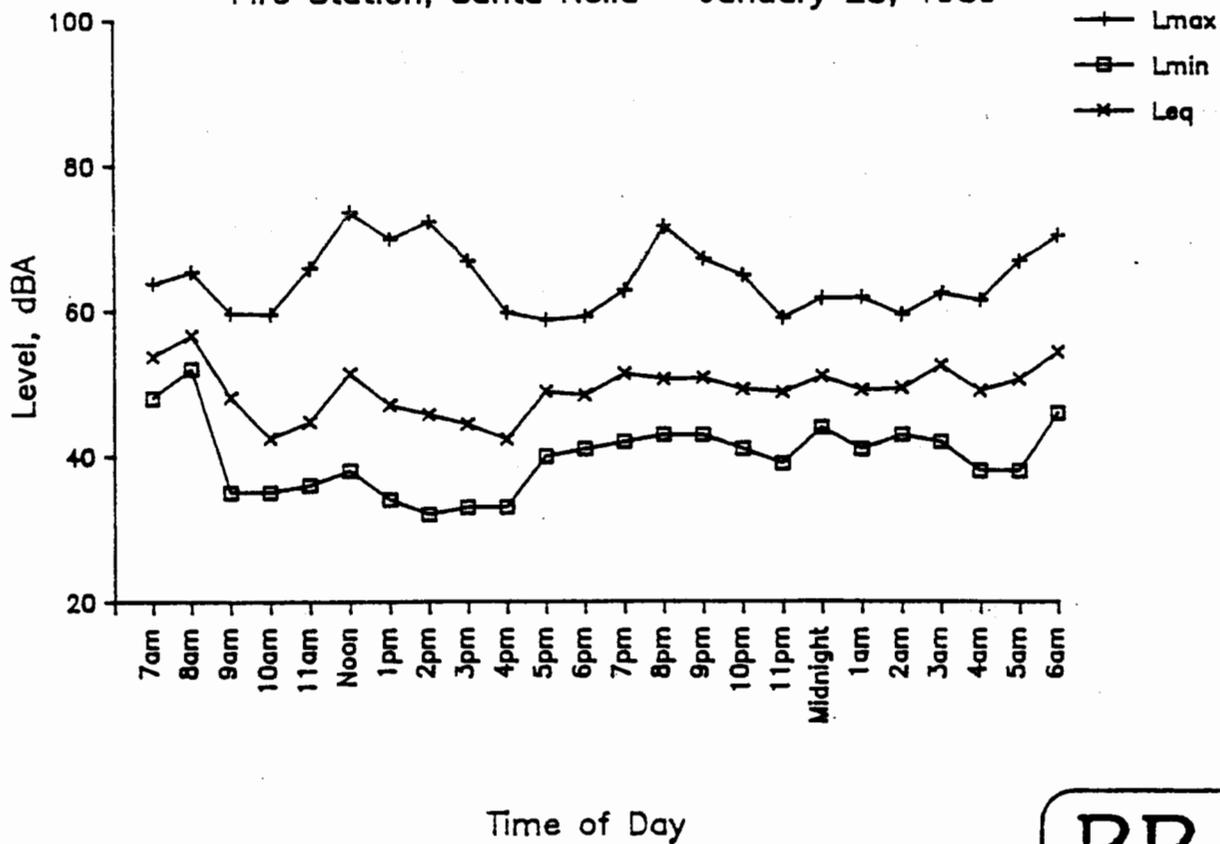
7282 Annie, Winton - January 20, 1989



24-HOUR NOISE LEVELS 9585 Stanford, Planada - January 24, 1989



Fire Station, Santa Nella - January 25, 1989



Land Use Compatibility Guidelines

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 - MULTI. FAMILY						
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						

INTERPRETATION



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.

Source: California Office of Noise Control



TABLE IV-4

SUMMARY OF COMMUNITY NOISE SURVEY DATA

Site #	Community/Location	LD	LN	Lmax (Source)	Lmin (Source)	Estimated Ldn*
1	Le Grand/Le Grand School	48	30	67 (traffic)	27 (traffic)	44-48 dB
2	Planada/Gage & Stanford	50	34	63 (traffic)	32 (tractor)	47-51 dB
3**	Planada/9585 Stanford	47	43	78 (aircraft)	22 (unknown)	50 dB
4	Rural/Childs @ Cunningham	40	26	56 (traffic)	21 (unknown)	37-41 dB
5	Snelling/4th & Emma	46	35	65 (chainsaw)	32 (traffic)	44-48 dB
6	Rural/East & Looney	48	45	65 (aircraft)	32 (traffic)	50-54 dB
7	Delhi/Near 9955 6th	53	49	66 (traffic)	44 (traffic)	54-58 dB
8**	Delhi/16458 Mahagony	51	49	74 (traffic)	35 (unknown)	56 dB
9	Hilmar/American & Cypress	48	47	66 (traffic)	44 (traffic)	52-56 dB
10	Hilmar/End of 1st St.	46	44	53 (birds)	36 (traffic)	49-53 dB
11	Cressey/Cressey School	50	32	70 (school bell)	32 (traffic)	46-50 dB
12	Winton/7247 Crawford	55	42	76 (aircraft)	33 (traffic)	52-56 dB
13**	Winton/7282 Annie	66	52	95 (aircraft)	31 (traffic)	65 dB
14	Atwater RRD/Station & Mulberry	54	38	68 (traffic)	35 (traffic)	51-55 dB
15	Franklin-Beachwood/Fir & Maple	67	48	80 (aircraft)	31 (traffic)	63-67 dB
16	Rural/Roosevelt @ Bliss	46	38	64 (aircraft)	30 (traffic)	45-49 dB
17	So. Dos Palos/Flexington @ "K"	48	27	67 (chainsaw)	25 (traffic)	44-48 dB
18	Rural/Volta & Ramos	53	43	69 (aircraft)	31 (traffic)	51-55 dB
19**	Santa Nella/Fire Station	50	51	73 (P.A. system)	32 (traffic)	57 dB
20	Santa Nella/Mercury & Comet	44	55	60 (traffic)	38 (traffic)	59-63 dB

LD = Average Leq of two 15-minute samples obtained between 7:00 a.m. and 10:00 p.m. except for sites marked with a ** where 24-hour monitoring was conducted.

LN = Leq for one 15-minute sample obtained between 10:00 p.m. and 7:00 a.m. except for sites marked with a ** where 24-hour monitoring was conducted.

* Ldn estimated from LD and LN

** 24-hour monitoring site

Source: Brown-Buntin Associates, Inc.

TABLE IV-5

LAND USE COMPATIBILITY STANDARDS
RESIDENTIAL LAND USES
MERCED COUNTY

<u>Noise Source</u>	<u>Exterior Standard</u>	<u>Interior Standard</u>
Traffic on public roadways, railroad line operations & aircraft in flight	65 dB Ldn/CNEL ¹	45 dB Ldn/CNEL ²
	Daytime (7 a.m. - 10 p.m.)	Nighttime (10 p.m. - 7 a.m.)
<u>Other sources</u>	Hourly Leq of 55 dBA and a maximum level of 75 dBA	Hourly Leq of _____ 45 dBA and a maximum level of 65 dBA

1. Standards for exterior noise from Castle Air Force Base operations shall be in accordance with the most recently adopted comprehensive land use compatibility plan prepared by the Merced County Association of Governments.
2. Windows and doors closed

Source: Brown-Buntin Associates, Inc.

Noise attenuation methods are identified and described in the Technical Appendices of the General Plan. These methods include acoustically sensitive site planning, use of setbacks and barriers and building design. The means to protect residences and other noise sensitive land uses are set forth in the following Goals, Objectives, Policies and Implementation measures.

C. NOISE CHAPTER GOALS, OBJECTIVES, POLICIES AND IMPLEMENTATION

GOAL 1:

All citizens of the County free from the harmful effects of excessive noise.

Objective 1. A.:

Residential areas are not significantly impacted by excessive exterior noise levels.

Policies:

1. New residential land use designations shall not be approved in locations where it is determined that existing or projected exterior noise levels will exceed 65 dBA.*
2. Residential subdivisions and multiple family developments should incorporate appropriate measures to reduce exterior noise exposure from ground sources to less than 65 dBA.

* All identified noise exposure levels are to be considered day/night levels (Ldn). See Appendix in this Chapter for a definition of this term.

Implementation:

Residential development projects will be reviewed at the building permit or discretionary review stage to determine noise exposure levels. Discretionary residential applications include general plan amendments, zone changes, tentative subdivision maps, location and development permit applications, and administrative permits.

3. Any existing residentially designated areas that are identified to be exposed to exterior noise levels greater than 65 dBA shall be considered "noise impacted" and should be reviewed by the County to identify possible means to correct the identified noise/land use incompatibilities.

Implementation:

As noise impacted residential properties are developed, programs to help reduce noise exposure will be identified.

Objective 1. B.:

Interior noise levels for residential dwelling units in residential areas do not exceed 45 dBA.

Policies:

4. Design standards and construction measures must be incorporated into all new residences to achieve an interior noise level which does not exceed 45 dBA.
5. For existing houses in residential areas, the County will provide technical assistance to property owners to achieve an interior noise level which does not exceed 45 dBA.

Implementation:

All residential building permits for new dwellings will include a requirement to achieve a maximum interior noise level of 45 dBA. The County will provide technical assistance, when requested, to achieve a maximum interior noise level of 45 dBA when reviewing building permits for expansion or remodeling of existing dwellings.

Objective 1. C.:

Hospitals and Schools are not significantly impacted by excessive exterior noise levels.

Policies:

6. Proposed new land use designations for the development of hospitals and schools shall not be approved in locations where it is determined that existing or projected exterior noise levels exceed 70 dBA.

Implementation:

Applications for general plan amendments and/or zone changes which are proposed for hospitals or schools, will be reviewed for

exposure to noise levels exceeding 70 dBA.

7. Hospitals and schools that are currently exposed to exterior noise levels that exceed 70 dBA should not be significantly expanded unless measures are incorporated into the project to reduce exterior noise exposure to 70 dBA.
8. The County should assist owners of schools and hospitals in reducing excessive noise exposure.

Implementation:

During the review of conditional use applications or capital improvement plans, all hospital and school expansions will be reviewed for exposure to noise levels exceeding 70 dBA. Otherwise, when requested by hospital or school authorities, the County will provide technical assistance to help reduce existing noise exposure to hospitals and schools.

Objective 1. D.:

Existing noise conflicts are reduced or eliminated.

Policies:

9. Existing residential areas that are exposed to an exterior noise level greater than 65 dBA shall be considered "noise impacted."
10. Existing schools and hospitals exposed to an exterior noise level of greater than 70 dBA shall be considered "noise impacted."
11. The County should evaluate and identify means to reduce noise conflicts for noise sensitive land uses that are "noise impacted."

Implementation:

As noise impacted areas are identified through complaints and during the review of building permits and discretionary applications, the County will work with property owners or responsible agencies to determine appropriate noise reduction measures.

GOAL 2:

Noise generating land uses and facilities important to the economic health of the County are not adversely affected by incompatible land uses.

Objective 2. A.:

The current operation and expansion of existing Commercial and Industrial designated areas are not significantly impaired by the encroachment of new incompatible noise sensitive land uses.

Policies:

1. New noise sensitive land uses and land use designations should not be approved where existing and projected noise levels from Commercial or Industrial designated areas will result in those noise sensitive uses being "noise impacted."

Implementation:

All noise sensitive land uses, including but not limited to, hospitals, schools and residential dwellings, will be reviewed at the building permit or discretionary review stage to determine noise exposure levels. Discretionary applications generally include general plan amendment and/or zone change applications to redesignate property to accommodate a noise sensitive land use, as well as conditional use applications, location and development applications and administrative permits.

Objective 2. B.:

New Commercial and Industrial areas are located to minimize encroachment by incompatible noise sensitive land uses.

Policies:

2. When establishing new Commercial and Industrial land use designations, the potential for encroachment by residential and other noise sensitive land uses on adjacent lands which could significantly impact the viability of the Commercial or Industrial area shall be considered.

Implementation:

Recognition of future land uses will be evaluated during the

general plan amendment and zone change application review process.

Objective 2. C.:

The operations of existing public use airports are not significantly impacted by the encroachment of new incompatible land uses.

Policies:

3. New noise sensitive land uses should not be approved where it is determined that the noise generated by operations of an existing public use airport will result in an incompatibility that would substantially impair the operations of said airport.

Implementation:

All noise sensitive land uses, including but not limited to hospitals, schools and residential dwellings, will be reviewed at the building permit or discretionary review stage for compatibility with noise exposure from any public use airport as identified in the latest adopted Merced County Airport Land Use Commission Policy Plan. Discretionary applications include those listed under implementation of Policy 1, Objective 2.A. above.

Objective 2. D.:

Authorized noise generating facilities in Agricultural and Foothill Pasture designated areas are not significantly impacted by encroachment of new incompatible noise sensitive land uses.

Policies:

4. Recognize authorized noise generating land uses located in rural areas when new noise sensitive land uses are proposed.

Implementation:

All noise sensitive land uses, including but not limited to hospitals, schools and residential dwellings, will be reviewed at the building permit or discretionary review stage to determine noise exposure levels from authorized rural noise generating land uses. Discretionary applications generally include those listed under implementation of Policy 1, Objective 2.A. above.

