

Table 8.2-2

ESTIMATED VEHICLE EMISSIONS
(Tons/Day)

<i>Unit Type</i>	<i>TOG</i>	<i>CO</i>	<i>NOX</i>
Single-Family Housing	0.0	0.3	0.0
Multi-Family 10-20 DU/acre	0.3	2.8	0.6
Regional Commercial	0.1	1.3	0.3
Commercial - General	1.2	10.4	2.4
Commercial - Industrial	0.3	2.4	0.5
Planned Development	1.1	10.3	2.2
Regional Industrial	<u>0.0</u>	<u>0.4</u>	<u>0.1</u>
TOTAL Emissions:	3.0	27.9	6.1

Notes: TOG - total organic gases
CO - carbon monoxide
NOX - nitrogen oxides

The proposed development within the project area will consume electric energy and emissions from off-site power generating plants contributing to the total regional pollutant burden. Natural gas will also be consumed for space heating, water heating, and industrial process heat.

The estimated electric power plant and natural gas emissions are presented in Table 8.2-3. The emission factors were taken from the "Air Quality Handbook for EIRs" by the SCAQMD (April 1987). The daily energy consumptions were calculated based on proposed land uses listed in the Specific Plan as shown in Table 9.1-1 in the Energy section.

The estimated total vehicle and stationary emissions attributed to the proposed project are listed in Table 8.2-4. It must be noted that emissions related to specific industrial developments allowed by the Specific Plan were unable to be quantified at the time. All industrial developments whose emissions are greater than established regulatory limits, will be required to adhere to all rules and regulations of the SCAQMD.

Table 8.2-3

ESTIMATED STATIONARY EMISSIONS

<u>Estimated Electric Power Plant Emissions</u>			
<u>Pollutant</u>	<u>Emission Factors</u> (lbs/1000 kWh)	<u>Daily Electric Consumption</u> (kWh)	<u>Emissions</u> (tons/day)
Carbon monoxide	0.2	1.83×10^6	0.18
Nitrogen oxides	1.15	1.83×10^6	1.05
Sulfur oxides	0.12	1.83×10^6	0.11
Particulates	0.04	1.83×10^6	0.04
Reactive organic gases	0.01	1.83×10^6	0.01

<u>Estimated Natural Gas Emissions</u>			
<u>Pollutant</u>	<u>Emission Factors</u> (lbs/10 ⁶ cu feet)	<u>Daily Gas Consumption</u> (cu feet)	<u>Emissions</u> (tons/day)
Carbon monoxide	20	6.43×10^6	0.06
Nitrogen oxides			
Residential	80	6.43×10^6	0.26
Commercial	120	6.43×10^6	0.39
Sulfur oxides	Negligible	6.43×10^6	---
Particulates	0.15	6.43×10^6	< 0.1
Reactive Organic Gases	5.3	6.43×10^6	0.02

Source: Air Quality Handbook for EIRs, SCAQMD, April 1987.

Table 8.2-4

ESTIMATED PROJECT EMISSIONS
(Tons/Day)

Pollutant	Source		Total
	Vehicle	Stationary	
Carbon monoxide	27.9	0.2	28.1
Nitrogen oxides	6.1	1.7	7.8
Sulphur oxides	(EST) 0.8	0.1	0.9
Particulates	(EST) 1.2	0.1	1.3
Reactive organic gases	3.0	< 0.1	3.0

The East Valley Corridor Specific Plan is expected to promote planned residential, commercial, and industrial growth with buildout projected by 2028. This anticipated growth would increase emissions related to traffic and energy consumption over the existing conditions. In comparison, the no project alternative within the context of the area's General Plans with accelerated growth and buildout by 2012, would create a 16 percent higher population increase at a much faster growth rate and possibly more traffic due to a continued job-housing imbalance.

The project's impact on air quality is considered cumulatively significant because the plan is growth-inducing and the region is in nonattainment for ozone and particulates. However, the projected growth and the associated air quality impacts are consistent with the County's General Plan provisions and the AQMP. With adherence to the Specific Plan and the AQMP, and with proper mitigation to alleviate short- and long-term air quality effects, impacts related to the planned development would be mitigated to a level of nonsignificance. In fact, the goal of the Specific Plan, which is to create a balance between jobs and housing, and reduce commuting, should produce a positive impact on air quality impacts when compared to the no project alternative and projected growth in the region.

8.2.3 Mitigation Measures

During the construction of sites within the project area, the following mitigation measures to reduce dust and equipment emissions should be implemented:

1. Control dust by regular watering, paving construction roads, or other dust preventive measures as defined in the SCAQMD Rule 403;
2. Maintain equipment engines in proper tune;

3. Seed and water landscape areas until grass cover grown;
4. Phase and schedule construction activities to avoid high ozone days; and
5. Discontinue construction during second stage smog episodes.

The East Valley Corridor Specific Plan includes numerous mitigation measures in its goals, policies, and objectives to conform and be consistent with the Air Quality Management Plan. The principal provisions of the Specific Plan to improve air quality are to promote and facilitate employment-producing development within the housing rich, job poor San Bernardino County to reduce commuter traffic. The Plan's policies include the following:

1. Maximize generation of employment opportunities in a region which has a significant imbalance of housing versus employment opportunity;
2. Facilitate location in the project area of a wide range of commercial uses to serve the region, local industry, and residential neighborhoods;
3. Support a limited amount of residential land use within the planning area;
4. Develop the land use map in conformance with, and implement the policies of the General Plans of San Bernardino County, and the cities of Redlands and Loma Linda, and with other regional plans;
5. Adopt energy-efficient transportation strategies to implement State and County goals for reduced energy consumption and improved air quality;
6. Designate land uses so as to reduce the number and length of vehicle trips in the East Valley Corridor; and
7. Provide opportunities for alternative travel modes to supplement the private automobile.

Under the Specific Plan's objectives are numerous specific mitigation measures related to air quality improvement. These include:

1. Conformity with the SCAG-82 directive to facilitate industrial growth to balance jobs and housing;
2. Adoption of performance standards to protect and improve air quality and to be consistent with the AQMP;
3. Providing local jobs, services, and shopping to reduce commuter trips;

4. Establishing residential densities in proximity to employment and commercial centers;
5. Requiring bus turn-outs, shelters, and park and ride lots;
6. Cooperation with regional transportation efforts to implement convenient bus service, ridesharing and staggered work hours;
7. Development of a pedestrian and bicycle circulation system;
8. Promotion of so-called "clean" industrial developments; and
9. Utilization of landscaping to reduce cooling costs.

As part of a project-wide Transportation Management System (TSM) and to meet new SCAQMD rules, it is also recommended that an areawide employer association be set up to administer promotion, progress, and coordination of TSM services for future developments. Some specific measures should include:

1. Preferential parking and access for car and van pools;
2. Employer or building specific plans for implementing car and van pooling as a condition for tenancy;
3. Inclusion of commercial, shopping, and restaurant areas on ground floors of office buildings or in a locally convenient area;
4. Interconnected pedestrian access for lunch-time and after-work shopping and business;
5. Inclusion of bicycle lockers/storage for employees; and
6. Evaluation of child care facilities either at large employment centers or for locally dense employment areas.

Energy conservation measures and standards should be implemented to all new development. Energy-saving practices pertain to building design, insulation, efficient heating and cooling units, landscaping, easy access to public transportation and utilization of solar energy.

The project estimates that 50 to 60 percent of the absorption of industrial, commercial, and retail space will be due to local expansion needs, with the rest from the region and the nation. The continued trend of eastward urbanization in the South Coast Air Basin indicates that many of the new developments and the influx of new residents may come from within the Basin itself. Thus, the increase in energy consumption and traffic in the project area could be offset by reductions in emissions in other parts of the region.

8.3 HYDROLOGY

Much of the following information on existing conditions and proposed facilities was provided by the draft East Valley Corridor Specific Plan (December 1987) and the draft Engineers Report by Metcalf & Eddy (January 1988).

8.3.1 Existing Conditions

8.3.1.1 Drainage Patterns

The East Valley Corridor lies within the overflow flood plain of Mission Zanja and San Timoteo Creek. Both are tributaries of the Santa Ana River, which forms the northern boundary of the Corridor. The Santa Ana River is a major, partially improved water course with 360 square miles of mountainous watershed tributary to the study area.

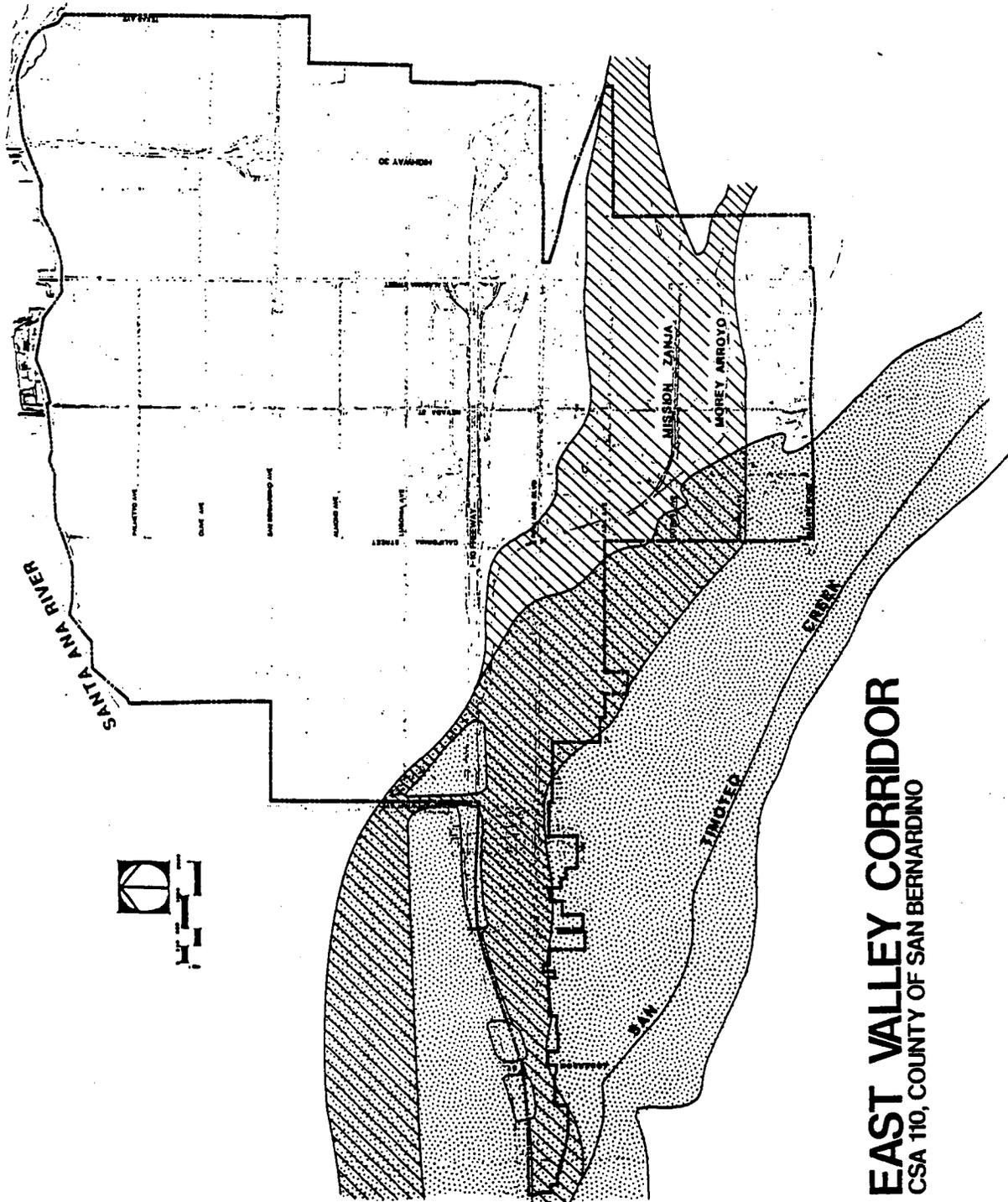
San Timoteo Creek is a partially improved channel with 126 square miles of hilly watershed lying in the counties of San Bernardino and Riverside. The creek flows generally in a northwest direction and discharges into the Santa Ana River north of I-10 and west of Waterman Avenue. In 1973 the Army Corps of Engineers (COE) estimated peak discharge of 45,000 cubic feet per second (cfs) for the standard project flood and 23,000 cfs for a 100-year flood. The southwest portion of the study area is affected by flooding in San Timoteo Creek.

The Mission Zanja originates at Mill Creek, east of Redlands and flows westerly through the City of Redlands into the Santa Ana River near Loma Linda. The Mission Zanja is an open channel except when it runs parallel and under Redlands Boulevard from 9th Street to Eureka Street, in downtown Redlands, as an underground box culvert. This tributary has a drainage basin which encompasses about 25 square miles. The Morey Arroyo, a local tributary of the Mission Zanja, is an unimproved channel draining the southern portion of the study area in Redlands.

In a 1981 Mission Zanja project report by the U.S. Army COE, peak drainage of the Mission Zanja downstream from the Morey Arroyo was estimated to be 12,400 cfs for the standard project flood and 5,700 cfs for the 100-year flood.

Under current conditions, neither the Morey Arroyo nor the Mission Zanja have sufficient carrying capacity to handle 100-year flood events. Major portions of the study area south of I-10 are within the overflow flood plain of both these channels and have experienced severe flooding in the past (see Figure 8.3-1).

Portions of Loma Linda and Bryn Mawr lying in the southwest corner of the study area ~~could~~ would be flooded by overflow from either stream, but the chance for both streams to peak and overflow at the same time are remote. Areas north of I-10 are not a part of any major flood plain.



LEGEND

-  SAN TIMOTEO FLOOD PLAIN
STANDARD PROJECT FLOOD
PEAK FLOW
-  MISSION ZANJA FLOOD PLAIN
STANDARD PROJECT FLOOD

EAST VALLEY CORRIDOR
CSA 110, COUNTY OF SAN BERNARDINO

FIGURE 6.3-1

AREAS SUBJECT TO FLOODING

The only existing storm drainage plan for the East Valley Corridor is the Comprehensive Storm Drain Plan No. 4 (CSDP) prepared in 1975. Since both the land use plan and design criteria have changed since 1975, the Engineers Report by Metcalf & Eddy (January 1988, Draft) has replaced this earlier work for the East Valley Corridor Study area.

8.3.1.2 Existing Flood Control Facilities

All major existing flood control facilities and their tributary drainage areas, within the East Valley Corridor are shown on Figure 8.3-2. Shaded areas on the map are those for which drainage facilities essentially consistent with the CSDP, have been constructed. The unshaded areas on the map indicate areas for which appropriate flood control facilities will have to be constructed before any major development can occur. A brief discussion on existing systems follows.

Highway 30 (Tennessee Freeway) Storm Drain. This storm drain is an open channel running along the east side of Highway 30, within the Caltrans right-of-way. The channel was constructed with the roadway in 1984, and is mostly concrete lined starting at the I-10 Interchange and flowing north to discharge into the Santa Ana River. The channel bottom width varies from 6 to 8 feet, the side slope varies from 1.5:1 to vertical, and the height varies from 3.8 to 6.8 feet.

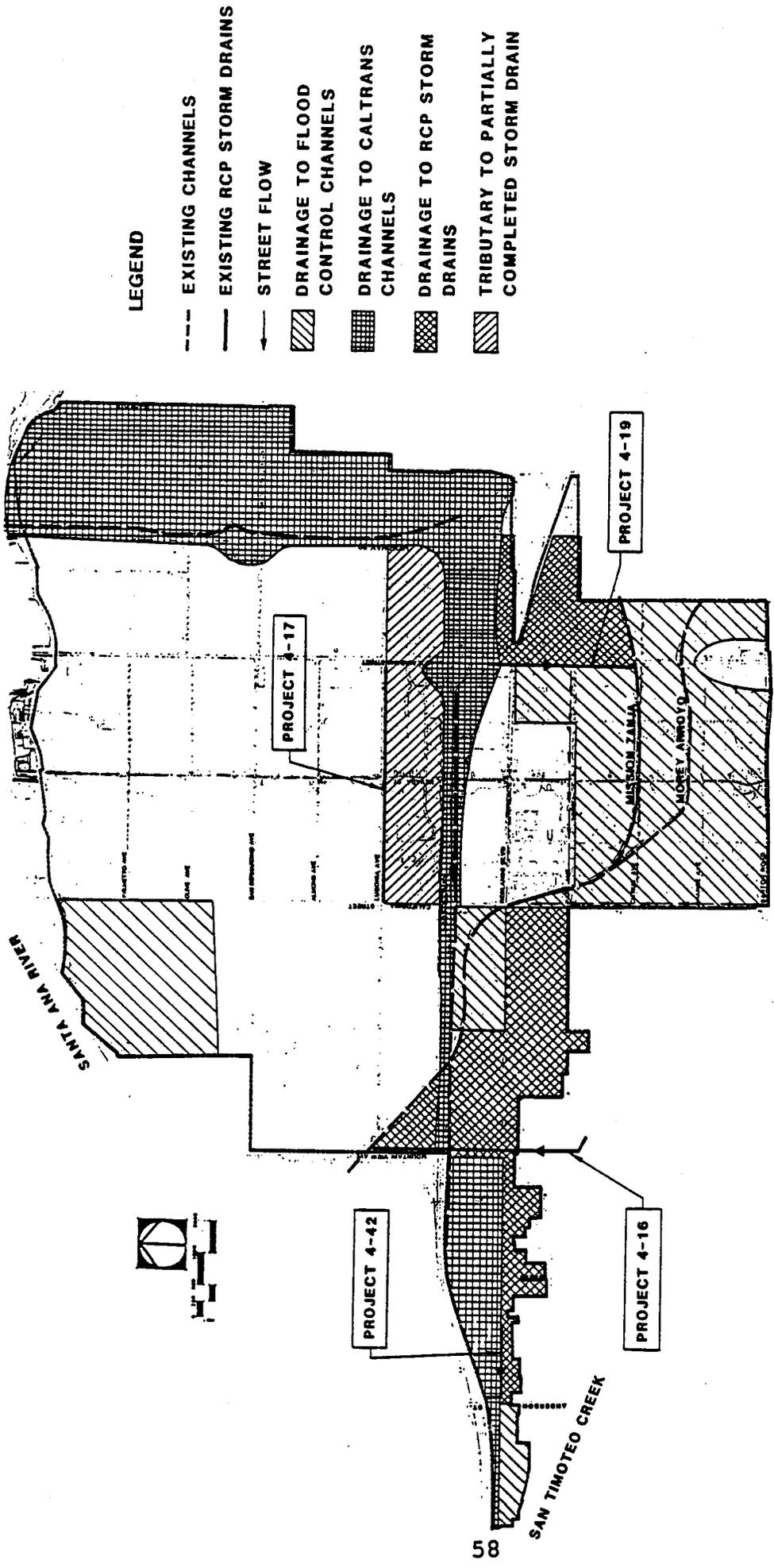
I-10 Storm Drain. The I-10 storm drain is a concrete lined open channel storm drain which runs along the south side of I-10 within the Caltrans right-of-way. Starting at Alabama Street, it flows west into the Mission Zanja at the bridge and overhead crossing. Starting again west of the crossing, it flows west to discharge into the San Timoteo Creek.

Project 4-16. This project, constructed in 1985, consists of 33-, 57-, 60-, and 69-inch reinforced concrete pipe (RCP) along and within Mountain View Avenue right-of-way in the City of Loma Linda. It starts at Mission Road intersection and flows north to discharge into the Mission Zanja, north of I-10.

Project 4-17. A storm drain consisting of 48- and 54-inch RCP has been constructed along Lugonia Avenue, between Alabama Street and California Street. This recently completed line is a portion of Project 4-17 and eventually would be extended west along Lugonia Avenue to discharge into the Mission Zanja, as the area develops. It will be a dry line until the downstream portion is completed.

Project 4-19. A storm drain consisting of 48- and 51-inch RCP runs along and within Alabama Street right-of-way in the City of Redlands. Starting north of Redlands Boulevard, it flows south to discharge into Mission Zanja Creek.

Project 4-42. A 42-inch RCP storm drain, this pipeline starts at the intersection of Redlands Boulevard and Ohio Street in Loma Linda. It flows westward along Redlands Boulevard to Anderson Street and turns



EAST VALLEY CORRIDOR
 CSA 110, COUNTY OF SAN BERNARDINO

FIGURE 6.3-2
EXISTING STORM DRAIN FACILITIES

north along Anderson to discharge into a Caltrans drainage channel along the I-10 freeway.

8.3.2 Project Impacts

8.3.2.1 Projected Stormwater Flows

The drainage system of the project area, particularly the area north of the I-10 freeway, was based on low density and agricultural land uses. With the higher density development called for in the Specific Plan, the stormwater flows are expected to increase significantly.

Stormwater flows generated from rainfall within the project area were determined according to the method and procedures outlined in the County of San Bernardino Hydrology Manual, August 1986. Since the tributary areas for all stormwater conduits laid out in the study area are less than one square mile (640 acres), the Rational Method as outlined in Section D of the Manual is the method used to compute peak discharge rates. The County Manual contains basic hydrological data for all areas of San Bernardino County and a procedure for estimating peak stormwater flow based on the well-known Rational Method.

Stormwater flow projections for the Mission Zanja and Morey Arroyo channels can be found in studies which take into account the entire basin areas of the channels. The design storm for projecting flow rates has been taken as the 100-year storm in conformance with the design standards set for the reaches beyond the East Valley Corridor boundaries.

Peak stormwater flow for the Morey Arroyo channel corresponding to 100-year flood protection was estimated to be 3,022 cfs according to a study by Metcalf & Eddy (June 1987). The estimate was calculated following a new alignment of the channel from Alabama Street to a new confluence with the Mission Zanja near Iowa Street.

Peak flow rates for the Mission Zanja within the East Valley Corridor were provided by the San Bernardino County Department of Transportation and Flood Control based on ongoing flood routing analyses of the channel. Figures assumed for the present study are based on the construction of a detention basin at Wabash Street to hold back peak flows and on the recommended realignment of the Morey Arroyo previously described. With these basic assumptions, the peak design flow rates for the Mission Zanja above the confluence of Morey Arroyo is taken at 6,390 cfs, and below the confluence of Morey Arroyo at 7,200 cfs.

8.3.2.2 Impact Areas

The project area as a whole will be significantly impacted by the increased stormwater flows due to complete development planned by the Specific Plan. The area north of I-10, which is currently served by a drainage system based on low density land uses, is expected to have a significant increase of stormwater flows. Although the area is not a

part of any major flood plain, the increased stormwater flow is likely to create local flooding during major storms without major improvements.

A significant portion of the southwestern part of the study area, including most of the City of Loma Linda portion, is contained in the 100-year flood plains of San Timoteo Creek and the Mission Zanja flood channel. Since these two drainage courses are regional channels, hydrologic conditions and land uses upstream of the project area will have cumulative impacts on this part of the study area in terms of potential flooding. The San Timoteo Creek drainage is currently being studied by the Army Corps of Engineers for necessary improvements.

8.3.3 Mitigation Measures

Mitigation measures are contained in the backbone stormwater facilities which consist of stormwater pipelines and improvements to the Mission Zanja and Morey Arroyo channels. Stormwater pipelines convey local runoff to either the Santa Ana River, Mission Zanja, or Morey Arroyo. These channels in turn transport stormwater flows beyond the East Valley Corridor boundaries. The recommended facilities integrate with existing facilities described in Section 8.3.1 to form a comprehensive drainage plan for the East Valley Corridor. Figure 8.3-3 shows design flow rates and the recommended sizes and layout of these facilities.

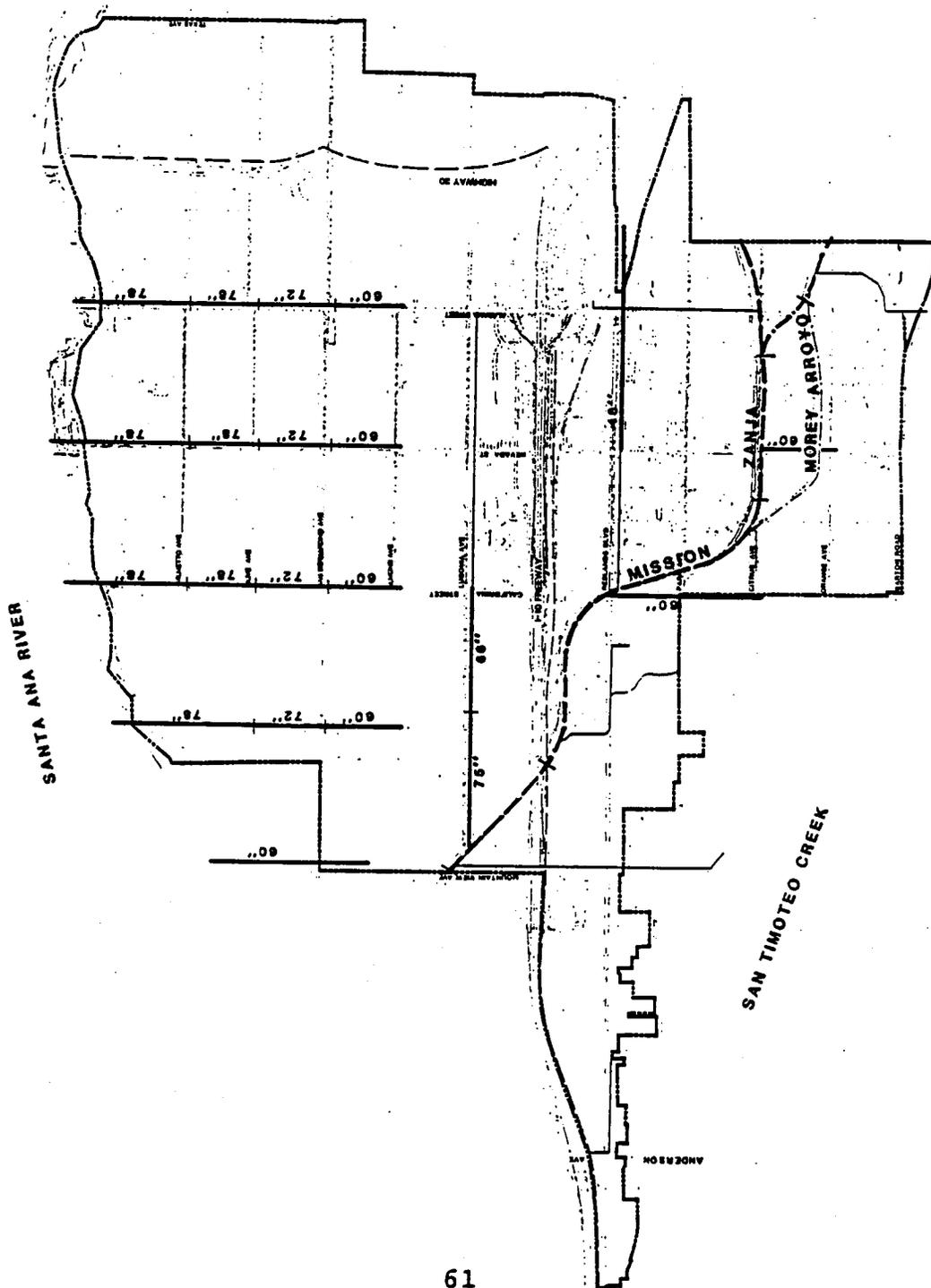
Flow rates and sizes will be seen to be of greater magnitude than those projected in the CSDP No. 4. These larger flow rates and larger pipe sizes are due to the newer design criteria of the 1986 edition of the County Hydrology Manual and the more complete development of the area called for by the East Valley Corridor Specific Plan. Tributary areas for the recommended storm water facilities are also shown in Figure 8.3-3. These tributary areas are the same as those developed in the earlier Comprehensive Storm Drain Plan.

The Specific Plan also will establish a Safety Overlay District for areas subject to flooding (100-year floodplains). This Safety Overlay District sets regulations and development standards to appropriately safeguard public health and safety. Division 5 of the Specific Plan describes the Overlay District in detail.

8.3.3.1 Stormwater Pipelines

Stormwater flows generated north of Lugonia Avenue are collected in local pipelines and conveyed in north/south collectors northward to the Santa Ana River.

Runoff on either side of Lugonia Avenue will be collected in one long storm drain installed along Lugonia that will convey flow westward and discharge it in the Mission Zanja just east of Mountain View Avenue. The reach between Alabama and California streets is existing; new pipelines between California and Mountain View will complete this storm drain.



LEGEND:

- NEW REINFORCED CONCRETE PIPE STORM DRAINS
- - - NEW OPEN CHANNEL ALIGNMENT
- - - - PROPOSED OPEN CHANNELS TO BE IMPROVED
- OPEN CHANNEL STORM DRAIN TO BE ABANDONED
- EXISTING RCP STORM DRAINS
- - - EXISTING OPEN CHANNEL STORM DRAINS



FIGURE 8.3-3

RECOMMENDED STORM DRAIN

EAST VALLEY CORRIDOR
 CSA 110, COUNTY OF SAN BERNARDINO

A major collector is recommended along Redlands Boulevard, south of I-10. Beginning just west of Alabama Street, this pipeline will run westward along Redlands Boulevard and discharge into the Mission Zanja near California Street.

A summary of the recommended stormwater pipelines is shown in Table 8.3-1.

8.3.3.2 Improvements to Morey Arroyo

The existing Morey Arroyo is inadequate to carry the predicted 100-year storm flows and must be improved in order to carry these flows. The improvements include:

- o Improvements to the existing channel from west of Tennessee Street and continuing westward along the existing channel to Alabama Street
- o Addition of a reinforced concrete box at Orange Street
- o Construction of a reinforced concrete double box culvert at Kansas Street
- o Realignment of the channel west of Alabama Street, to flow northwesterly and discharge into Mission Zanja in the vicinity of Iowa Street
- o Construction of a double box culvert under Citrus Avenue
- o Construction of a new confluence with Mission Zanja and any required erosion protection at the confluence.

Improvements in the existing channel and the new channel section will include a rectangular reinforced concrete cross section with bottom controls if necessary. Channel capacity will be provided for the full 100-year design flow of 3,022 cfs.