D. NOISE CHAPTER APPENDICES

APPENDIX A

Acoustical Terminology

APPENDIX B

Examples of Noise Levels (Source Figure B-1 from BBA appendix)

APPENDIX C

Future Noise Exposure Within Unincorporated Communities

Appendix C-1: Ballico

Appendix C-2: Cressey

Appendix C-3: Delhi

Appendix C-4: El Nido

Appendix C-5: Franklin/Beachwood

Appendix C-6: Hilmar

Appendix C-7: Le Grand

Appendix C-8: Planada

Appendix C-9: Santa Nella

Appendix C-10: South Dos Palos

Appendix C-11: Volta

Appendix C-12: Winton

APPENDIX D

Existing Noise Exposure From Industries

Appendix D-1: Capco

Appendix D-2: E. & J. Gallo Winery

Appendix D-3: Los Banos Gravel Company

Appendix D-4: Monte Cristo Packing Company

Appendix D-5: Wood Fruit

APPENDIX E

Existing Noise Exposure from Public Use Airports, Castle Air Force Base

Appendix E-1: Gustine Municipal Airport

Appendix E-2: Los Banos Municipal Airport

Appendix E-3: Merced Municipal Airport

Appendix E-4: Turlock Municipal Airport

APPENDIX F

Castle Master Re-Use Plan

Appendix F-1: 2015 Proposed Development – Noise Contours

**APPENDIX A
ACOUSTICAL TERMINOLOGY**

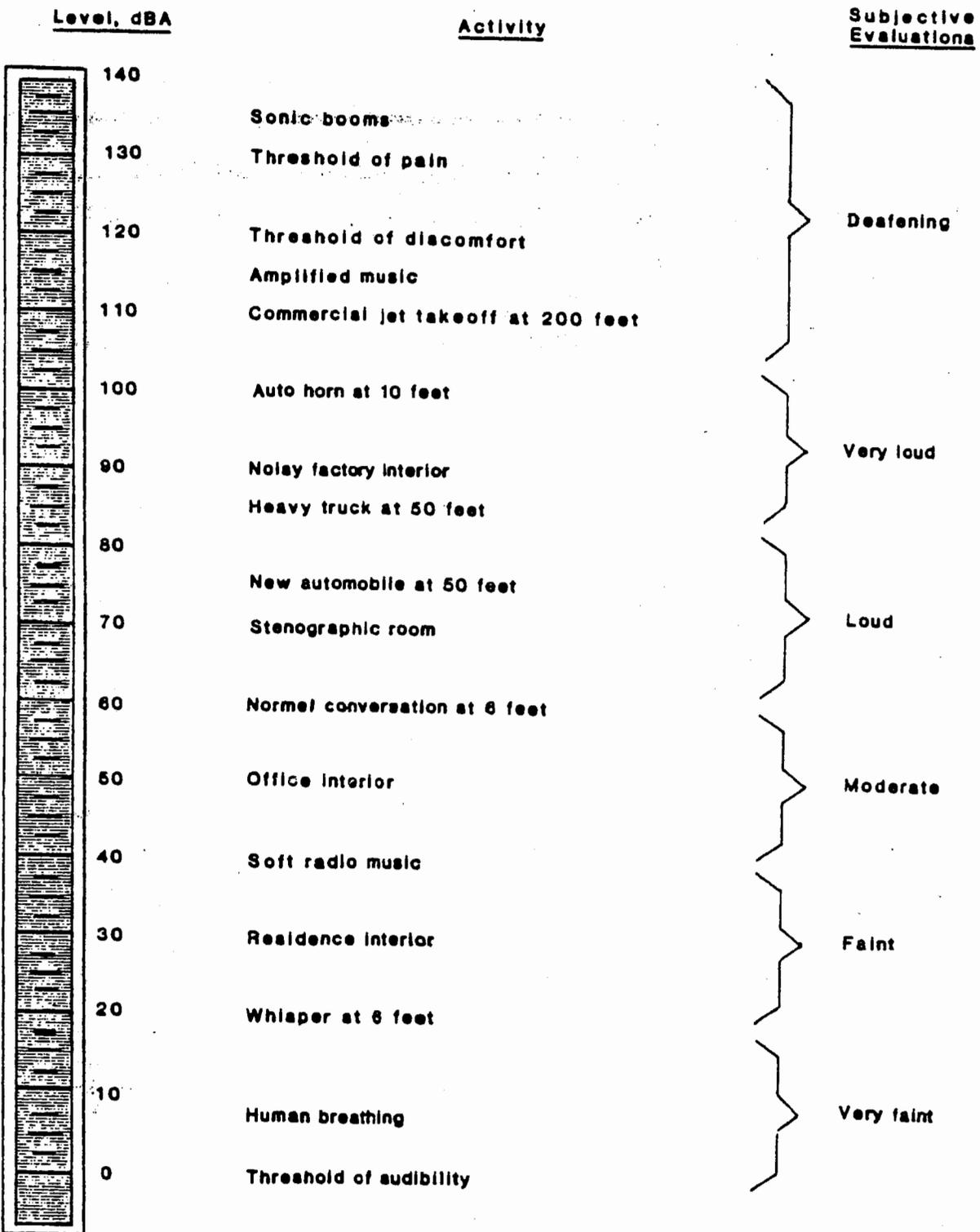
AMBIENT NOISE LEVEL:	The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.
A-WEIGHTED SOUND LEVEL:	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.
CNEL:	Community Noise Equivalent Level. The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.
DECIBEL, dB:	A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
EQUIVALENT ENERGY LEVEL, L_{eq}:	The sound level corresponding to a steady state sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.
L_{dn}:	Day/Night Average Level. The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.
NOTE: CNEL and L_{dn} represent daily levels of noise exposure averaged on an annual basis, while L_{eq} represents the equivalent energy noise exposure for a shorter time period, typically one hour.	
L_{max}:	The maximum A-weighted noise level recorded during a noise event.
L_n:	The sound level exceeded "n" percent of the time during a sample interval. L_{10} equals the level exceeded 10 percent of the time (L_{90} , L_{50} , etc.)

APPENDIX A (Continued)

ACOUSTICAL TERMINOLOGY

NOISE EXPOSURE CONTOURS:	Lines drawn about a noise source indicating constant energy levels of noise exposure. CNEL and L_{dn} are the descriptors normally utilized to describe community exposure to noise.
SOUND EXPOSURE LEVEL (SEL) OR SINGLE EVENT NOISE EXPOSURE LEVEL (SENEL)	The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the level of time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micronewtons per square meter and reference duration of one second.

Examples of Noise Levels



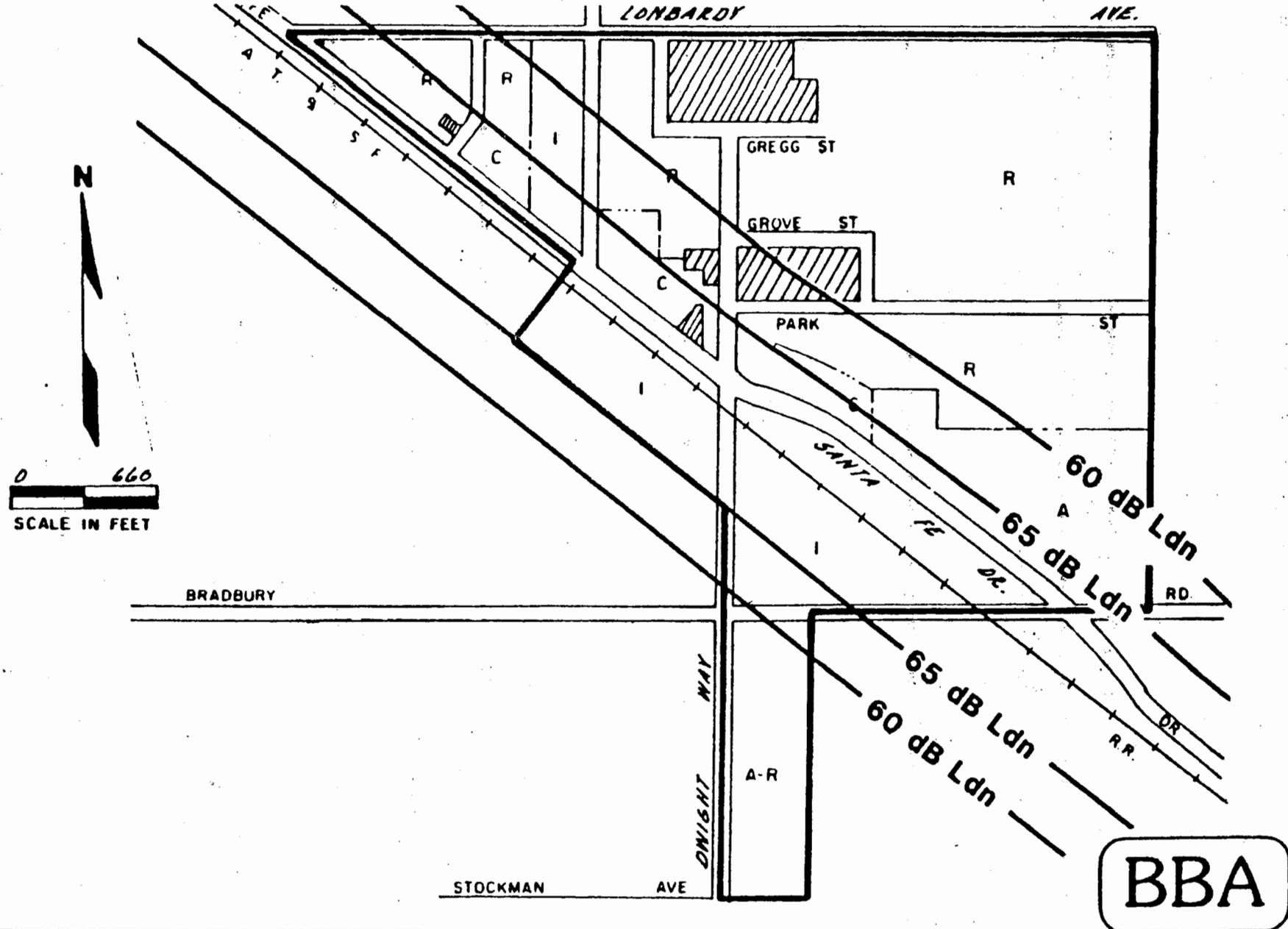
BBA

APPENDIX C

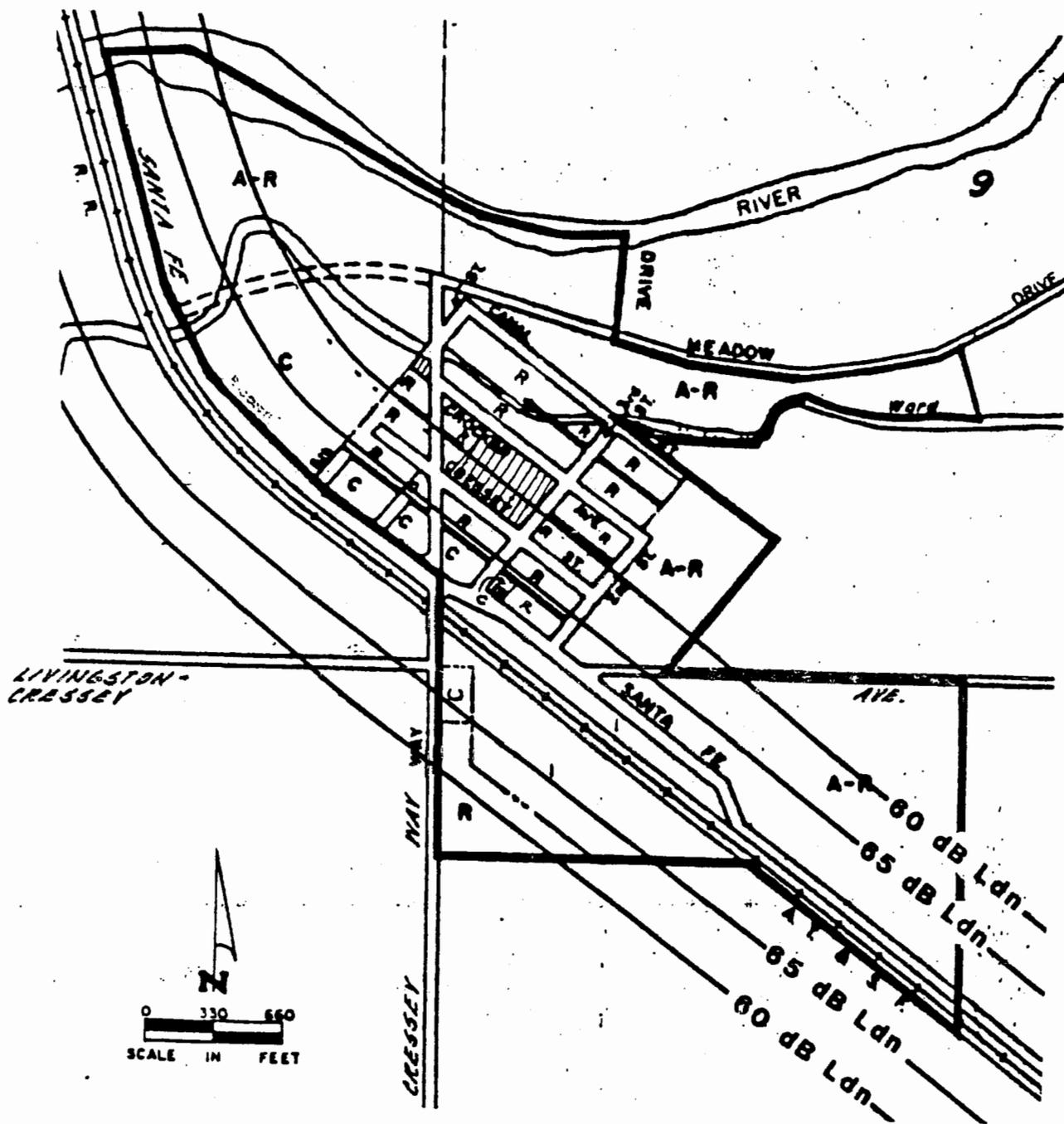
Future Noise Exposure Within Unincorporated Communities

- Appendix C-1: Ballico
- Appendix C-2: Cressey
- Appendix C-3: Delhi
- Appendix C-4: El Nido
- Appendix C-5: Franklin/Beachwood
- Appendix C-6: Hilmar
- Appendix C-7: Le Grand
- Appendix C-8: Planada
- Appendix C-9: Santa Nella
- Appendix C-10: South Dos Palos
- Appendix C-11: Volta
- Appendix C-12: Winton

Ballico

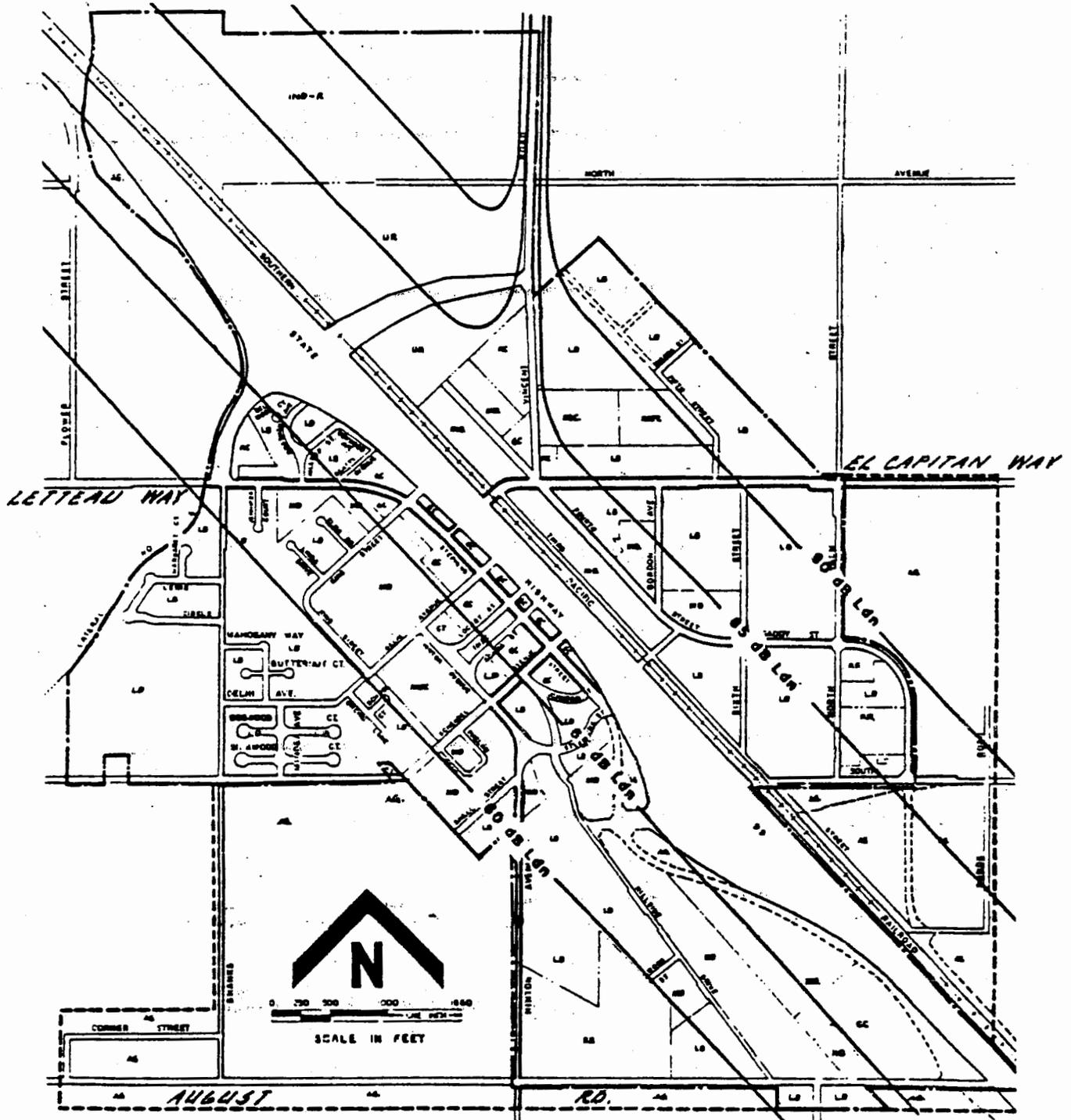


Cressey



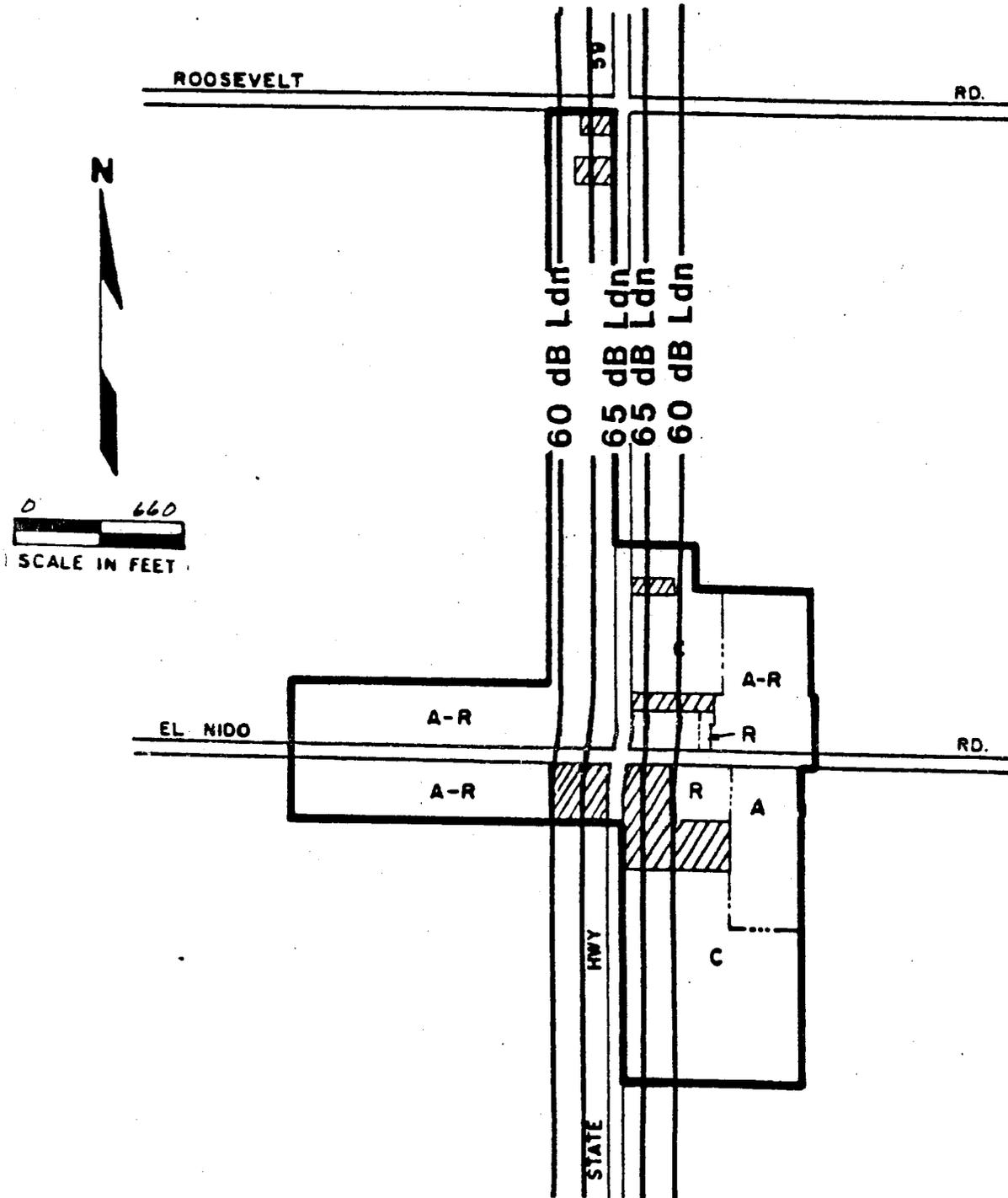
BBA

Delhi