8.3.3.3 Improvements to Mission Zanja

The existing capacity of the Mission Zanja channel is also inadequate to contain the projected 100-year stormwater runoff. Recommended improvements include:

- o Construct a reinforced concrete rectangular and trapezoidal channel along the existing channel alignment
- o Construct a reinforced concrete channel under I-10
- o Provide additional width to the existing bridges at the Bryn Mawr and Park Avenue crossings

Table 8.3-1
SUMMARY OF RECOMMENDED STORM DRAIN FACILITIES
(Lengths in Feet)

Location (streets)	Pipelines (Diameters)					Channel Improvements		
	48"	60"	66"	72"	75"	81"	Morey Arroyo	Mission Zanja
Alabama		1,300		1,300	1,300	2,200		
Nevada	1,600	1,300		1,300	1,300	2,600		
California	2,600	4,000		1,300	1,300	2,300		
Bryn Mawr	1,000	1,300	1,300	2,600				
Mountain View	3,000							
Lugonia		2,500			2,600			
Redlands	1,300							
Various							2,000	10,350
TOTALS:	9,500	10,400	1,300	6,500	6,500	7,100	2,000	10,350

- o Construct additional box culvert capacity at the existing box culvert crossings at New Jersey, Nevada, and Iowa streets.

Crossing structures at Mountain View Avenue, Alabama Street, and Kansas Street are adequate to carry the 100-year projected runoffs.

8.4 BIOLOGY

8.4.1 Existing Conditions

Historic land use within the East Valley Corridor has precluded native plant and animal communities for many years. The river channels as well as the fertile benches and valley lands were converted to agricultural, industrial, and commercial facilities long ago, and the existing wildlife consists of species that have adapted to the presence of man. Virtually no native vegetation is present, except as remnant plants and those that have re-established in vacant fields. The established groves and horticultural plantings, however, have become important habitat areas for the surviving wildlife, and new linear bands of native riparian plant community are found along the Santa Ana River, especially behind the Southern California Edison plant at the northern end of Mountain View Avenue. Additional riparian vegetation may be found along the Morey Arroyo between Nevada and Kansas streets. No rare or endangered species of plants would be expected to exist in the project area because virtually no native vegetation is present.

A distinctive citrus grove assemblage of wildlife persists, composed largely of predatory mammals and a few noteworthy birds. Characteristic of extensive groves are such nocturnal animals as coyote, striped skunk, raccoon, and opossum. More commonly seen are ground squirrels, jackrabbits, and cottontails. Characteristic birds are crows, which have a huge population in the study area, starlings, and ring-necked pheasant. Smaller ground-dwelling animals are generally depleted within established agricultural areas because of repeated cultivation and herbicide treatment. Hence most reptiles, including many species of snakes and lizards are absent, as are a number of rodent species and ground-nesting songbirds. However, the edges of the fields and groves often support the more hardy ground-nesting species, such as roadrunner, meadowlark, and gophers. No rare or endangered species of animals are known to exist in the project area as the wildlife community consists of all common, urban-adapted species.

Though the Santa Ana River is outside the northern border of the project area, it is of prime importance to much of the resident wildlife, and it may contain populations of the Santa Ana River woollystar, an endangered plant species. The riverbed provides valuable open space that enlarges the available habitat for the existing wildlife community, which can travel back and forth from agricultural lands. Essentials of space and food are provided, especially for the predatory species.

The rows of fan palms which line the major citrus groves provide substantial nesting habitat for resident birds. Though many "nuisance" birds use the palms, such as crows and starlings, there is also a considerable number of American kestrels, barn owls, flickers, and songbirds. The most valuable trees are those along Palmetto and San Bernardino avenues, within the existing citrus groves.

The combination of groves next to alfalfa fields now provide good foraging habitat for birds of prey. Red-tailed hawks are fairly

common, as are American kestrels, shrikes, and barn owls. On occasion, one can see a black-shouldered kite, and in the winter, other species are possible. A surprisingly large number of raptorial birds forage within the study area, considering the amount of urbanization. No species list has been provided because virtually no native vegetation is present, and the wildlife community present consists of all common, urban-adapted species.

8.4.2 Project Impacts

The East Valley Corridor Specific Plan proposes to develop the project area with urban uses and totally eliminate agricultural uses at build-out. The development of the agricultural areas will destroy habitat for wildlife that has adapted to the citrus groves and open fields. As the citrus groves are removed, associated wildlife will either be destroyed or will be displaced. Since the agricultural areas are continually impacted at present and are not considered sensitive biological habitat, the urbanization is not considered a significant adverse impact on biological resources. No native plant or animal communities will be eliminated by development within the project area.

The urbanization will also impact the nesting habitats located in the rows of fan palms. The degree of impact is dependent on each bird species' sensitivity to urban noise and to the number of palms which may be removed. No threatened or endangered species are expected to be impacted however.

8.4.3 Mitigation Measures

Though no specific mitigation is required to offset any significant biological impacts, the following measures are recommended to preserve the fan palms and to provide habitat for urban-adapted wildlife, especially adjacent to the Santa Ana River wash.

The rows of fan palms should be retained as street borders and possibly for lining bike lanes. The East Valley Corridor Specific Plan states in Section EV2.0225(a)(2)(c) that an objective is to "preserve existing Mexican fan palm rows and extend palm row plantings along selected major arterials both north and south of Interstate 10".

The least intensive land uses should be planned along the Santa Ana River so that a larger block of habitat is created for the resident wildlife. Open space, parks, agriculture, ranches, or a golf course would be suitable for this purpose.

The landscaping element for new development and for major streets should be implemented. This will provide additional habitat for urban-adapted bird species and provide space for diverse ornamental plant species. The retention and replacement of palms as street trees in areas bordering the Santa Ana River will retain the nesting habitat for the birds of prey. This will allow for conservation of as many of the predatory birds as possible. Phasing of the development plan in the agricultural areas will also allow a gradual change in the urban-

adapted fauna. This phasing will allow for the gradual displacement of wildlife and accommodation to a new lower, carrying capacity.

Development of the parcels containing the blue line stream channels, as shown on USGS maps, will require a permit for alteration of the stream channel from the California Department of Fish and Game under section 1601-3 of the Fish and Game Code, as well as a permit from the Corps of Engineers under section 404 of the Clean Water Act, if dredging is conducted or fill materials are placed in these wetland habitats. The Morey and Mission Zanja channels are so indicated, as is the San Timoteo Canyon wash.

8.5 AESTHETICS

8.5.1 Noise

Noise is generally defined as sound that is unwanted or interferes with a person's hearing. Noise impacts can range from actual loss of hearing in extreme cases to adverse physiological effects in the community environment. Common significant impacts produced by excessive noise in the community are interference with speech communication, disruption of sleep and sleep patterns, reduced ability to do complex tasks, and physiological effects (such as nervous tension and high blood pressure). Some common environmental sounds and their associated decibel ranges are shown in Figure 8.5-1.

Noise levels are assessed and measured using the A-weighting scale with units of sound known as a decibel (dB). Two assessment scales frequently used are the Noise Equivalent Level (LEQ) and the Community Noise Equivalent Level (CNEL). LEQ is the "energy" average noise level and is a level of continuous noise. CNEL is defined as the cumulative noise exposure level over a 24-hour period with an increased weighing factor applied to the evening and night time period.

The Environmental Protection Agency (EPA) has concluded that a daily average LEQ of less than or equal to 70 dB would protect the public from hearing damage. However, other less intense noise impacts can occur at lower noise levels as illustrated by the following list.

<u>Noise Impact</u>	<u>Noise Level (dB)</u>
Hearing Loss	75-85
Physiological	65-75
Speech Interference	50-60
Sleep Interruption	35-45

8.5.1.1 Existing Conditions

There are two major sources of noise within the East Valley Corridor: vehicular noise generated primarily by I-10 and Highway 30 and aircraft noise generated by Norton Air Force Base.

Interstate 10 is a 6-lane freeway that runs east to west for approximately 4 miles through the center of the project area. General noise contours were estimated for this transportation corridor and for Highway 30 utilizing Caltrans estimation of noise exposure from highway traffic for County general plans. The estimations were adjusted for the elevated design of the freeways and used 1986 average daily traffic (ADT) counts.

The estimated existing noise contours are shown on Figure 8.5-2. The 70 dB contour is approximately 300 feet from the centerline of the outside lane and the 65 dB extends to 600 feet. The noise levels decrease slightly to the east of Alabama Street as ADT are slightly lower.

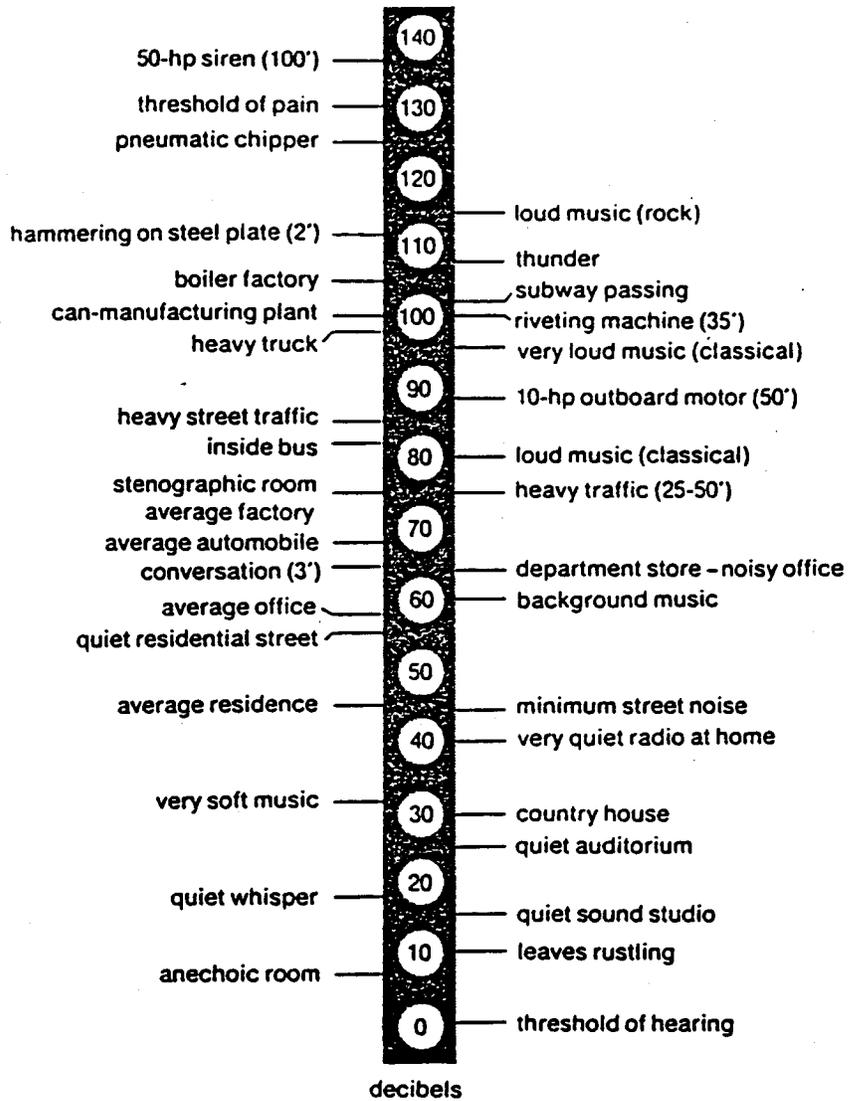


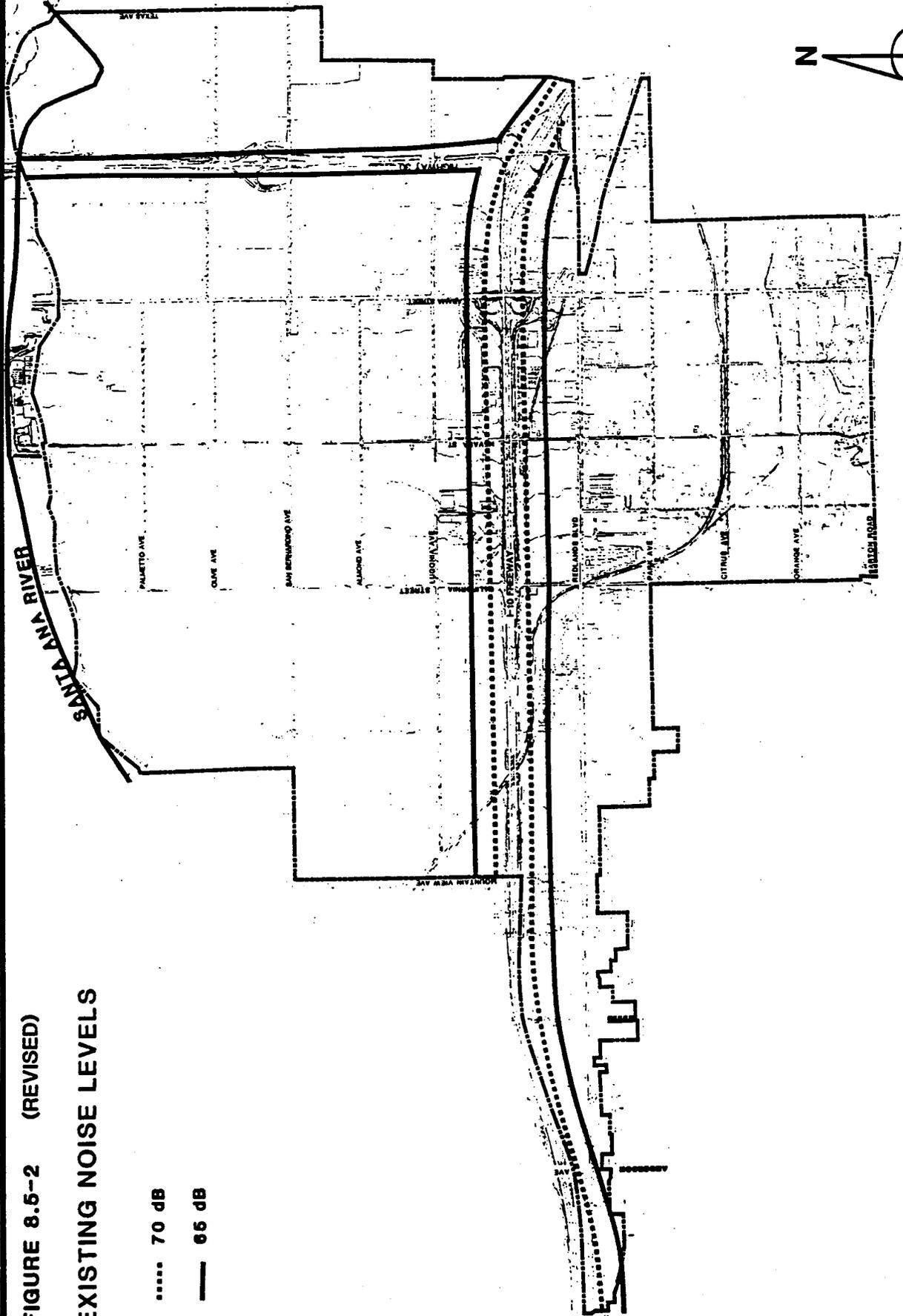
FIGURE 8.5-1

COMMON ENVIRONMENTAL SOUNDS



FIGURE 8.5-2 (REVISED)
EXISTING NOISE LEVELS

..... 70 dB
—— 65 dB



0 1/2 1 2 MILES
SCALE

EAST VALLEY CORRIDOR
CSA 110, COUNTY OF SAN BERNARDINO

Noise contours along Highway 30 for the 65 dB contour extend out to about 200 feet on each side of the freeway.