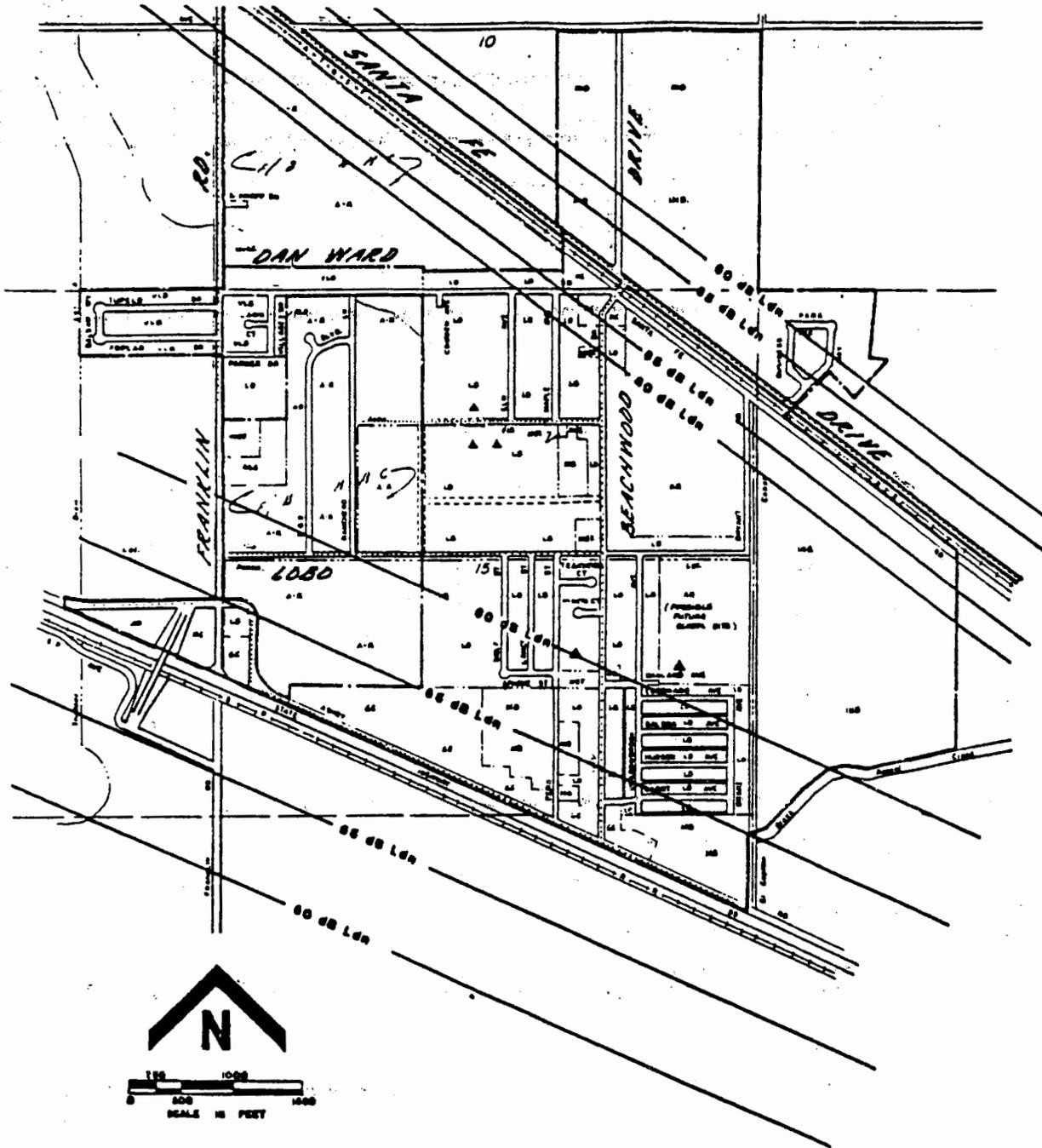
BBA

El Nido



BBA

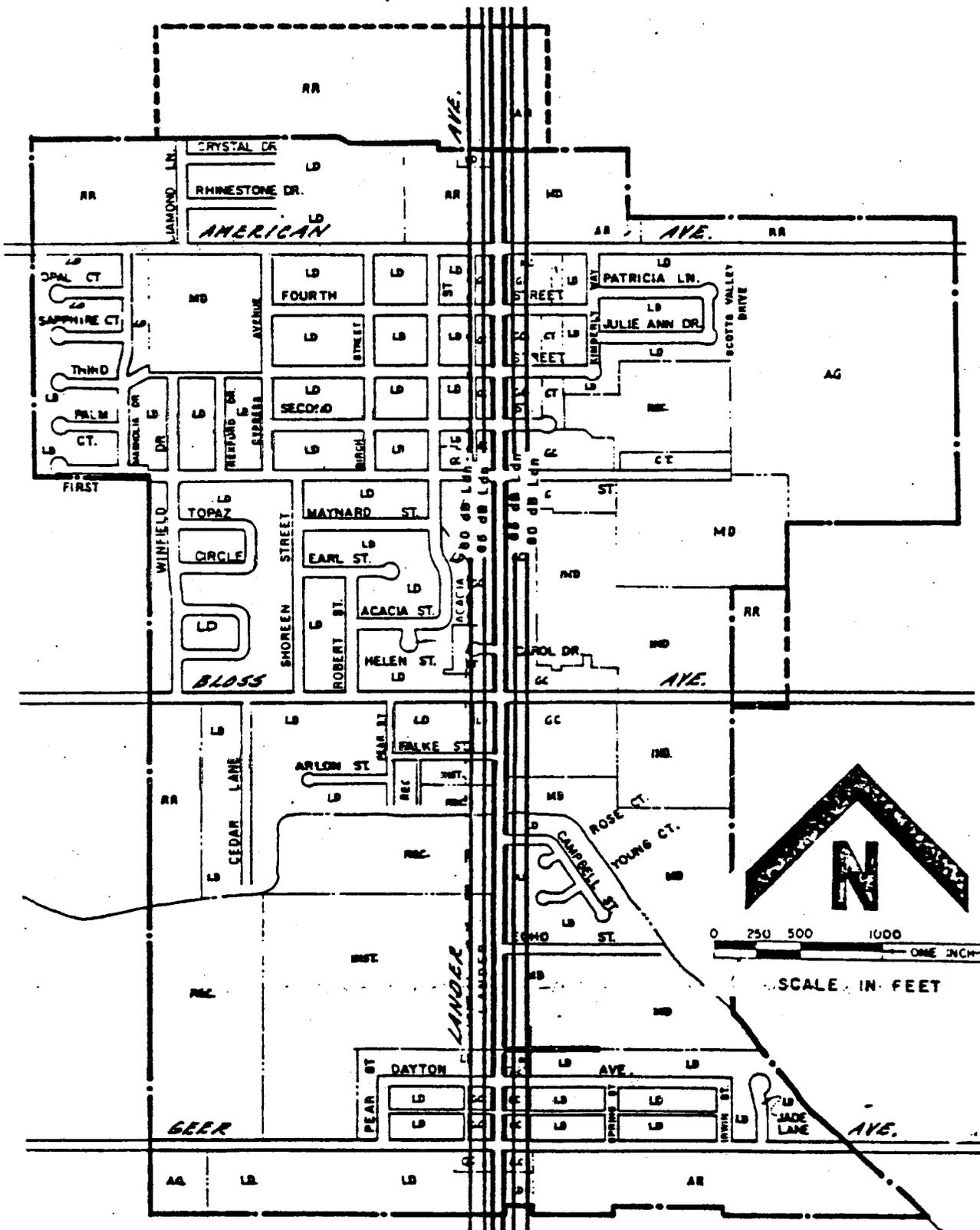
Franklin/Beachwood



**Note: Community Impacted By Noise From
Castle Air Force Base Exceeding 65 dB Ldn**

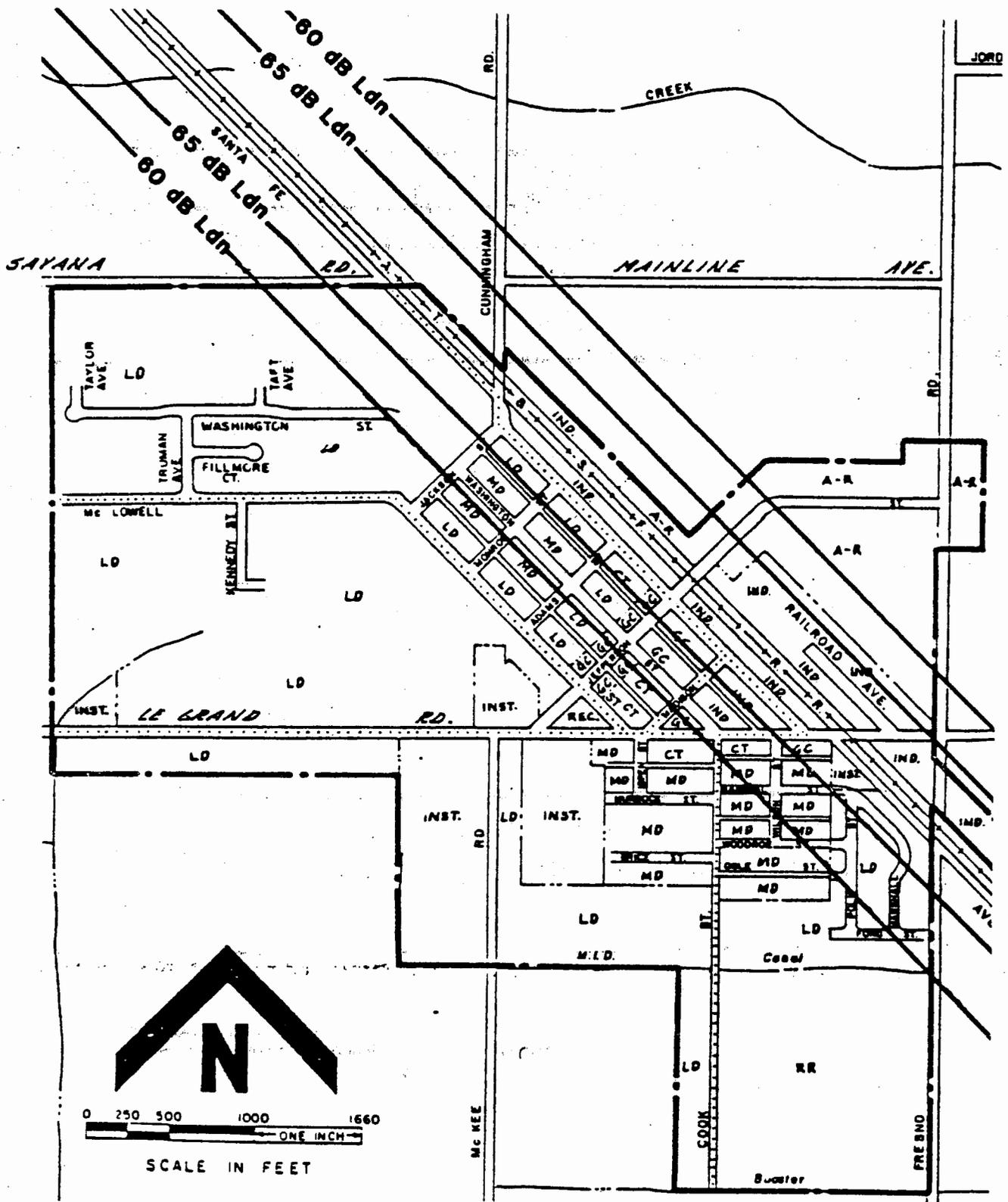


Hilmar



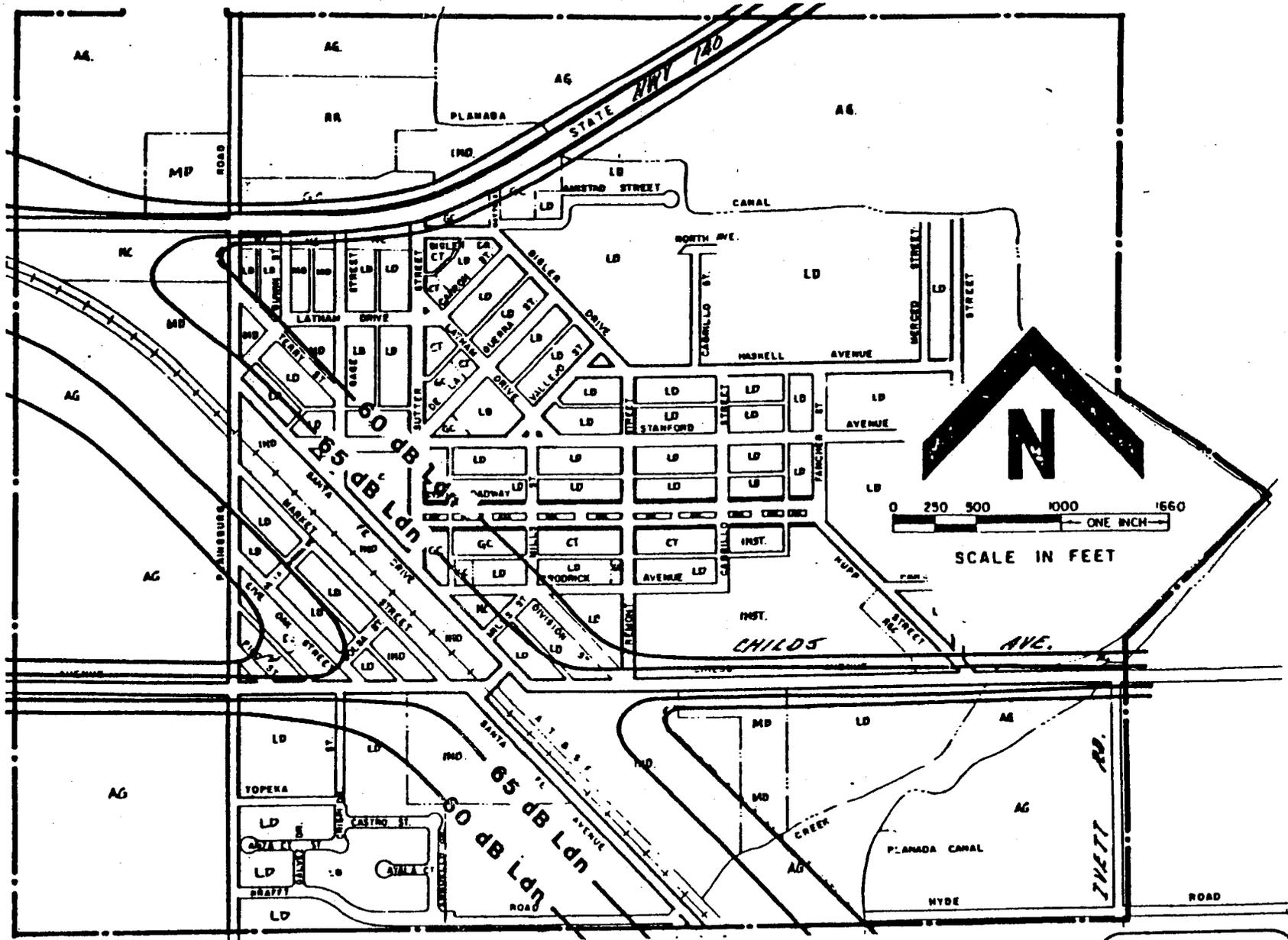
BBA

Le Grand



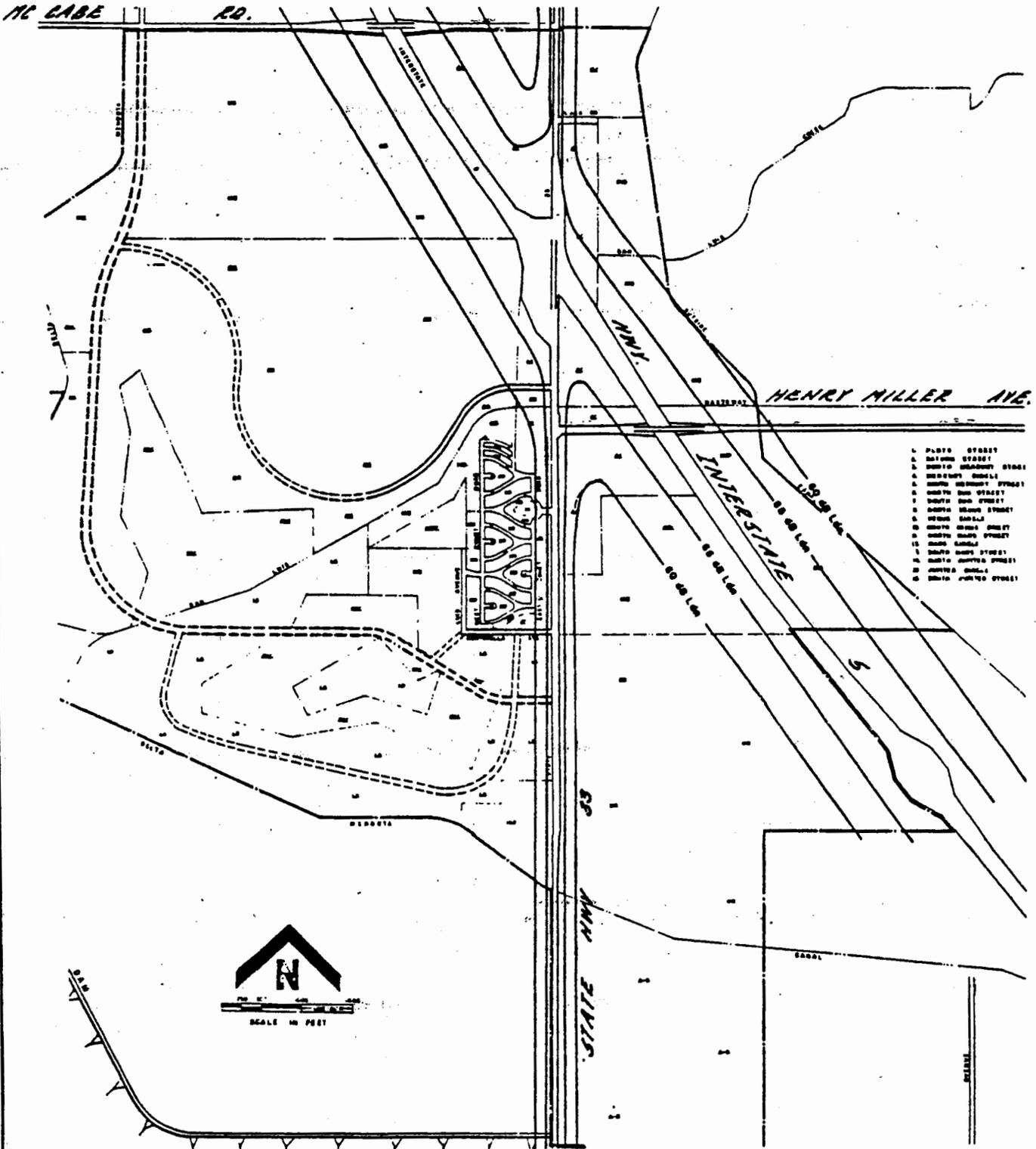
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Planada



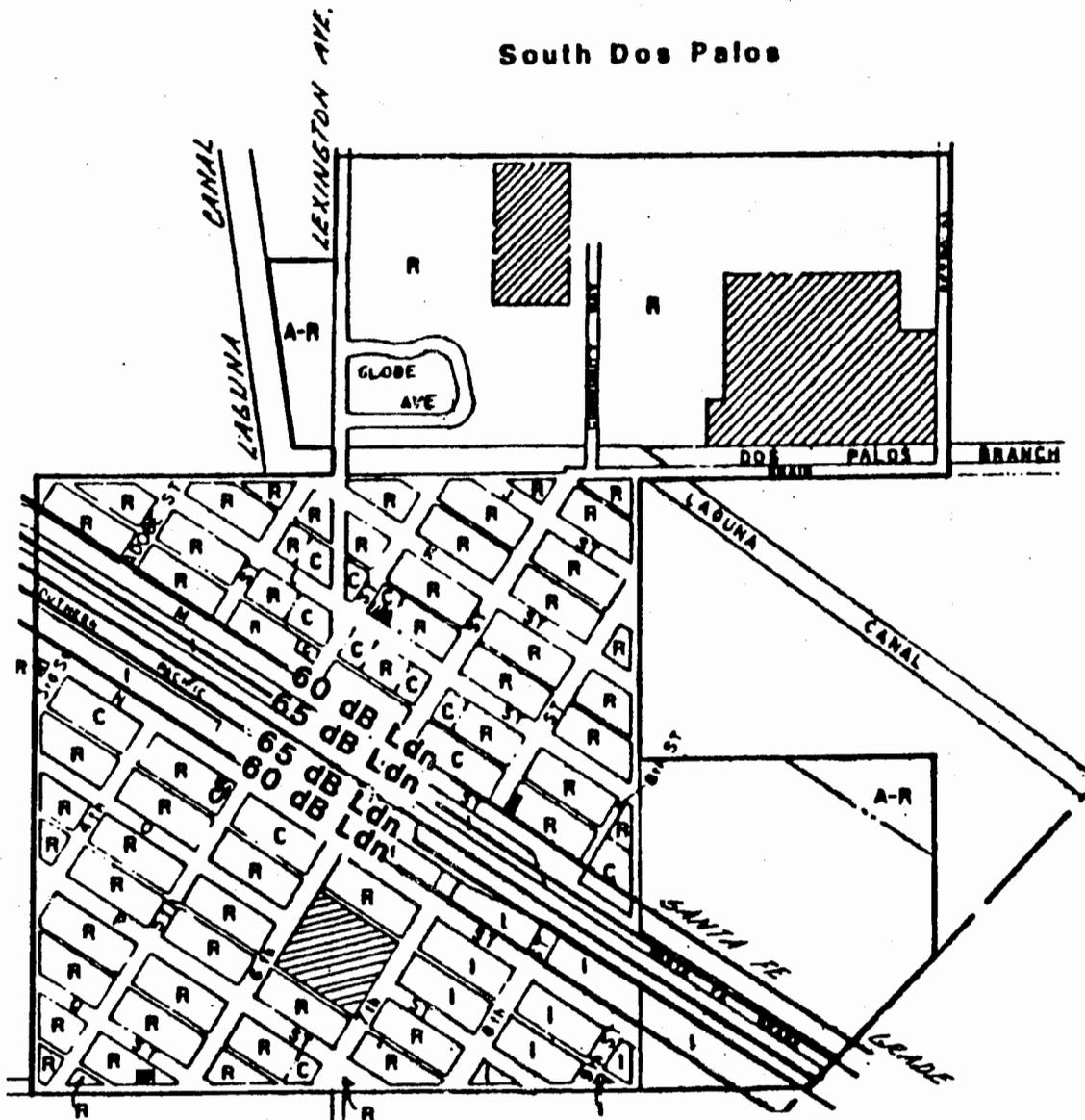
BBA

Santa Nella



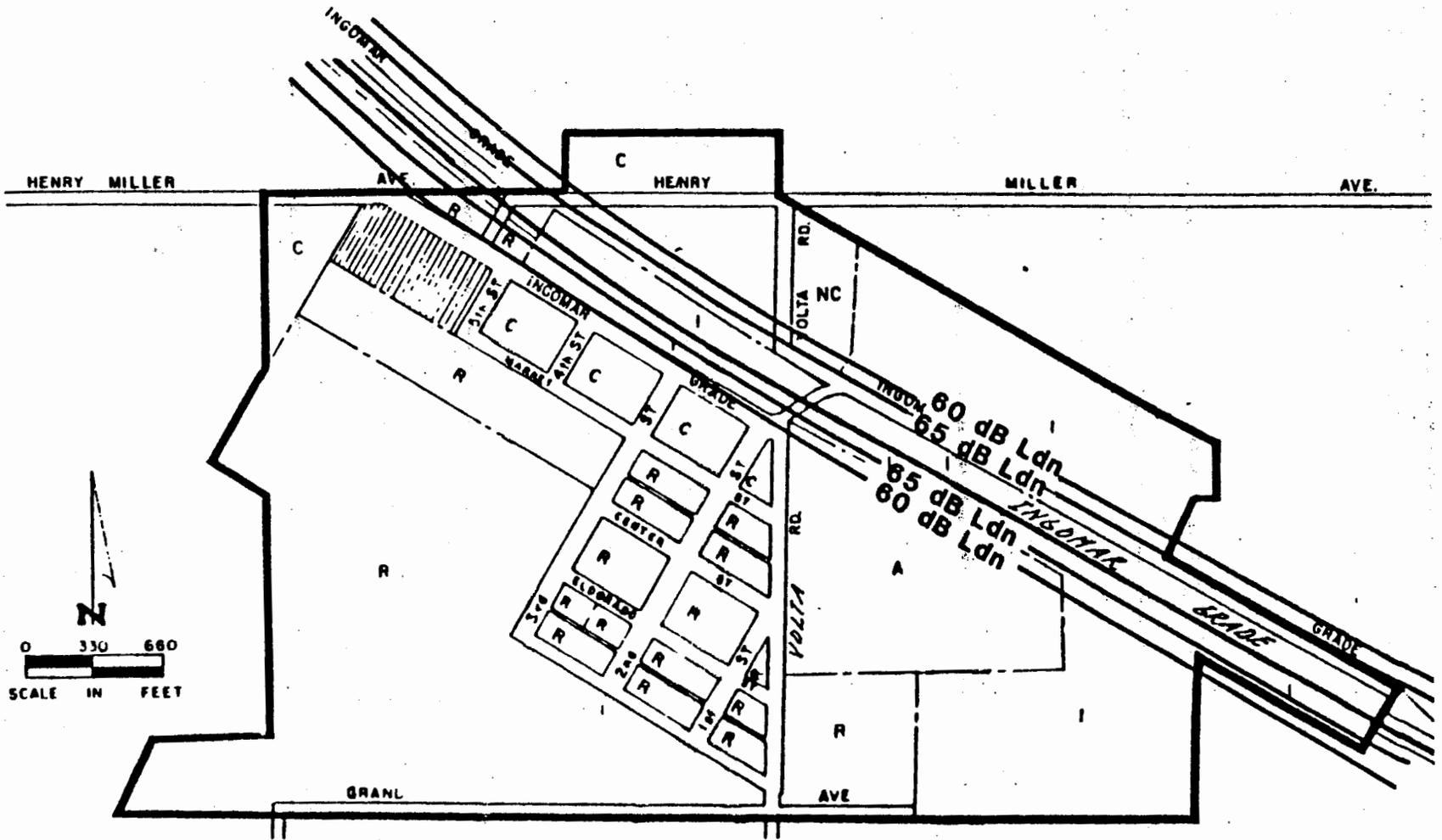
BBA

South Dos Palos



BBA

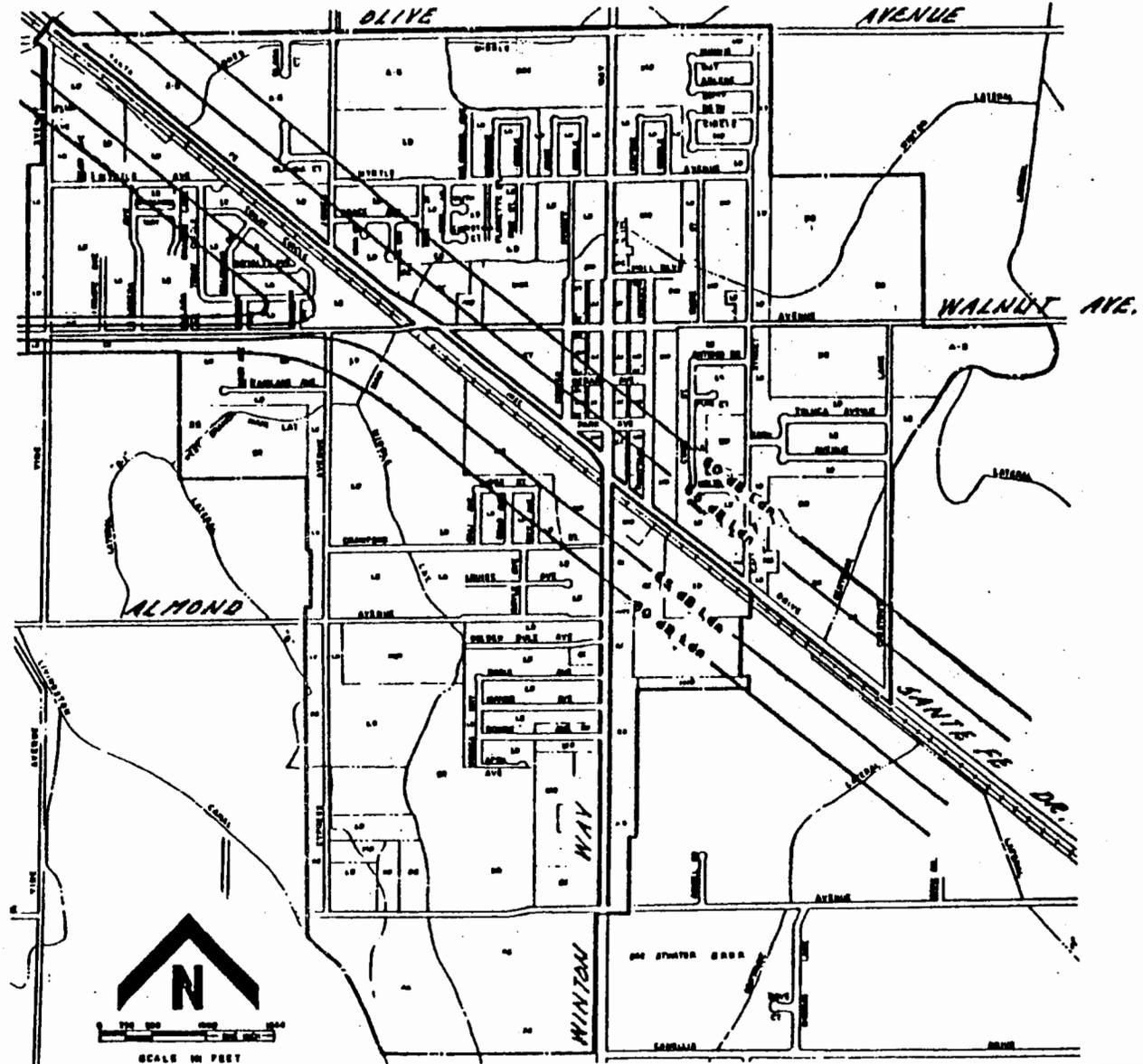
Volta



BBA

Appendix C-12

Winton



**Note: Community Impacted By Noise From
Castle Air Force Base Exceeding 65 dB Ldn**