The flight pattern from Norton AFB and the subsequent noise produced by overflying aircraft were provided by the Air Installation Compatible Use Zone (AICUZ) Study for Norton AFB, ~~December-1976~~ February 1988. The 65 dB noise contour from overflying aircraft and general runway noise, affects ~~the entire length of the northern border~~ an area just north of the East Valley Corridor along the Santa Ana River and a narrow zone in the northeast area (see Figure 8.5-2). The study states that residential uses within the 65 CNEEL contour are "strongly discouraged unless a demonstrated community need for residential development would not be met if the development were prohibited." Commercial uses are strongly recommended by the study in these noise level zones.

~~Another narrow band extending from the northeast to southwest corners of the project is designated as the Closed Landing Area (see Figure 8.5-2). This area represents a zone of significant noise levels resulting from aircraft training flight patterns. Although the frequency of these flights are low, noise levels are above significant levels at times. Base officials strongly recommend that only non-residential uses be placed within the Closed Landing Pattern.~~

8.5.1.2 Project Impacts

Short term increases in ambient noise levels would occur during the construction phase of individual projects. Construction of the project is expected to span 30 to 40 years; however, the area impacted by individual projects will be localized. As development progresses, impacts of construction noise upon adjacent residential and other urban use would become more common. However, it should be noted that the County's Development Code excludes temporary construction activities between 7:00 a.m. and 7:00 p.m. from compliance with established noise standards.

During the construction of an individual project, construction of different types of structures will produce different sound levels. Individual noise events on construction sites could typically reach as high as 95 dB depending on equipment used. These noise levels would impact construction workers to a more significant degree than adjacent residents or existing retail businesses due to the proximity to the noise source. Residents living near a construction site would perceive higher ambient noise levels during construction than before or after construction.

Each land use will also have its own particular character noise emissions. Industrial uses will tend to have higher noise levels due to major mechanical equipment, manufacturing, fabrication and heavy truck traffic than other land uses. Commercial uses will generate higher traffic levels and other associated noise impacts but these are less significant than the same noises generated by industrial developments. Residential uses would generally have the lowest ambient noise generation of the three major land uses due to less traffic

generated and slower vehicle speeds, as well as an environment that diffuses noise sources throughout a larger area and includes more sound absorbing surfaces such as vegetation.

The home environment is the most sensitive noise receptor for land use planning. Noise exposure at commercial and industrial sites tends to be shorter in duration and thus has less significant effects on people than the long term exposure to noise that may occur in and around the home. Noise generated from exterior sources which may affect a residence or educational institutions is required to be attenuated to 45 CNEL. Exterior noise levels in excess of 65 dB are not permissible in residential areas without mitigation.

Project impacts from increased noise levels pertain mainly to increased traffic on I-10, Highway 30, and the major and secondary highways proposed for the East Valley Corridor. Table 8.5-1 lists the estimated highway noise levels at project buildout. Figure 8.5-3 depicts the projected highway noise levels at project buildout.

Interstate 10 is forecast by Caltrans to carry 172,000 vehicles per day by 2005 with 2 additional lanes planned. Predicted noise contours for 75 dB are about 175 feet, 70 dB to 425 feet, and 65 dB to 775 feet. This amounts to an increase of 41 percent in the area of 70 dB and 29 percent for 65 dB areas.

Highway 30 is planned to expand to 4 lanes that will handle approximately 56,000 vehicles by 2005 according to Caltrans. The 65 dB level of noise will remain about 200 feet due mainly to the reduction of speeds expected with increased congestion.

The proposed circulation within the East Valley Corridor and the forecast traffic flows for each route, are provided in the Circulation Report. Redlands Boulevard, Alabama Street, California Street, and San Bernardino Avenue are planned to expand to 6-lane highways. Lugonia Avenue, Mountain View Avenue, and Nevada Street are scheduled as 4-lane secondary highways. Using Caltrans general estimation for noise levels, Table 8.5-1 lists the approximate distance from the outside lane to expected noise contours.

These increases in noise levels along the principal highways are a significant impact when compared to the existing low noise levels associated with the generally agricultural land uses. When compared to the alternative of market-driven growth within the East Valley Corridor, which envisions unplanned buildout by 2012, the projected noise levels under the Specific Plan should be slightly less due to community and roadway landscaping standards and a slower, more planned growth (buildout by 2028).

The aircraft noise associated with Norton AFB is expected to remain essentially unchanged during the growth period. However, the noise which now impacts principally citrus groves, would impact urban development. The Specific Plan states that no residential developments will be allowed within the 65 dB contour as provided in the Base

Table 8.5-1

ESTIMATED HIGHWAY NOISE LEVELS AT BUILDOUT

Highway	Existing Distances (feet)			Projected Distances (feet)		
	70 dB	65 dB	60 dB	70 dB	65 dB	60 dB
Interstate 10	300	600	900 to 1,050	425	775	1,275
Highway 30	---	100 to 200	---	---	200	450
Redlands Blvd.	---	100	---	75	175	420
Alabama Street	---	<100	---	100	200	450
San Bernardino Avenue	---	<100	---	60	150	330
California St.	---	---	---	60	150	330
Lugonia Avenue	---	---	---	40	120	280
Mt. View Avenue	---	<100	---	50	125	300
Nevada Street	---	---	---	---	100	---

Note: I-10 and Highway 30 projected distances are for 2005. Remainder of roads are for 2028. I-10 and Highway 30 distances adjusted due to their elevated design. Distances are from center of outside lane.

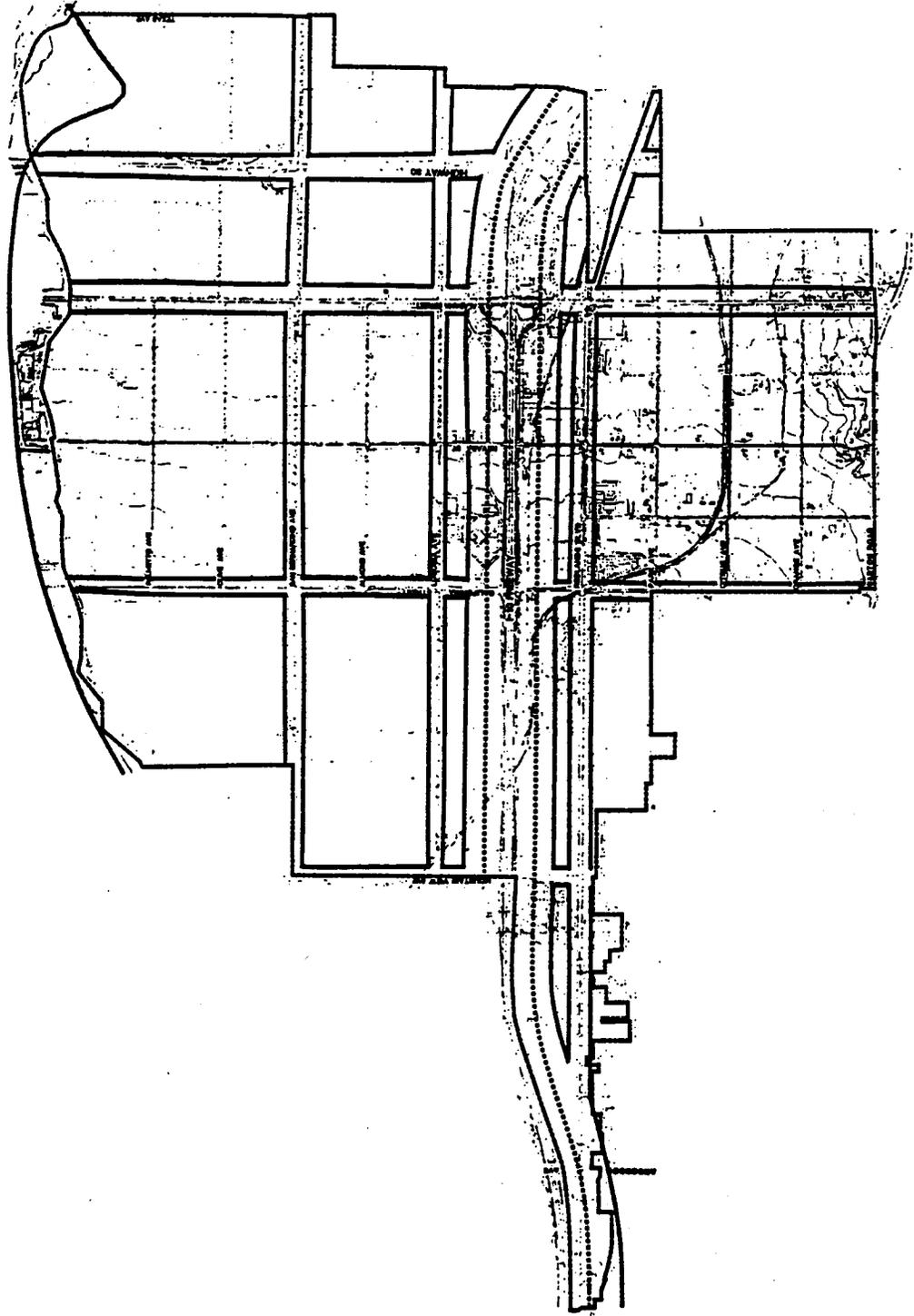


FIGURE 8.6-3 (REVISED)

PROJECTED NOISE LEVELS

- 66 dB
- 70 dB



EAST VALLEY CORRIDOR
CSA 110, COUNTY OF SAN BERNARDINO

study. ~~Some residential may occur south of Citrus Avenue within the narrow Closed Landing Area.~~ Noise levels created by Norton AFB are considered a low impact on the planned commercial and industrial development within the 65 CNEL.

8.5.1.3 Mitigation Measures

Adequate mitigation of construction-related noise can be accomplished through the following measures implemented through the County Development Code.

- o Restrict hours of operation of noise equipment to between 7:00 a.m. and 7:00 p.m., Monday through Saturday adjacent to occupied residential areas.
- o Stationary machines should be placed to direct noise away from sensitive receptors.
- o Construction vehicles should be equipped with adequate mufflers.

The East Valley Corridor Specific Plan has incorporated the County's compatibility and development standards and land use requirements with regards to long-term noise levels. These standards are generally based on state guidelines for land use compatibility for community noise environments as provided by the California Department of Health. These guidelines are shown in Figure 8.5-4. In the Community Design, Division 2, Chapter 2, Section EV4.0225(b), The Specific Plan states that "Every use of land or building shall operate in conformity with the following performance standards:...

- (2) Noise: Every use shall be so operated that the maximum volume of sound or noise generated does not exceed 65 decibels at any point on the lot line of the lot on which the use is located. ..."

This same section also states that an acoustical analysis shall be required for new single or multiple family residential development proposed adjacent to freeways, highways, arterials, rail lines, and under flight paths. The analysis shall indicate the existing and proposed CNEL's on the site, and the method(s) by which the noise is to be controlled or reduced to no more than 65 dB within the exterior living space, and 45 dB within the interior living space of the project.

The East Valley Corridor Specific Plan has also established a Safety-Noise Overlay District (Division 5, Chapter 3). This District was created to provide greater public safety by establishing land use review procedures and requirements for land uses in areas with identified high noise levels. The following requirements and standards are reprinted directly from the Specific Plan.

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE Ldn or CNEL, dB					
	55	60	65	70	75	80
RESIDENTIAL - LOW DENSITY Single Family, Duplex, Mobile Homes						
RESIDENTIAL - MULTI FAMILY						
TRANSIENT LOOING - Motels, Hotels						
SCHOOLS, LIBRARIES, CHURCHES, HOSPITALS, NURSING HOMES						
AUDITORIUMS, CONCERT HALLS, AMPHITHEATERS						
SPORTS ARENA, OUTDOOR SPECTATOR SPORTS						
PLAYGROUNDS, NEIGHBORHOOD PARKS						
GOLF COURSES, RIDING STABLES, WATER RECREATION, CEMETERIES						
OFFICE BUILDINGS, BUSINESS COMMERCIAL AND PROFESSIONAL						
INDUSTRIAL, MANUFACTURING UTILITIES, AGRICULTURE						

LEGEND:



NORMALLY ACCEPTABLE

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



CONDITIONALLY ACCEPTABLE

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



NORMALLY UNACCEPTABLE

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



CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

URS
CORPORATION

FIGURE 8.5-4

CALIFORNIA NOISE/LAND USE COMPATIBILITY GUIDELINES

SOURCE: CALIFORNIA DEPT. OF HEALTH, 1976

Section EV5.0405 Locational Requirements.

- (a) The Safety-Noise Overlay should be applied to those areas where the Community Noise Equivalency Level (CNEL) is 65 decibels, 65 dB or greater.
- (b) Community noise acoustical reports may be required during developmental processes to determine actual noise levels and contours.
- (c) Certain land uses may not be compatible at 65 CNEL dB or greater.
- (d) In the East Valley Corridor Specific Plan, this Overlay is established over areas subject to aircraft noise related to Norton AFB, and to traffic noise generated on I-10.

Section EV5.0410 Development Standards. When land use is proposed within a Safety-Noise Overlay, the following standards shall apply with respect to residential uses.

- (a) Noise levels shall be identified. An acoustical report shall be performed to identify noise impact and land uses.
- (b) Interior noise levels in all one-family and multifamily residences and educational institution shall not exceed 45 dB CNEL emanating from sources outside of the residential building.
- (c) Exterior noise levels in all one-family residential land use areas and multifamily residential land use areas should not exceed 65 dB CNEL. Exterior noise levels shall not exceed 70 dB CNEL for any residential use areas.
- (d) Ability to mitigate exterior noises to the levels of 65 dB CNEL and 70 dB CNEL shall be considered by the reviewing authority when determining the actual CNEL level with which the land uses must comply.
- (e) In areas where noise exceeds the noise standard, measures shall be taken to mitigate noise levels. An acoustical report identifying these mitigation measures shall be required and reviewed by the reviewing agency prior to issuance of any required permits or approval of land use applications.
- (f) All other structures shall be sound attenuated against the combined input of all present and projected exterior noise to meet the following criteria;

**12-Hour Equivalent
Sound Level (Interior)
dB CNEL**

Typical Uses

Educational Institutions, Libraries, Churches, etc.....	45 dB
General Office, Reception, etc.....	50 dB
Retail Stores, Restaurants, etc.....	55 dB
Other Areas for Manufacturing Assembly, Test, Warehousing, etc.....	65 dB

In addition, the average of the maximum levels of the loudest of intrusive sounds occurring during the 24-hour period shall not exceed 65 dB interior.

The overlay zone as described in Section EV5.0405(d) above should also include the zones with noise levels greater than 65 dB along the principal highways as listed in Table 8.5-1.

Basic methods to minimize noise levels on sensitive receptors include standard noise source control techniques, architectural design, land use or site planning, and usage of sound barriers.

Typical mitigation measures for site specific building developments include setbacks, landscaping, berming, block walls, and additional sound-proofing of the building.

With implementation of the Safety-Noise Overlay District, noise impacts are expected to be mitigated to a level of nonsignificance.

8.5.2 Visual Aesthetics

8.5.2.1 Existing Conditions

The East Valley Corridor is currently experiencing a transition from citrus-orientated agriculture to urban development. This transition is particularly noticeable south of I-10 and just north of I-10 between California Street and Highway 30. Areas south of Park Street and north of Lugonia Avenue are mainly agricultural with citrus groves the dominating feature.