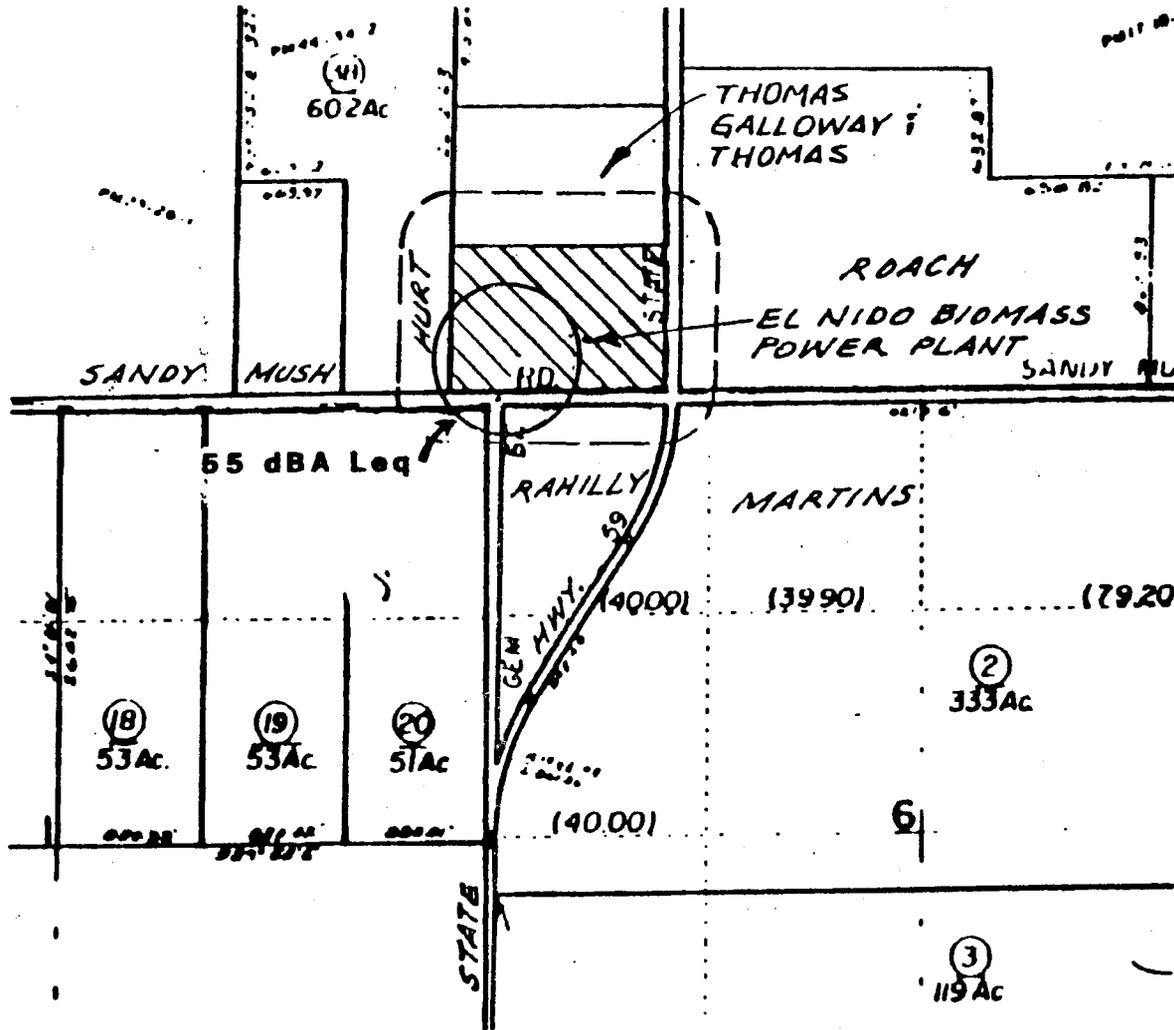
BBA

APPENDIX D

Existing Noise Exposure From Industries

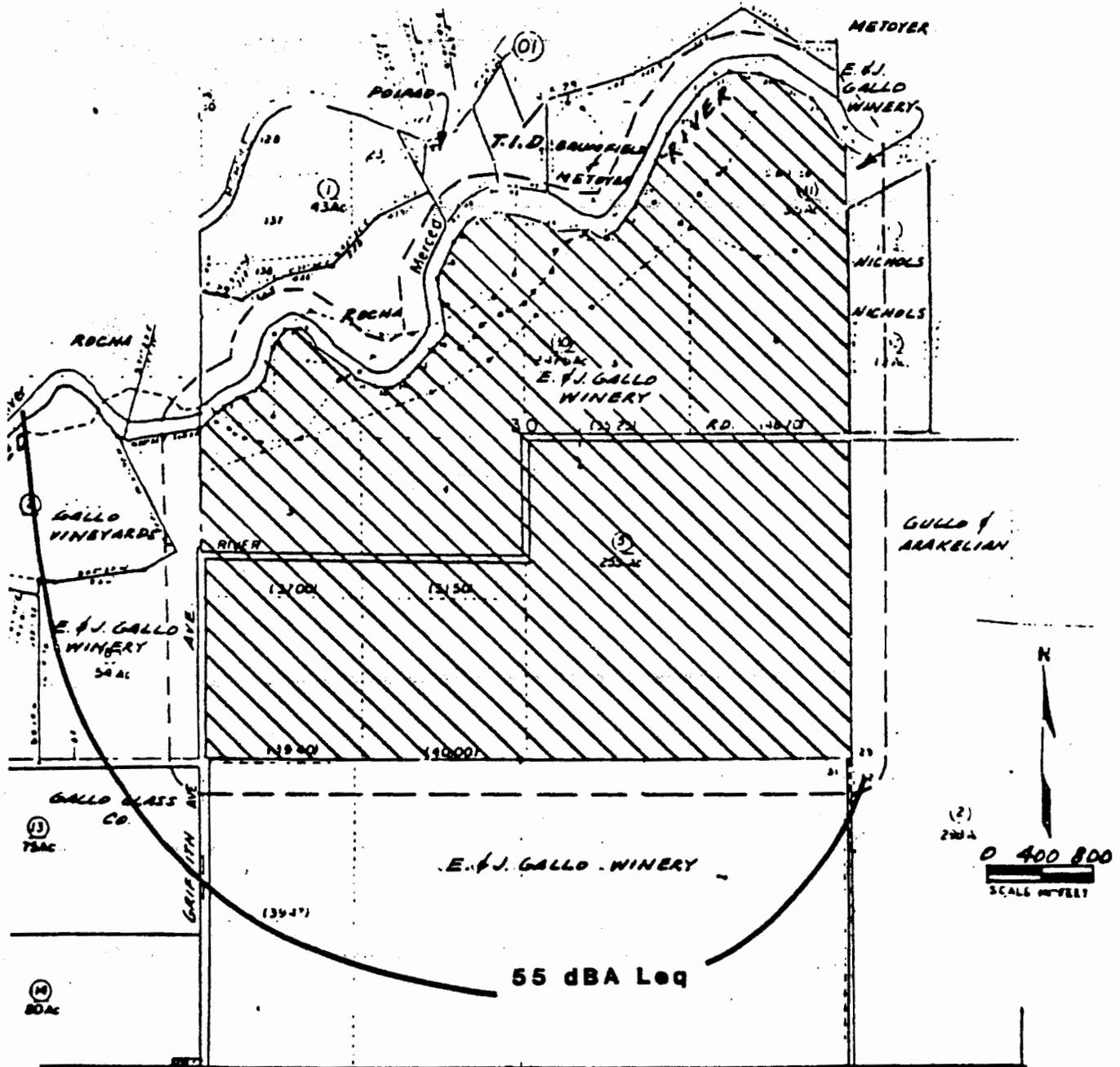
- Appendix D-1: Capco
- Appendix D-2: E. & J. Gallo Winery
- Appendix D-3: Los Banos Gravel Company
- Appendix D-4: Monte Cristo Packing Company
- Appendix D-5: Wood Fruit