A view analysis was prepared by Florian Martinez Associates from observations along the I-10 Freeway and Highway 30. These roadways offer view opportunities as a gateway to the project area along with elevated sections that are approximately 20 feet above grade that allow views of the entire site. The analysis examined four types of views: (1) good views - primary, these consist of major landmarks such as buildings, landscaping and views of the San Bernardino Mountains; (2) good views - secondary, are not views of major landmarks but oriented to pleasant backdrop views; (3) deficient views - primary,

these are unsatisfactory views of either major landmarks or of a depressed area adjacent to a good view - primary; (4) deficient views - secondary, are not of major elements but of small, visually unattractive areas that sporadically occur throughout the study area.

The resulting view corridor analysis is shown in Figure 8.5-5. In general, views north of I-10 are considered good-primary due to the extensive agricultural fields, citrus groves, Mexican fan palms, and the San Bernardino Mountains in the background. These views are exemplified by photographs labeled Figures 8.5-6 through 8.5-9 which were taken at locations shown on Figure 8.5-5.

Figure 8.5-6 shows the open fields that are prevalent throughout the northwest part of the project area. Typical orange groves that dominate the north-central sections of the project area are shown in Figure 8.5-7. The rows of tall Mexican palm trees are highly visible outlining the citrus groves. A closer view of the palm trees along Palmetto Avenue looking east from California Street is found in Figure 8.5-8. An example of the transition from citrus groves to urban development is shown in Figure 8.5-9. This view is taken from I-10 just west of Alabama Street and shows the emerging commercial/office development and cleared fields between I-10 and Lugonia Street with the extensive orange groves, palm trees, and mountains in the background.

Views south from I-10 are generally good-secondary to deficient-secondary. The only exception is the background view of the Box Springs Mountains. These southerly viewpoints observe the mixed retail along Redlands Boulevard which includes numerous old or rundown buildings west of California Street. New offices and the postal center have replaced the groves between California and Nevada streets. General commercial uses make up the views east of Alabama Street. Typical views along Redlands Boulevard are shown in Figure 8.5-10.

The area south of Park Avenue is experiencing a transition from agriculture to urban but extensive groves still exist providing good views. Figure 8.5-11 is a view north of Barton Road near Nevada Street that shows the existing agriculture but with the encroaching commercial building in distance to right.

8.5.2.2 Project Impacts

The proposed Specific Plan calls for elimination of all agriculture from the project area. The existing citrus groves provide the good foreground visual resources in the area by enhancing the mountain backgrounds and creating open space and a lush green view.

The urbanization of the project area will change the visual foreground character from agricultural to urban. This change from a quality agricultural view to a quality urban view is generally considered a significant impact.

FIGURE 6.5-6

VIEW CORRIDOR ANALYSIS

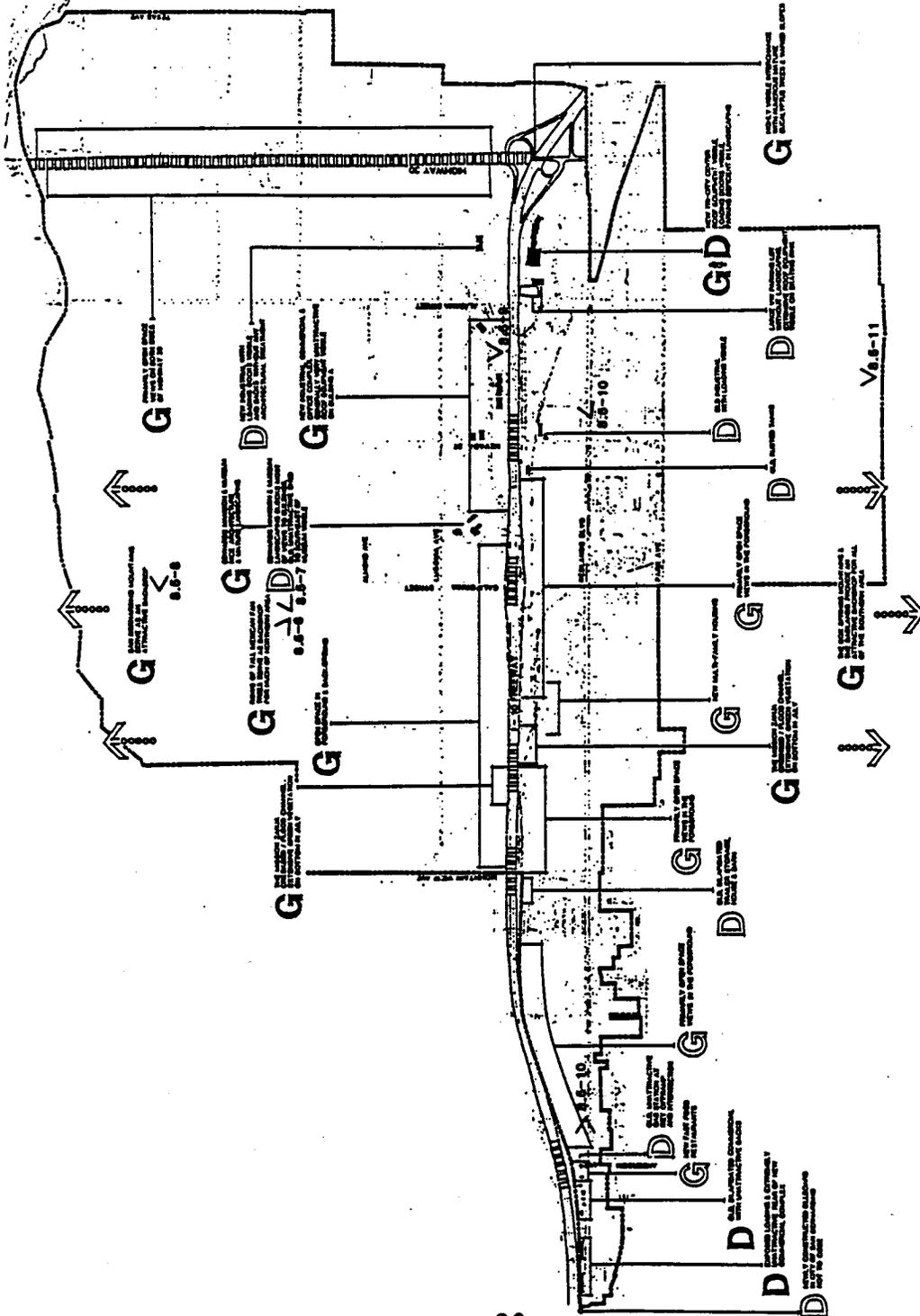
FROM I-10 FREEWAY AND 30 HIGHWAY

LEGEND

- G** GOOD VIEWS - PRIMARY
- G** GOOD VIEWS - SECONDARY
- D** DEFICIENT VIEWS - PRIMARY
- D** DEFICIENT VIEWS - SECONDARY
- |||||** ELEVATED PORTIONS OF THE I-10 FREEWAY AND HIGHWAY 30 APPROXIMATELY 100 FEET ABOVE GRADE
- <** VIEWPOINTS OF PHOTOGRAPHS

GENERAL NOTES

LANDSCAPING IN THE I-10 CORRIDOR FREEWAY AND 30 HIGHWAY CORRIDOR RIGHT-OF-WAY IS GENERALLY DEFICIENT



EAST VALLEY CORRIDOR

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FIGURE 8.6-8

VIEW NORTHWEST FROM INTERSECTION OF SAN BERNARDINO AVENUE AND CALIFORNIA STREET

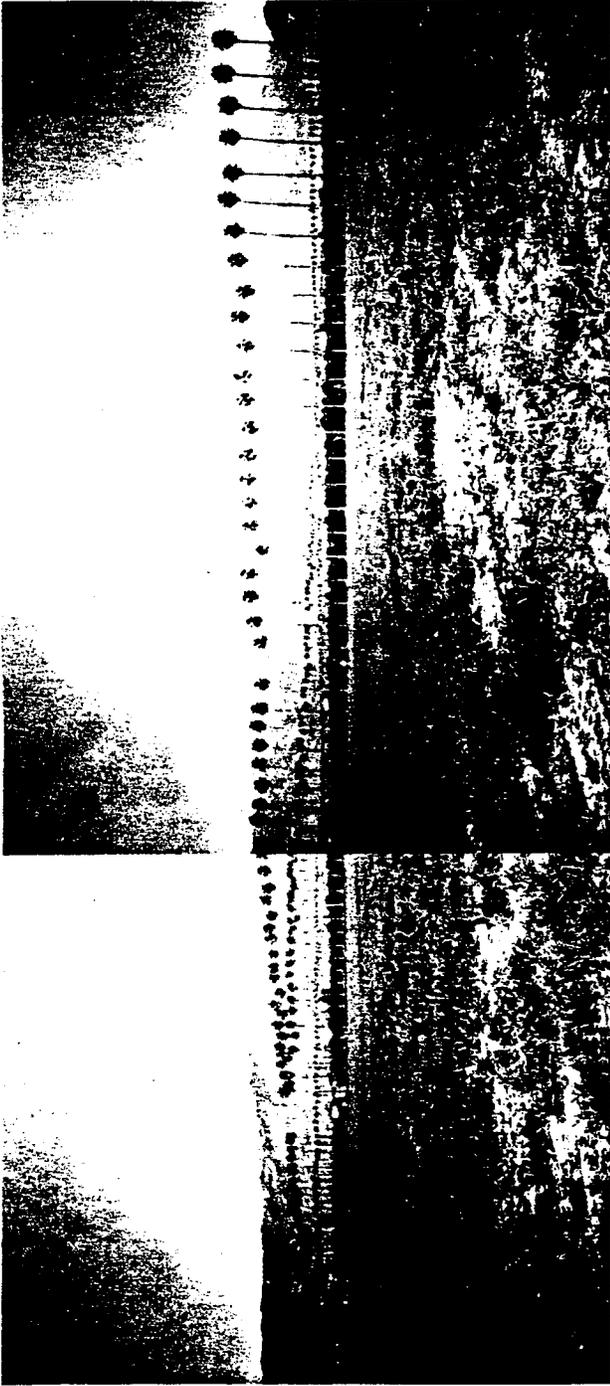


FIGURE 8.5-7

VIEW NORTHEAST AND EAST NEAR SAN BERNARDINO AVENUE AND CALIFORNIA STREET



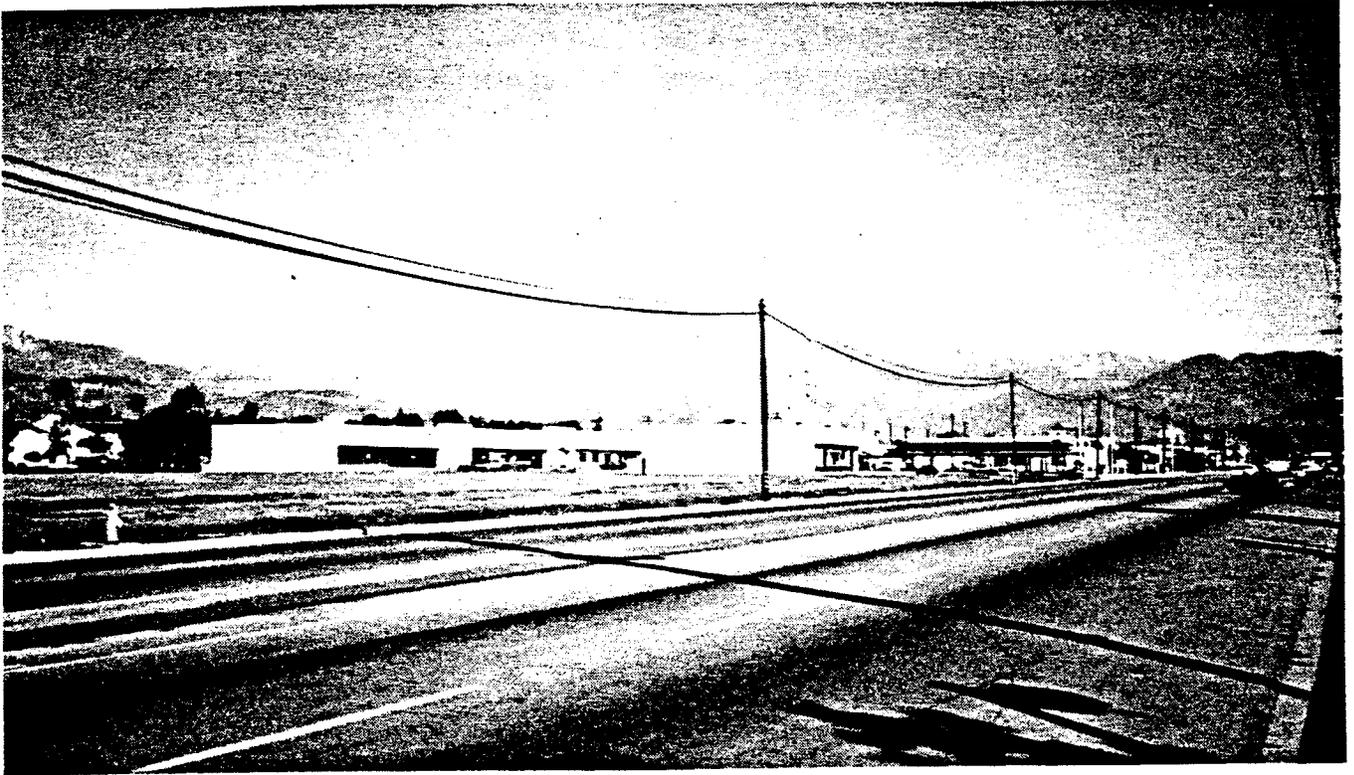
FIGURE 8.5-8

VIEW EAST ALONG PALMETTO AVENUE



FIGURE 8.5-9

VIEW NORTH FROM I-10, WEST OF ALABAMA STREET



VIEW EAST ALONG REDLANDS BLVD. NEAR IOWA STREET



FIGURE 8.5-10

**VIEW WEST ALONG REDLANDS BLVD.
NEAR ANDERSON AVENUE**



FIGURE 8.5-11

VIEW NORTH FROM BARTON ROAD NEAR NEVADA STREET

However, the Specific Plan, with its standards and policies to develop aesthetically pleasing development, should produce less visual impacts than the General Plan or market-driven alternate.

8.5.2.3 Mitigation Measures

The Specific Plan has a stated goal to promote high quality development by protecting and enhancing existing amenities, creating an identifiable community character, and adopting development standards and guidelines to ensure aesthetically pleasing design and land use compatibility. Policies to provide visual goals include establishing design themes, creating pleasing views from freeways and arterials, and encouraging effective use of landscaping.

Specific mitigation measures as listed in Section EV2.0225 include the following:

1. Design streetscapes and intersections consistent with regard to setbacks, landscaping, sidewalks, and medians;
2. Preserve existing Mexican fan palms along selected roadways;
3. Require screening for negative views on buildings;
4. Adopt minimum landscaping requirements;
5. Preserve open space along specified scenic corridors;
6. Ensure preservation of scenic vistas and unique historic or architectural features; and
7. Lights shall be placed to avoid excessive light glare or spillage.

With implementation of the Specific Plan's land use, architectural, and landscaping standards, a pleasing urban view should be established. The mountain background will be maintained and should be enhanced by extensive landscaping and well-designed development. The Specific Plan will eliminate unsightly and haphazard development. With the Specific Plan's design standards acting as mitigation measures, the significant visual impacts can be reduced to a level of non-significance.

8.6 LAND USE AND PLANNING

8.6.1 Existing Conditions

8.6.1.1 Land Use

The East Valley Corridor includes a full range of existing land uses and vacant properties. A major portion of the study area (59%) is agricultural with citrus groves covering approximately 1,611 acres or 37 percent of the project (see Figure 8.6-1). The entire area bounded on the north by the Santa Ana River, on the west by California Street, on the south by Lugonia Avenue, and on the east by Texas Street is in San Bernardino County or Redlands agricultural preserves. Citrus groves to the south of I-10 are being subjected to rapid urban development, particularly along Redlands Boulevard. Field crops are generally confined to the northwest portion of the study area, north of I-10 and west of California Street, and total about 947 acres.

Commercial property is the primary land use along Redlands Boulevard (especially the western and eastern ends) and extends along West Colton Avenue. Office complexes and industrial parks are currently being developed in a strip of land between I-10 and Lugonia Avenue from California Street to the Route 30 Freeway. Scattered industrial uses are also present south of I-10.

Only isolated farm houses are located in the agricultural zones north of I-10 with a slightly higher density of homes south of I-10. Single- and multiple-family residences are being developed in the area near California Street and Redlands Boulevard. Housing tracts lie adjacent to the project area on the south, the west, and the east.

Other significant developments are adjacent to the northern boundary of the project. These include the City of Redlands Wastewater Treatment Plant and Sanitary Landfill along the south bank of the Santa Ana River between Nevada and Alabama streets, and Norton Air Force Base, whose runway is situated just north of the river. An oil and natural gas-fueled Southern California Edison powerplant is located at the northeast corner of San Bernardino and Mountain View avenues.

Existing land use types were identified using aerial photographs and site review and verification. General land use categories used to define the area include:

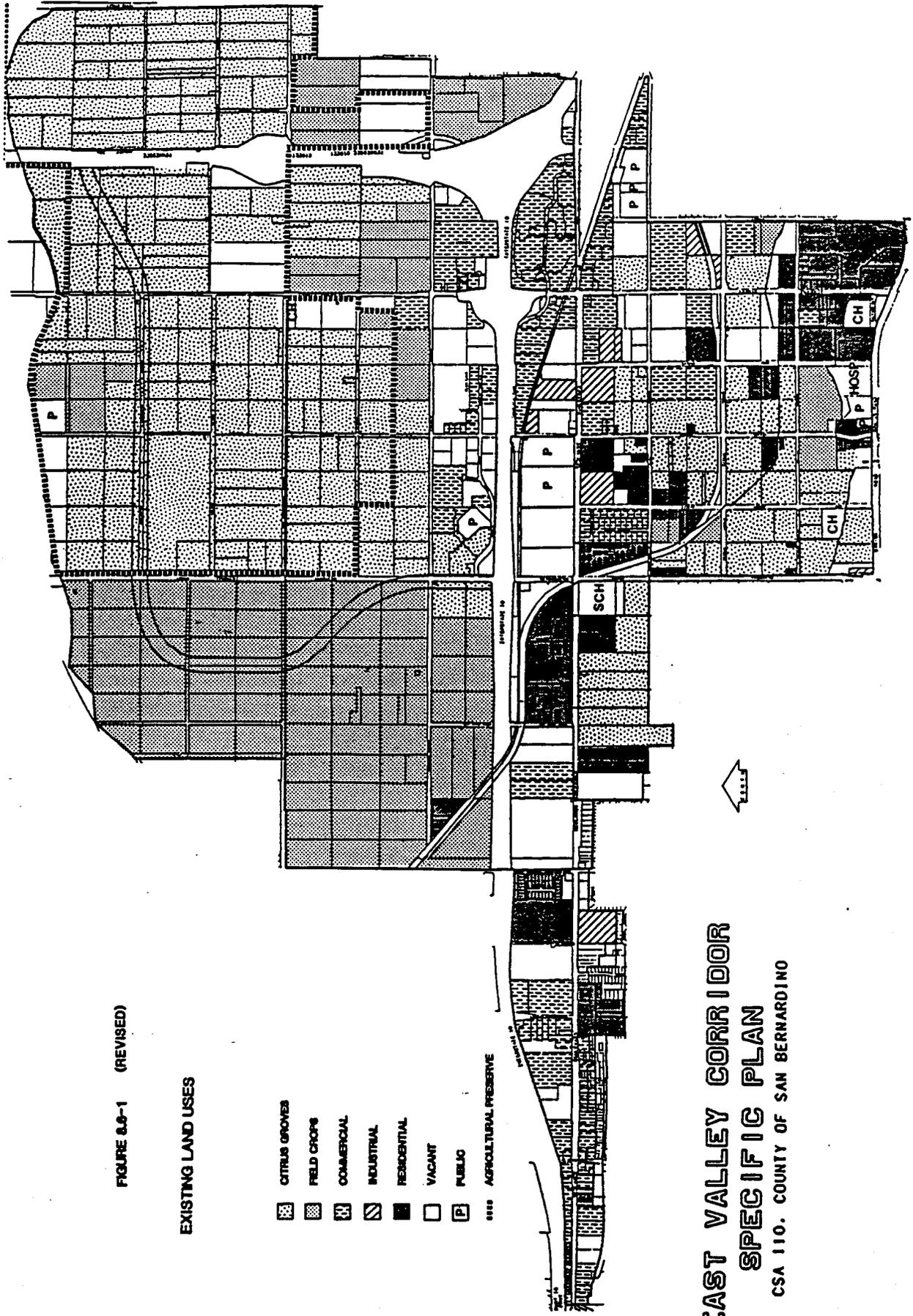
- o Residential - Single-family and Multi-family
- o Commercial
- o Industrial
- o Agriculture - Citrus and Field Crops
- o Public
- o Vacant
- o Roads and Infrastructure.

Table 8.6-1 lists the existing land uses within the East Valley Corridor as updated by the County of San Bernardino in October 1987.

FIGURE 8.9-1 (REVISED)

EXISTING LAND USES

-  CITRUS GROVES
-  FIELD CROPS
-  COMMERCIAL
-  INDUSTRIAL
-  RESIDENTIAL
-  VACANT
-  PUBLIC
-  AGRICULTURAL PRESERVE



**EAST VALLEY CORRIDOR
SPECIFIC PLAN
CSA 110, COUNTY OF SAN BERNARDINO**

Figure 8.6-1 depicts the general existing land uses. Each of these categories is described below.

Table 8.6-1

EAST VALLEY CORRIDOR SPECIFIC PLAN
EXISTING LAND USE ANALYSIS

<i>Land Use</i>	<i>Acreage</i>	<i>Percent of Total</i>
Residential - Single and Multi-Family	388	9
Commercial - General, Retail, and Office	351	8
Industrial	74	2
Citrus Groves (est.)	1,611	37
Field Crops (est.)	947	22
Public	86	2
Vacant	<u>390</u>	<u>9</u>
Land Uses (Subtotal)	3,847	89
Roads and Infrastructure	<u>503</u>	<u>11</u>
TOTAL:	4,350	100

Single-Family Residential. Single, unattached residences are designed to accommodate individual family units and are usually located on separate lots. Clustered residential units in conventional subdivisions are located between Redlands Boulevard and I-10, west of California Street. There are also subdivisions bordering the study area in most directions except north, along the Santa Ana River.

Individual residential units are scattered throughout the study area. Many are associated with farm or citrus activities particularly north of I-10. South of I-10, lots are generally smaller in overall size. The number of residences is greater and more clustering occurs. Many are still associated with agricultural uses although most appear to be inactive or transitional. Several small farm or farming like properties with single residences are located in the south and southeast portion of the study area. Those not in citrus are equestrian related with stalls and pasture surrounding the residence.

Multi-Family Residential. This category identifies multi-family attached or detached units on single lots. Examples are condominiums, apartments, mobile homes and trailer parks. Within the study area most are located to the south of I-10 on Redlands Boulevard. They include five mobile or trailer parks and two large townhouse apartment/condominium complexes. A new condominium complex is also located in the extreme southeast corner of the project area. The combined single-family and multi-family residential uses amount to 388 acres or 10 percent of the total land use.

Commercial. Commercial properties include all business, service-type activities or vacant commercial buildings or identified commercial under construction. It does not include manufacturing. Existing commercial is clustered in three primary portions of the study area, north of I-10 between California and Tennessee streets (Route 30 Freeway), from I-10 south to the south side of Redlands Boulevard between Nevada and Kansas streets, and scattered on both sides of Redlands Boulevard from Mountain View Avenue west to Anderson Street.

Types of uses are extremely varied and dependent on location. The Redlands Boulevard/Tennessee Avenue hub includes a large number of restaurants, fast food drive-ins, car sales, a motel, shopping center and miscellaneous services. The north side of I-10 is retail commercial and freeway services. Commercial activities vary widely in the western-most portion of the study area, encompassing both sides of Redlands Boulevard. Examples include a nursery, car dealership, drive-in theater, service stations, liquor stores, market, thrift store, auto parts sales and antiques stores. Commercial properties account for 351 acres or 9 percent of the total land use.

Industrial. This land use category plays a minor role in the study area. It is used here to indicate manufacturing or light industrial uses. Various types of manufacturing and assembly are the predominant uses, i.e., prefabricated modular homes and electric cars. Tank yards are also included. This type of land use is found along Redlands Boulevard and a few outlying locations. Industrial and manufacturing land uses account for 2 percent of the total land use (74 acres).

Agriculture. Agriculture includes all citrus groves and cultivated field crops throughout the study area. The vast majority of the study area north of I-10 is currently used for some form of agriculture or citrus. Field crops are primarily grown in the northwest section of the study area. Alfalfa is the predominant crop but other row crops are grown seasonally. Scattered types of agriculture in the southern study area besides citrus include dairies, poultry and hay. Non-citrus agriculture amounts to an estimated 947 acres or 22 percent of the study area.

Agricultural citrus is the primary existing land use within the study area. It is also subject to the most recent land conversion. Citrus orchards are the predominant land use north of I-10 and account for the majority of land use south of I-10. In some areas the quality of the orchards are noticeably poor and thinning. Citrus groves amount to an estimated 1,611 acres and account for 21 percent of the total acres of citrus production within the County of San Bernardino,

according to the County's 1986 Annual Crop and Livestock Report. The 947 acres of field crops (mainly alfalfa) accounts for about 4 percent of the County's total alfalfa acreage.

The principal citrus grown in the project area and their approximate acreages and estimated yields as reported by the annual crop report are as follows: valencia oranges - 575 acres, 540 cartons per acre; navel oranges - 730 acres, 480 cartons per acre; and grapefruit - 225 acres, 890 cartons per acre. Using average values per carton for 1986, the estimated annual value of citrus production within the project area is approximately \$5 million. Assuming all the field crops were alfalfa, the annual estimated value of production would be approximately \$600,000.

Much of the area north of I-10, as depicted on Figure 8.6-1, is included in the County of San Bernardino or City of Redlands agricultural preserves. Agricultural preserves were established by local jurisdictions under the 1965 Williamson Act to save farmland and control urban sprawl. Under the act, landowners can enter into contracts restricting their land to agriculture use for 10 years. In return, the landowners are taxed on agricultural-use value, rather than the value of land for potential real estate development. The property owner can withdraw from the contract over a 9-year period, during which the tax rate rises gradually to market value.

Within the agricultural preserves in the project area, approximately 190 acres are still under contract. Of this total, approximately 130 acres have not renewed their contracts which are due to expire by 1993 at the latest. Parcels totalling about 60 acres are still under agriculture contracts which will require a 9 year withdrawal period or a one-year buy out which includes a substantial penalty.

Public. Very few public land uses are identified within the study area. They include the San Bernardino County Museum located on Orange Tree Avenue, the Asistencia Mission on Barton Road east of Nevada Street (see Section 8.11), the Redlands City Maintenance Yards located on Park Avenue, and the post office, school property, and Mission school on Redlands Boulevard. They total 85.9 acres or 2 percent of the study area.

Vacant Space. Property was designated open space or vacant when there was no apparent agricultural activity and when the parcel was obviously vacant. This includes individual parcels and portions of single parcels presently unoccupied. Vacant land occupies 390 acres or 9 percent of the total land use.

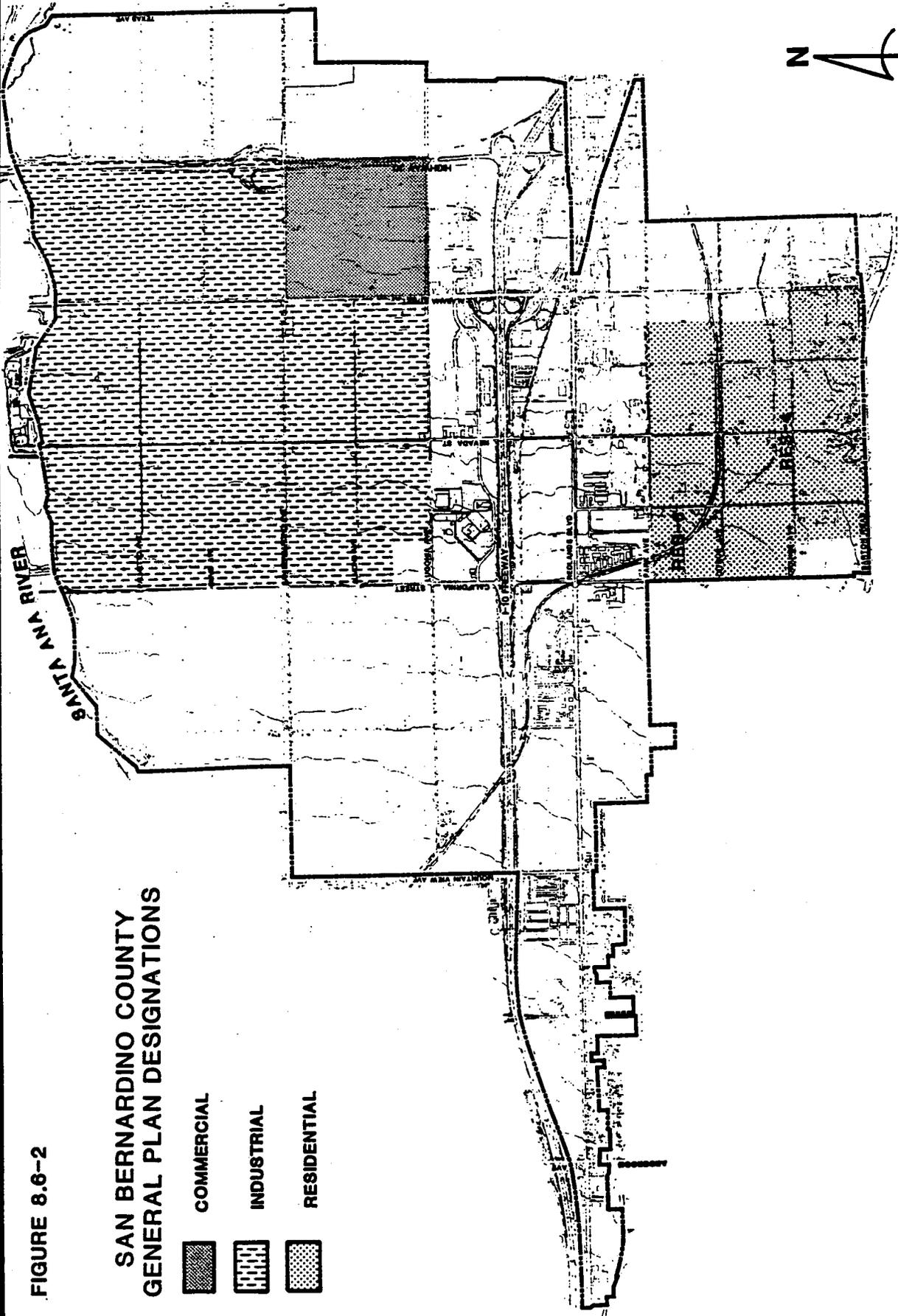
8.6.1.2 General Plan Designations

County of San Bernardino. The existing San Bernardino County General Plan has designated County lands north of I-10, which are currently planted in citrus tree and field crops, for industrial uses with some commercial uses in the southeastern most portion. The south-central portion of the study area, between Park Avenue and Barton Road, has been designated for medium density residential (RES-4 and RES-6) (see Figure 8.6-2).