Capco



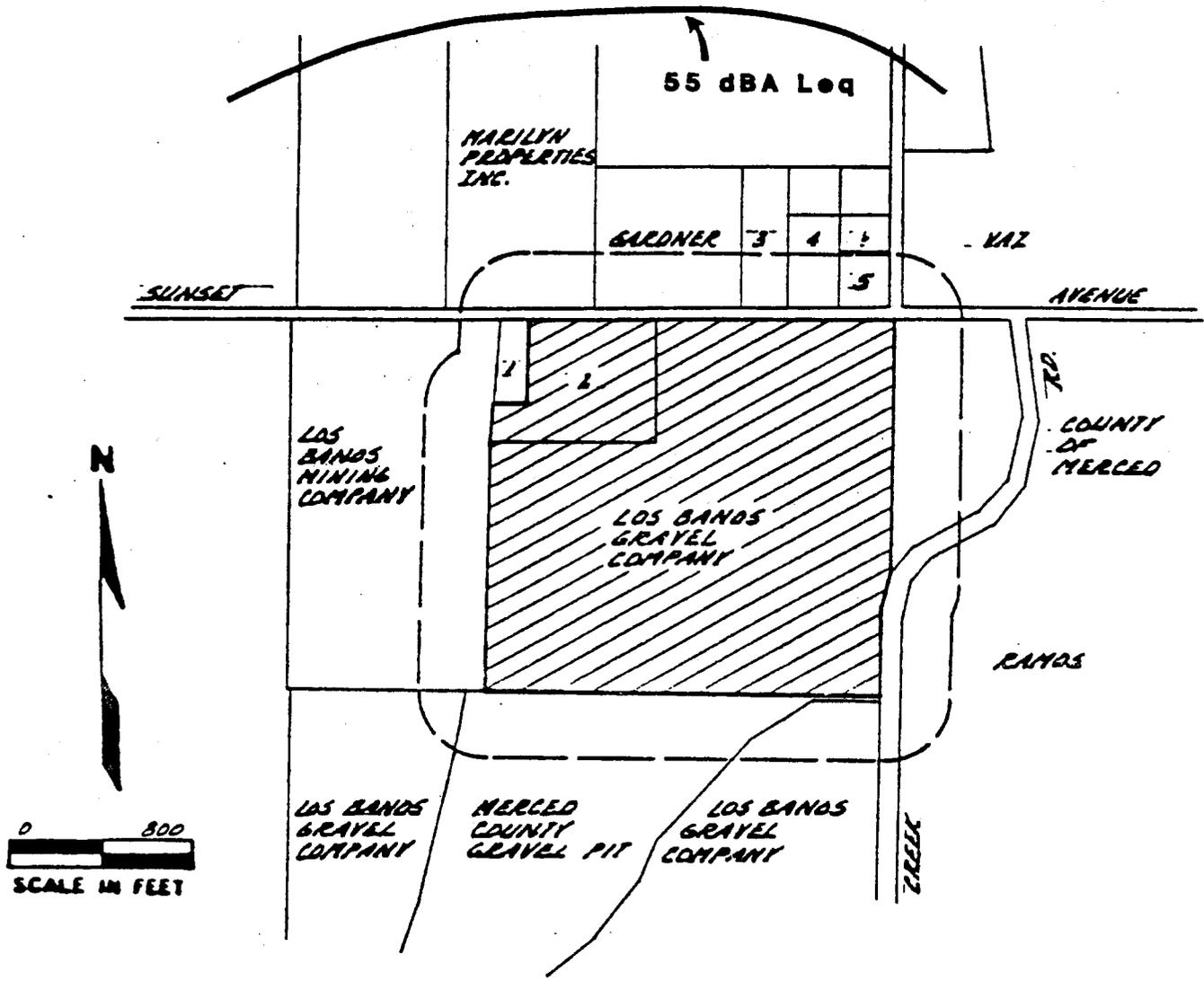
BBA

E. & J. Gallo Winery



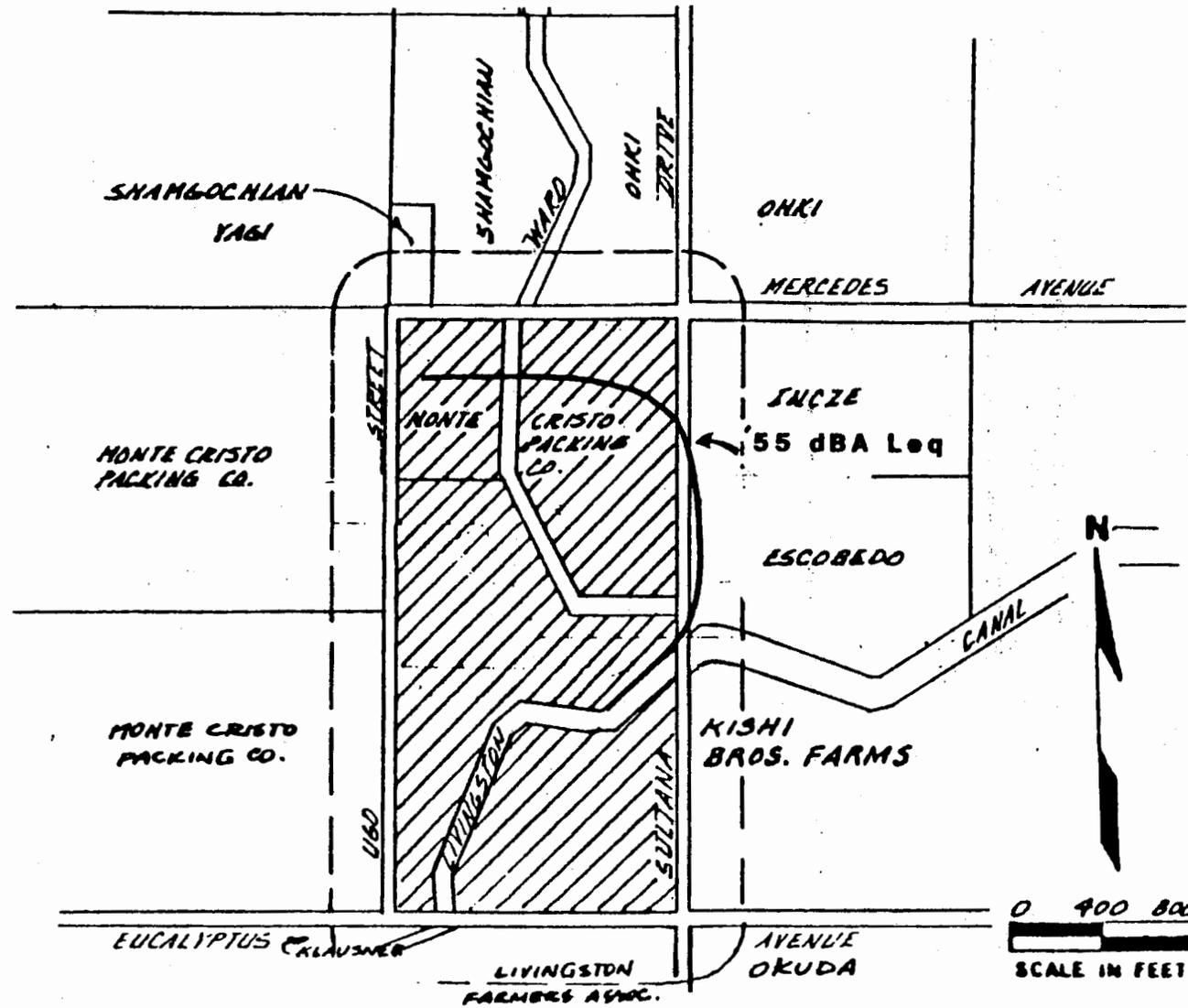
BBA

Los Banos Gravel Company



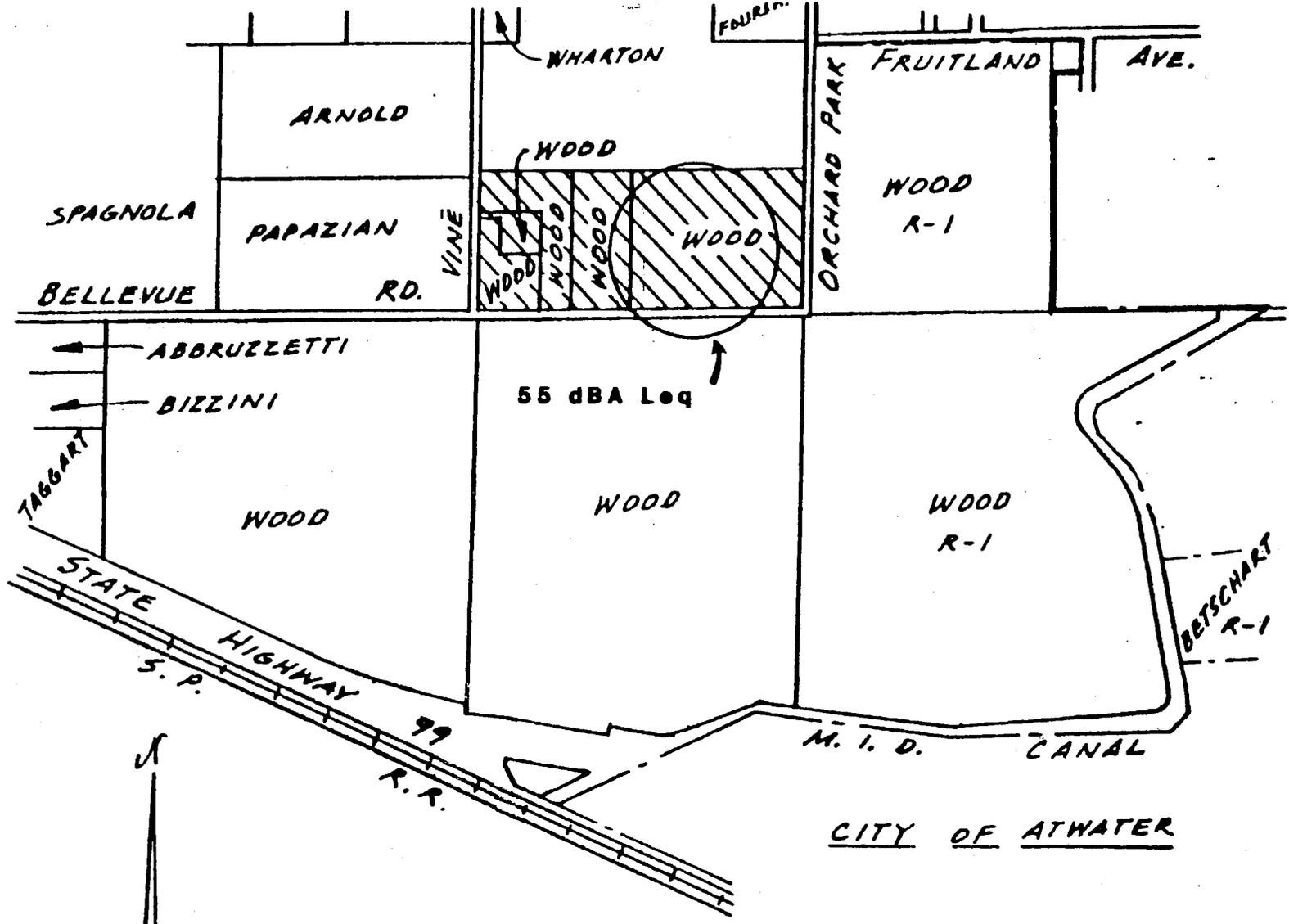
BBA

Monte Cristo Packing Company



BBA

Woodruff



SCALE: 1" = 800'

NOTE: ALL PROPERTY IS ZONED A-1 UNLESS OTHERWISE NOTED.

BBA

APPENDIX E

Existing Noise Exposure From Public Use Airports

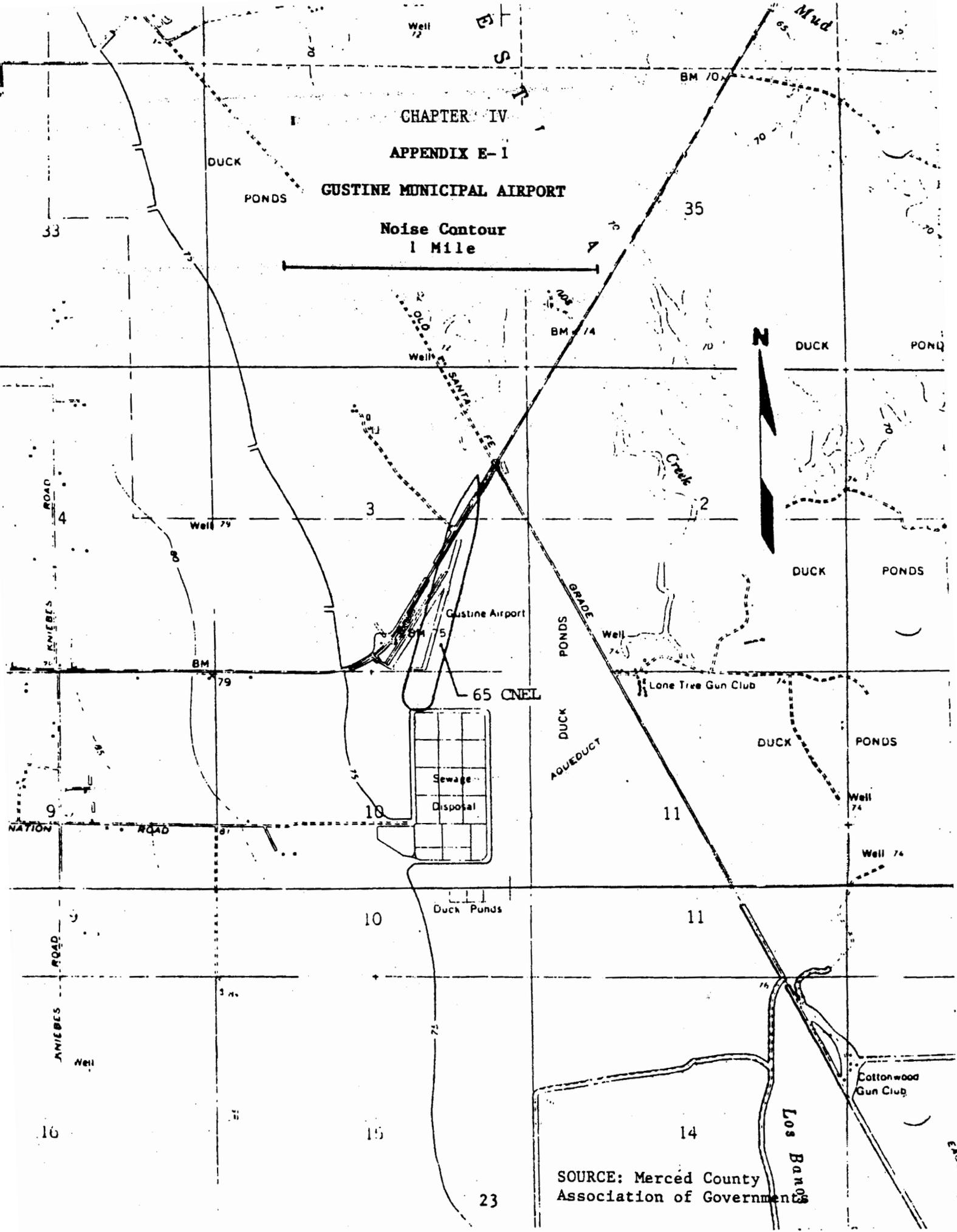
- Appendix E-1: Gustine Municipal Airport
- Appendix E-2: Los Banos Municipal Airport
- Appendix E-3: Merced Municipal Airport
- Appendix E-4: Turlock Municipal Airport