FIGURE 8.6-2

**SAN BERNARDINO COUNTY
GENERAL PLAN DESIGNATIONS**

-  **COMMERCIAL**
-  **INDUSTRIAL**
-  **RESIDENTIAL**



SCALE

EAST VALLEY CORRIDOR
CSA 110, COUNTY OF SAN BERNARDINO

City of Loma Linda. Figure 8.6-3 illustrates the General Plan Designations for the City of Loma Linda for its city limits and sphere of influence within the project area. Their General Plan has designated the areas west of Curtis Street, along Redlands Boulevard as commercial. A high density residential designation (9-13 dwelling units per acre) has been given to the area northwest of the Redlands Boulevard-California Street intersection while a large area of medium density residential (5-9 dwelling units per acre) lies to the southwest. Another area of medium density residential lies northwest of the Redlands Boulevard-Mountain Avenue intersection and an area designated for general industrial uses lies to the northeast and southwest.

City of Redlands. Redlands General Plan has designated the area north of Lugonia Avenue and west of California Street as light industrial; this area is currently used for agricultural purposes. The lands lying between Lugonia Avenue and Interstate 10 and along Redlands Boulevard -- east of California Street -- have been designated for urban services. There is some light industry designated for the areas south of Redlands Boulevard and extending southeast toward Orange Avenue. A small area of land has been designated for medium density residential (10-15 dwelling units per acre) in the southeastern corner of the project area. The Redlands General Plan designations are shown in Figure 8.6-4.

8.6.2 Project Impacts

The Specific Plan proposes to promote retail, office, industrial, and residential development throughout the project area. The most likely scenario of the Specific Plan anticipates buildout by 2028 with a maximum or worst case population of 25,700 (an estimated increase of 20,080 over the existing population).

The proposed land use designations as presented in the Specific Plan are shown in Figure 2-2 and are listed in Tables 2-1 and 8.6-2. Figure 2-2 lists large areas north of I-10 as Planned Development. The land uses associated with these areas were broken out in the tables. Also shown on Table 8.6-2 are the estimated land use acreages listed under the existing County and cities General Plans and for the market-driven high growth alternative from the Lawrence Market Report, deemed to occur without the Specific Plan.

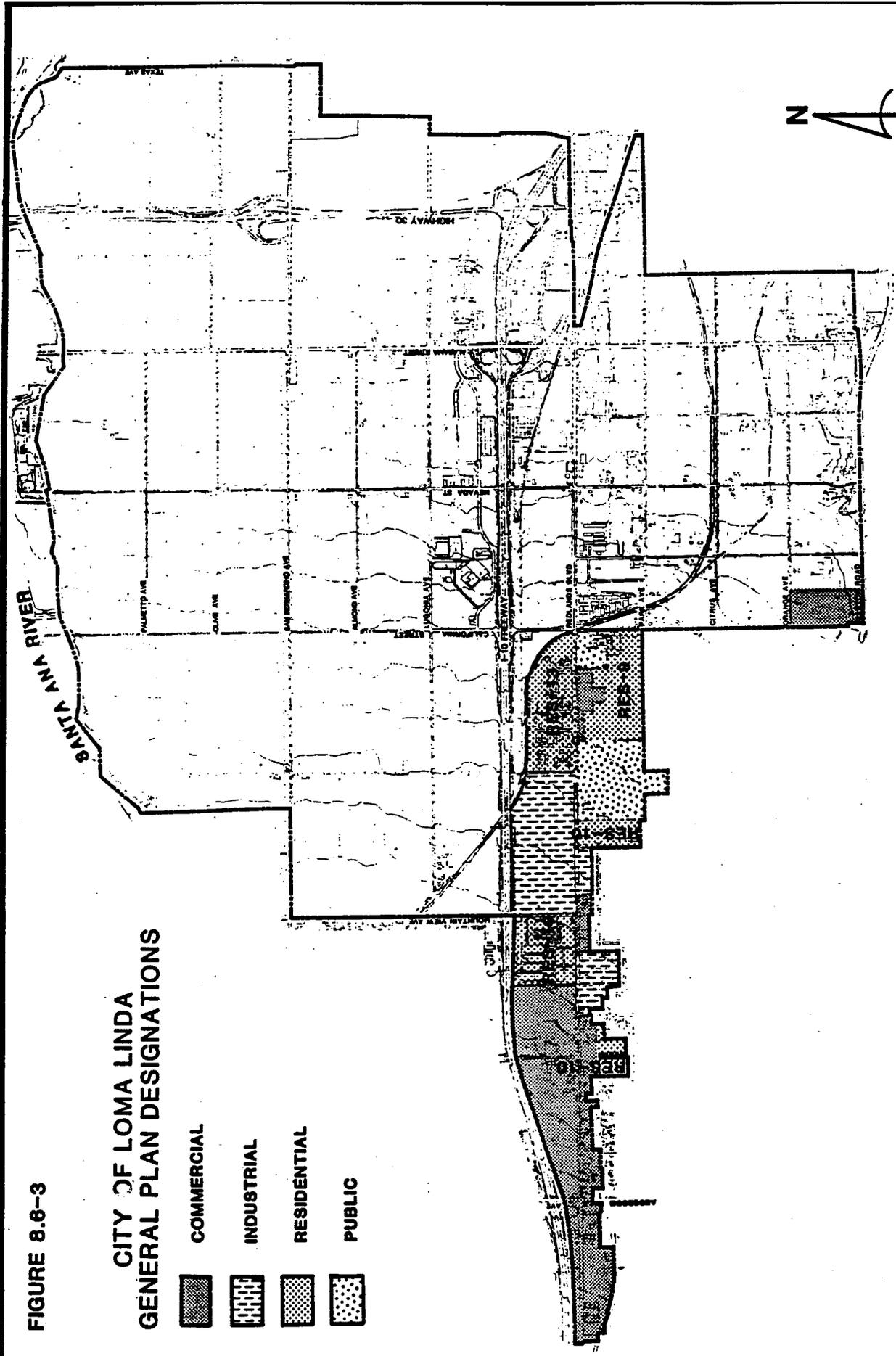
The most significant impact of the Specific Plan as well as the General Plan and the market alternative, is the near total elimination of prime agricultural lands at project build-out. Over 2,500 acres of agricultural land, including the 1,611 acres of citrus groves, could be eliminated as development occurs. The Redlands General Plan, if extended into the County lands north of I-10 within its sphere of influence, designates almost 1,500 acres to urban or agricultural reserve which is considered open space.



FIGURE 8.6-3

CITY OF LOMA LINDA
GENERAL PLAN DESIGNATIONS

-  COMMERCIAL
-  INDUSTRIAL
-  RESIDENTIAL
-  PUBLIC



EAST VALLEY CORRIDOR
CSA 110, COUNTY OF SAN BERNARDINO

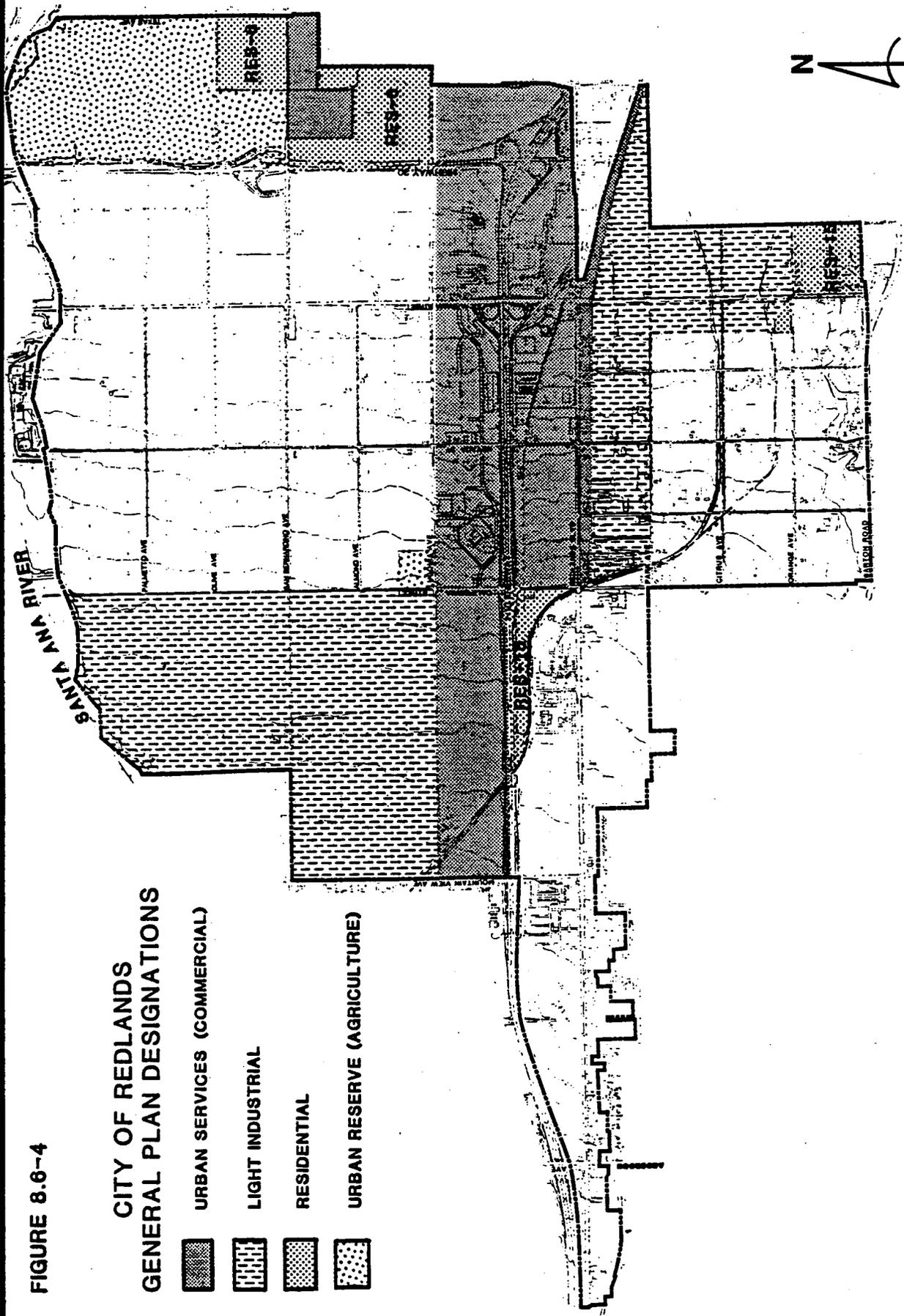


FIGURE 8.6-4

**CITY OF REDLANDS
GENERAL PLAN DESIGNATIONS**

-  **URBAN SERVICES (COMMERCIAL)**
-  **LIGHT INDUSTRIAL**
-  **RESIDENTIAL**
-  **URBAN RESERVE (AGRICULTURE)**

EAST VALLEY CORRIDOR
CSA 110, COUNTY OF SAN BERNARDINO

Table 8.6-2
PROJECTED LAND USES

<i>Land Use</i>	<i>Specific Plan (acres)</i>	<i>General Plans (est. acres)</i>	<i>Market Driven Alternative (acres)</i>
Industrial/R&D	1,264	2,045	732
Office	743	0	415
Retail	1,036	1,130	1,635
Residential	613	635	897
Public	132	60	86
Open Space	57	0	80
Agricultural	0	250	0

Approximately 40 acres of agricultural land would be developed annually assuming uniform development during the 40-year buildout period. Of course, this development rate will depend on the rate and size of specific projects.

At buildout, the elimination of 1,611 acres of citrus groves will reduce by 21 percent the acreage currently in citrus production within the County. During 1986 alone, 435 acres or 5.5 percent of citrus acreage were eliminated in the County, continuing a steady decline as urban development spreads throughout the San Bernardino Valley. The transition of the 947 acres of field crops represents a potential decrease in alfalfa production of 4 percent Countywide.

The planned development and gradual elimination of agriculture will probably impact agriculture around the planning area by increasing urban pressures on farmland and increasing property values. This pressure on agricultural lands to convert to urban development is present throughout the San Bernardino Valley, particularly in the East Valley region. Residential projects in Redlands, San Bernardino, Loma Linda, and East Highlands are all replacing prime agricultural lands.

The proposed development of industrial uses within the project area may increase the risk of upset. Industrial and some commercial facilities may store, process, or manufacture chemicals or products that may pose hazards to human health. These hazards include emission of toxic fumes during processing or manufacturing; emission of toxic fumes caused by accidental spills, fires, or explosions; and runoff of toxic liquids onto adjacent properties or into drainage channels or pipes.

The principal difference between the Specific Plan and the County and cities General Plans are the reduction of industrial acreage and the increase in office area. The slight reduction in residential area is in response to the imbalance that now exists in the region as houses

outnumber employment opportunities and the SCAG-82 directive on this same issue. The intent of increasing designations for offices and the promotion of industrial parks and research and development facilities in place of general industrial uses is to create more jobs than the existing General Plans or the most likely alternative.

The Specific Plan will also promote and ensure uniform land use, infrastructure, architectural, landscaping, circulation, and environmental policies, standards, and designs. The Specific Plan's goals and policies on land use and implementation of these goals and policies should have a positive impact to land use when compared to the existing General Plans or the market-driven alternative developments.

8.6.3 Mitigation Measures

In order to restrict the premature elimination of agriculture activities within the project area, the Specific Plan in Section EV2.0205 states that the existing viable agricultural activities in the East Valley Corridor should be preserved as long as feasible while the area transitions to more intensive uses. This measure will decrease the adverse impact on agriculture production and value by reducing the rapid, widespread elimination of valuable agricultural lands.

This same section also lists the goals, policies, and objectives of the Specific Plan regarding land use and planning; refer to Section EV2.0205 for a complete listing of these measures.

Buffer areas of light commercial are recommended to be located between industrial and residential land uses in order to reduce the risk of toxic fumes or spills from impacting residential areas. Buffers may also be in the form of adequate setbacks, landscaped areas, and site-specific development approval as listed in the Specific Plan's Compatibility Standards in Section EV4.0225. The storage or manufacture of any potential toxic substances should be restricted adjacent to residential areas, and the siting of any development with this potential should be thoroughly reviewed by the appropriate agencies. The buffer areas should also be wider downstream or downwind of industries with potential hazardous emissions or spillage.

Division 3, Community Land Use, and Division 4, Community Design, in the Specific Plan, provide the land use regulations and development standards for the project area. These regulations are intended to promote, protect, and secure the public health, safety and general welfare, to provide the social and economic advantages resulting from an orderly, planned use of land and resources, and to encourage, guide, and provide a definite plan for the future growth and development of the East Valley Corridor. Refer to these divisions in the Specific Plan for a complete listing of all land use regulations and standards.