CHAPTER IV

APPENDIX E-1

GUSTINE MUNICIPAL AIRPORT

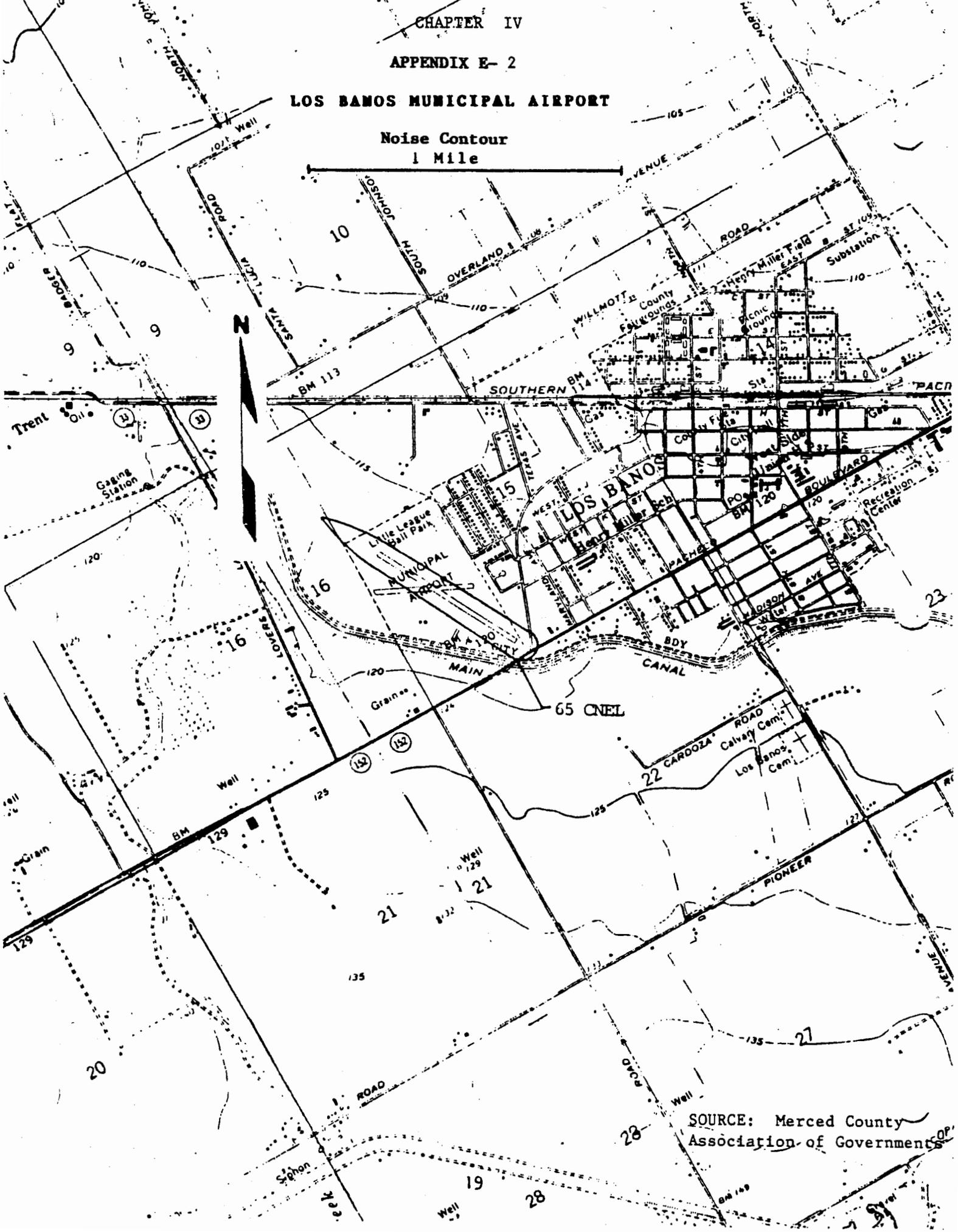
Noise Contour
1 Mile



SOURCE: Merced County
Association of Governments

LOS BANOS MUNICIPAL AIRPORT

Noise Contour
1 Mile

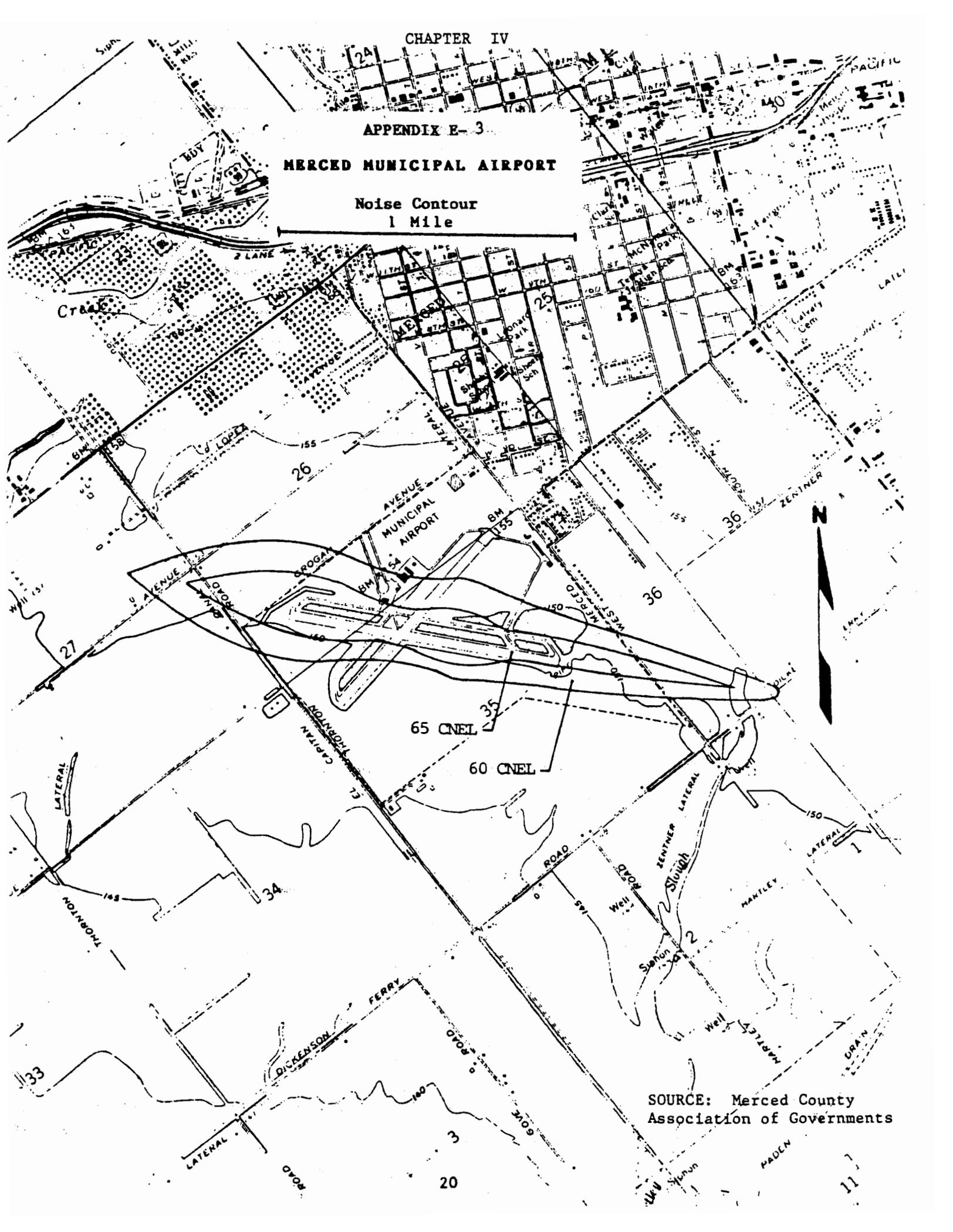


SOURCE: Merced County Association of Governments

APPENDIX E-3

MERCED MUNICIPAL AIRPORT

Noise Contour
1 Mile



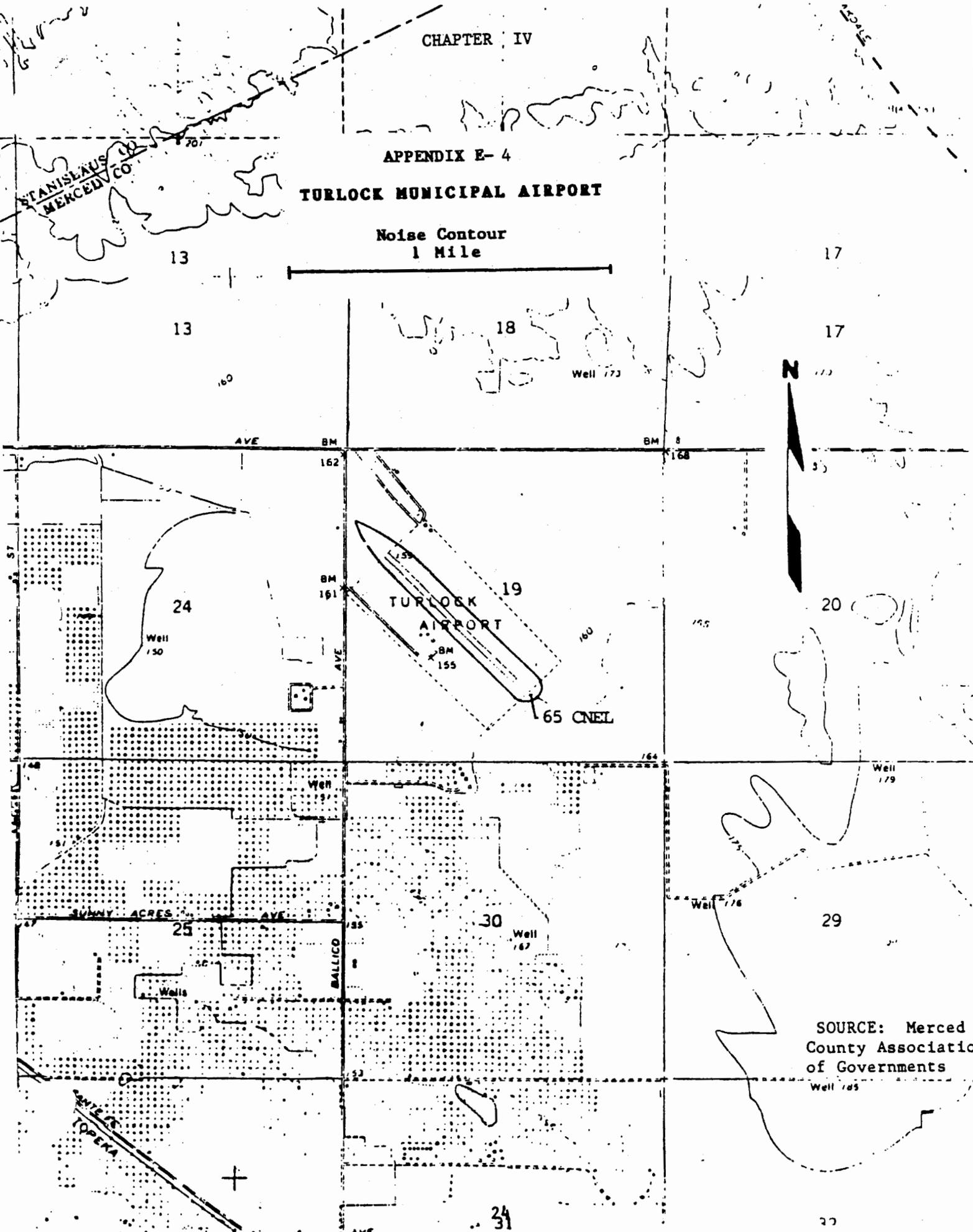
SOURCE: Merced County
Association of Governments

CHAPTER IV

APPENDIX E-4

TURLOCK MUNICIPAL AIRPORT

Noise Contour
1 Mile



SOURCE: Merced
County Association
of Governments

Well 185

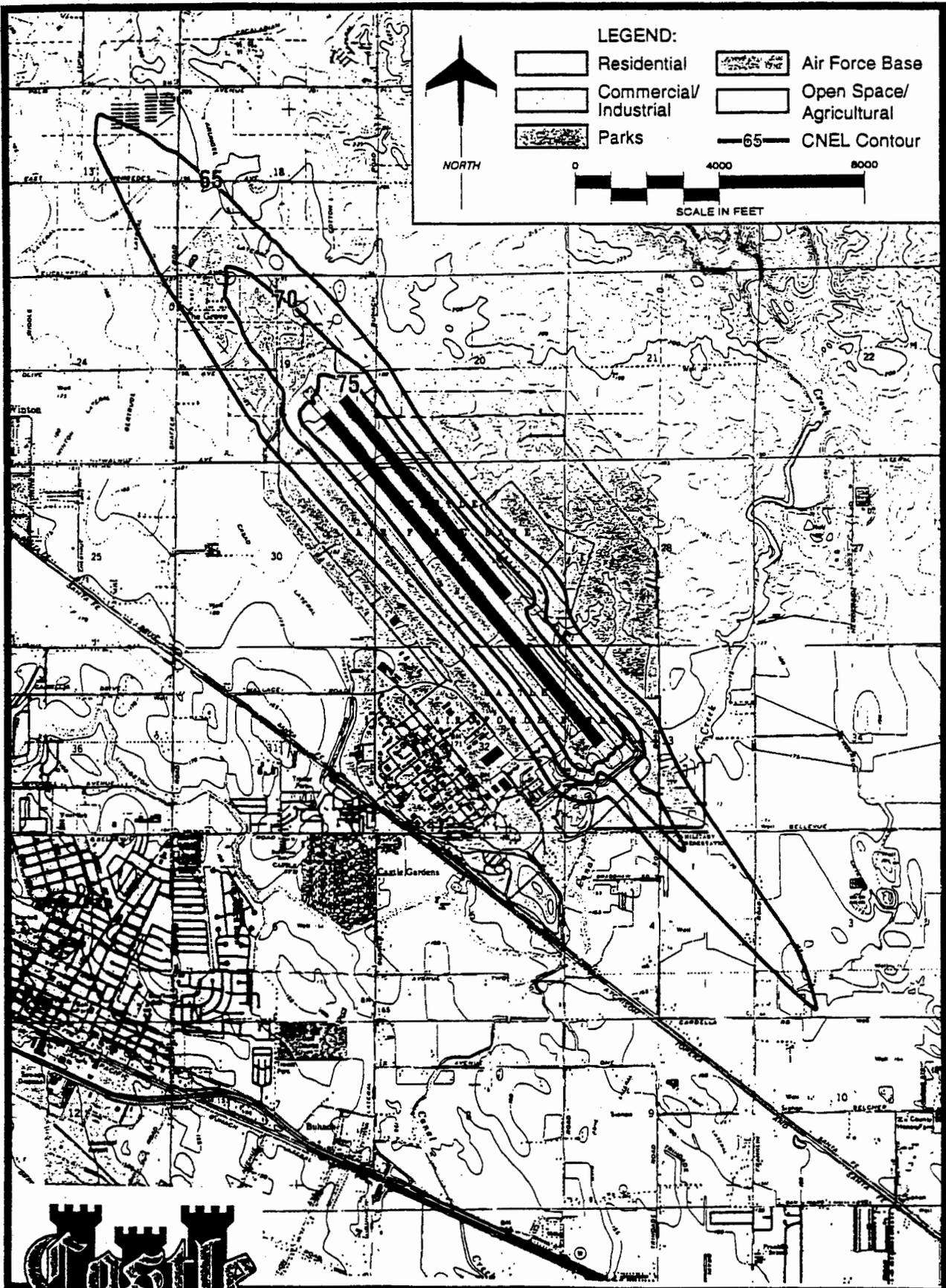
APPENDIX F

Castle Master Re-Use Plan

Appendix F-1: 2015 Proposed Development – Noise Contours

CASTLE MASTER RE-USE PLAN

92MP19-10D-2/18/94



2015 PROPOSED DEVELOPMENT
NOISE CONDITIONS