8.7 DEMOGRAPHICS

8.7.1 Existing Conditions

The demographic information provided in this section is prepared from data supplied by the following consultant and agencies:

1. William C. Lawrence Company - East Valley Corridor Market Feasibility, Absorption Potential and Phasing Study
2. Southern California Association of Governments (SCAG) - 1982 Modified Growth Forecast and 1987 Draft City Projections
3. California Department of Finance 1987 Population Estimate
4. County of San Bernardino.

8.7.1.1 Population

According to the 1980 census, the project area had a population of 978. The County of San Bernardino updated this figure in 1985 to 1,114. With the recent development of several single- and multi-family projects in the project area, the population is estimated to be approximately 5,620. Of the total, it is estimated that approximately 2,600 people reside in Redlands and 3,020 in Loma Linda.

The development of the project area will be influenced by demographic characteristics within the project environs, defined as the cities of Redlands and Loma Linda and the surrounding unincorporated lands. Population within the project environs grew from 52,400 in 1970 to about 70,100 in 1984. The average annual growth rate during this period was 2.1 percent. Since 1980, the annual growth rate increased to 2.5 percent, comparable to the East Valley region (2.4%) but well below the County rate of 3.8 percent.

From 1980 to 1987, the City of Redlands population has grown from 43,619 to 54,156, an annual average growth of 3.45 percent. Loma Linda has grown from 10,694 to 12,588 in this time span for an annual growth of 2.53 percent.

Regionally, from 1980 to 1987, the County of San Bernardino has had the second highest yearly growth in the region (4.34%), slightly lower than Riverside County (4.8%). The County has grown from 682,000 in 1970 to 895,016 in 1980, to an estimated 1.167 million in 1987 (California Department of Finance).

Table 8.7-1 summarizes the past and existing population and growth rates in the region.

Table 8.7-1

EXISTING POPULATION

	1980	Annual Growth Rate (%)	1984	Annual Growth Rate (%)	1987
East Valley Corridor	978	3.5	1,114*	---	(est)5,020
Redlands	43,619	3.0	48,933	3.6	54,156
Loma Linda	10,694	1.2	11,214	4.1	12,588
East Valley (RSA 29)	346,000	2.4	379,000	---	----
San Bernardino County	874,000	3.8	1,014,460	5.0	1,167,200

Note: * 1985

Sources: SCAG-82, SCAG-87 Draft, California Department of Finance.

8.7.1.2 Housing

The project area had 728 dwelling units according to the 1980 census. In 1985, the County estimated that number to slightly increase to 741 dwelling units. A housing survey conducted in 1985 for the East Valley Corridor by Florian Martinez Associates indicated only 599 dwelling units, 265 single family and 334 multi-family. Almost all of the existing housing (95%) were located south of I-10 with only 32 farm houses located north of I-10. Over 65 percent of the residences were built within the last 10 years and 80 percent of those were multi-family. Since 1985, new residential development have added approximately 100 single-family and over 1,000 multi-family units to the project area for an estimated total of 2,100 existing dwelling units.

The County of San Bernardino recorded an increase of 106,500 dwelling units between 1980 and 1987, an annual growth rate of 4.1 percent. Redlands posted 4,539 new residences during the same period for a yearly growth of 3.78 percent. Loma Linda had 1,190 new dwelling units reported in the 7 year period for an annual average growth of 3.7 percent.

The persons per household in 1987 for Redlands were 2.6, for Loma Linda 2.41, and for the County 2.83.

The building of new houses in Redlands and its sphere of influence is expected to slow due to restrictions imposed by a growth-limiting ordinance known as Proposition N, passed in November 1987. This ordinance limits to 400 the number of dwelling units that the City can approve in a year, and limits to 150 units outside the City but connected to City water and sewer lines.

8.7.1.3 Employment

Employment opportunities within the project area currently are associated with agriculture, retail (mainly along Redlands Boulevard) and office/professional in the expanding office buildings between Lugonia Avenue and I-10. The number of jobs actually within the East Valley Corridor are unquantified but are estimated to be much more than the number of dwelling units.

The East San Bernardino Valley Regional Statistical Area (RSA) reported 123,700 jobs in 1980 with an increase to 135,535 by 1984 (2.4% annual increase). This rate is lower than the 3.55 percent growth recorded Countywide. The largest employment sectors in the County were government, retail trade, and services.

The 1987 SCAG City Draft Projections listed the 1984 employment within Redlands at 13,514 and in Loma Linda at 9,480.

Population to employment ratios are important statistics with regards to growth in San Bernardino County. This ratio is still unbalanced in the County due to the abundance of affordable housing and with larger employment centers still in Orange and Los Angeles counties. The East Valley RSA showed a ratio of 0.36 in 1980 and 1984, where 0.50 shows a balanced population to employment. This ratio indicates that there are more people than jobs in the area and that people commute outside of the area for employment. The City of Redlands has a ratio of 0.28, which exemplifies its mainly residential character. Loma Linda, on the other hand, has a ratio of 0.85, due to the large employment of the university medical center and its related services and the Veteran's Administration hospital.

8.7.2 Project Impacts

8.7.2.1 Population

The East Valley Corridor Specific Plan based on high growth is the most likely alternative to occur. This scenario forecasts a buildout of the area by 2028 with a total population increase of 20,080. This population is based on the expected number of dwelling units proposed by the Specific Plan. Of the total population increase, Redlands would absorb 16,745 and Loma Linda 3,335.

On a regional level, the project's expected increase would amount to about 10.7 percent of the total growth forecast by SCAG-82 Modified by 2000 and 9.1 percent of the forecast by 2010 in the East Valley (RSA 29). SCAG-87 Draft revised figures show that the East Valley Corridor

growth would amount to 5.6 percent of the total East Valley growth through 2010.

The City of Redlands is expected to grow at a 1.79 percent annual rate (SCAG-87 Draft) to a 2010 population of 71,695. The City of Redlands anticipates a population of about 79,000 by 2010 based on the permitted housing starts allowed by Proposition N. According to projections by the Lawrence Marketing Report, expected maximum growth through 2010 within the Redlands portion of the East Valley Corridor would total about 9,210 and would account for 52 percent of the city's forecast growth by SCAG-87. Loma Linda is forecast by SCAG-87 Draft to increase by 6,558 by 2010 at a yearly growth of 2.27 percent. Buildout of the proposed residential tracts within the Loma Linda section of the East Valley Corridor is anticipated by 1995 (Lawrence, 1987) with an estimated population growth of 3,335. This increase would be 167 percent of the SCAG-87 forecasted growth of the City by 1995 and about 51 percent of the City's growth through 2010. See Table 8.7-2 for the project and SCAG population forecasts.

Table 8.7-2

PROJECTED POPULATIONS

Area	1987	SCAG-82 2000	SCAG-82 2010	SCAG-87 2010
East Valley Corridor	(est)5,620	13,975*	18,165*	18,165*
Redlands Sec.	(est)2,600	7,620*	11,810*	11,810*
Loma Linda Sec.	(est)3,020	6,365*	6,365*	6,365*
Redlands	54,156	---	---	71,695
Loma Linda	12,588	---	---	19,146
East Valley (RSA 29)	379,000 (1984)	510,000	579,000	705,700
San Bernardino County	1,167,175	1,536,600	1,816,00	2,205,040

Sources: * East Valley Corridor figures taken from "East Valley Corridor Market Feasibility, Absorption Potential and Phasing Study," William C. Lawrence Company, July 1987.

The projected population increase does not appear to use up a disproportionate share of the SCAG forecasted growths for the East Valley RSA 29. The project's accounting for over 52 percent of Redlands and 51 percent of Loma Linda's forecasted growths through 2010 are

considered significant increases that seem to account for a disproportionate share of the growth within these cities. However, this growth is expected to occur in the area with or without implementation of the Specific Plan.

The no-project or market-driven growth scenario predicts a much faster buildout (by 2012) and a population increase of 23,336. The population increase would be distributed differently with about 11,406 in Redlands and 11,930 in Loma Linda. This scenario would take up 13 percent of the SCAG-82 forecast and 8 percent of SCAG-87 Draft forecast through 2010 for the East Valley RSA 29. This alternative would account for 65 percent of the SCAG-87 projected growth for Redlands and would create an even greater impact to Loma Linda due to its almost doubling of the SCAG-87 projected growth of the City through 2010.

Overall, the projected growth under the Specific Plan would produce less of an impact on population than the no-project market-driven alternative due to its 16 percent lower population increase and its slower growth rate (buildout in Specific Plan expected in 2028, no-project buildout in 2012).

8.7.2.2 Housing

Under maximum buildout of residential uses permitted, in the Specific Plan, a total of 7,726 new dwelling units would be allowed. The type, location, and number of these planned dwelling units are as follows:

Redlands

Multi-family (10 dwelling units per acre)	600
Multi-family (20 dwelling units per acre)	<u>5,840</u>
Total dwelling units:	6,440

Loma Linda

Single family (6 homes per acre)	156
Multi-family (10 dwelling units per acre)	890
Multi-family (20 dwelling units per acre)	<u>240</u>
Total dwelling units:	1,286

Within the City of Redlands, the expected residential development with the Specific Plan is about 161 new dwelling units per year until buildout in 2028. This number of dwelling units annually amounts to 29 percent of the total new houses allowed within the city limits and sphere of influence by Proposition N. SCAG-87 Draft forecasts the City to increase its housing by 9,866 by 2010. The projected number of new units by the Specific Plan scenario of 3,700 through 2010 is 37 percent of the SCAG projection.

The Loma Linda section of the East Valley Corridor is expected to reach buildout of its 1,286 new dwelling units by 1995, approximately 183 units per year. The SCAG-87 Draft reported an estimated increase of 3,890 residences between 1984 and 2010. The dwelling units

proposed for the East Valley Corridor would represent 33 percent of this total and 78 percent of the number of units forecast through 1995.

Regionally, the East Valley is forecast by SCAG-87 to build 145,500 new units by 2010. The East Valley Corridor Specific Plan's proposed new housing would amount to about 5 percent of this total.

8.7.2.3 Employment

The East Valley Corridor Specific Plan proposes guidelines for the development and land use of the project area. One of its main policies is to "maximize generation of employment opportunities in a region which has a significant imbalance of housing versus employment opportunities.

"The "Economic and Demographic Analysis" prepared by Hoffman Associates, estimated new job opportunities for both a low and high capture rate of new businesses through the year 2000. Based on capture rates, historic and projected absorption of office and retail space within the East Valley, and an average number of employees per acre per land use type, the projected employment is determined for the East Valley Corridor. (The numbers of employees per acre of land use type utilized in the study are 25 for industrial/research and development, 60 for office, and 22 for retail). Anticipated development is expected to create 20,550 jobs in the low growth scenario and 35,743 jobs in the high growth scenario through the year 2000. Carrying the calculations to ultimate buildout for the most likely scenario, the East Valley Corridor could potentially create over 90,000 new jobs by 2028.

SCAG-82 Modified forecast 117,000 new jobs and SCAG-87 Draft estimated 96,000 new jobs within the East Valley RSA by 2010. The proposed project is estimated to create 63,000 jobs by 2010, 54 percent of SCAG-82 forecast and 66 percent of SCAG-87.

The potential increase in jobs created by the East Valley Corridor should play a significant role in alleviating the current population/housing to employment ratio imbalance in the East Valley RSA.

8.7.3 Mitigation Measures

8.7.3.1 Population

The projected population growth within the project area accounts for 52 percent of the SCAG-87 predicted growth through 2010 for Redlands and 51 percent for Loma Linda. In order to reduce this impact, it is recommended that residential growth within the East Valley Corridor be slowed to accommodate required infrastructure construction (in accordance with Specific Plan requirements) and to be more consistent with SCAG forecasts. Within the Redlands portion of the East Valley Corridor, Proposition N should slow projected residential growth, as

the limited housing starts allowed are expected to occur in the favored residential areas of Crafton Hills and Mentone.

It also appears that the forecast for buildout of dwelling units in Loma Linda by 1995 is too fast. The construction of infrastructure (roads, sewers, and water supply) as well as location in the 100-year floodplain should slow housing development and subsequently growth in the Loma Linda section of the East Valley Corridor to a level more consistent with SCAG-87 forecasts.

8.7.3.2 Housing

Within Redlands, the new housing starts allowed by Proposition N should produce a slower housing growth rate than anticipated by the marketing study and by SCAG. This slower growth rate for housing would be dependent on other residential development within the City due to the restricted number of new homes allowed per year. Thus, the implementation of Proposition N would act as a mitigation measure to reduce the number of new dwelling units proposed in the project area.

The absorption study projected that all 1,286 dwelling units forecast for Loma Linda would be developed by 1995. The Specific Plan requires that residential units should be supported by adequate infrastructure construction and city services.

8.7.3.3 Employment

No mitigation measures are recommended.

8.8 TRANSPORTATION

8.8.1 Existing Conditions

8.8.1.1 Regional Highway System

The proposed East Valley Corridor project is located in southwestern San Bernardino County, situated generally between the cities of Loma Linda, Redlands, and San Bernardino. As depicted in Figure 3.1-2, regional highway travel is serviced by Interstate 10.

The I-10 Corridor provides the major east-west transportation route directly servicing the study area. Most travel is between Los Angeles, San Bernardino, and east to Palm Springs. When completely built, State Route 30 (SR-30) will connect the existing SR-30 at Highland Avenue to the I-210 freeway in La Verne to the west. SR-30 will be a high speed, grade separated facility designed to serve intra-regional and local trips for those communities developing along the foothills of the San Gabriel and San Bernardino mountains. SR-30 is presently incomplete, with a segment missing north of the study area between Fifth Street and Highland Avenue in San Bernardino. Furthermore, SR-30 now terminates at SR-259, just north of I-215. An extension of the existing terminus is planned to bring SR-30 into an interchange with I-215 and beyond to merge into Highland Avenue on the west side of the City of San Bernardino. That extension plus the construction of the missing segment, the upgrading of the SR-30/I-10 interchange into a grade separated, four way interchange, and the addition of two lanes to the existing portion of SR-30 are all programmed into the current 5-year state improvement program.

8.8.1.2 Rail

Two major rail lines traverse the study area each trending east/west. The northernmost rail line which is operated by the Atchison, Topeka, and Santa Fe (A.T. & S.F.) Railroad has the most potential to slow traffic, crossing Mountain View Avenue, California Avenue, Nevada Street, and Alabama Street between Redlands Boulevard and I-10. The southernmost rail line is grade separated where it crosses Barton Road, a branch then turns north to parallel California Street to Citrus Avenue where it turns east and continues out of the study area. Most of this spur is now abandoned and removed.

8.8.1.3 Public Transit

Public transportation in the East Valley Corridor is provided by Omnitrans. Reflecting both limited development of the land and arterial highway system, public transportation in the study area is minimal. Omnitrans currently provides three routes through the study area which connect the cities of Redlands, Loma Linda, and San Bernardino. With the exception of a short route serving the County Museum and Norton AFB, all the routes are south of I-10. Two routes cross the corridor on Tippecanoe/Anderson, then travel east/west on

Barton Road. The third route enters from Loma Linda on University Avenue and meanders through the southern portion of the study area.

8.8.1.4 Air Travel

Ontario International Airport is located approximately 20 miles west of the East Valley Corridor study area. South of and adjacent to I-10, this airport facility is most frequently used by commuters both to and from the San Bernardino area. Ontario Airport is rapidly growing in importance as an alternative to air travel into Los Angeles International Airport and Orange County (John Wayne) Airport.

Although not directly related to the proposed East Valley Corridor project, it should be noted that Norton AFB is located just north of the Santa Ana River, in the southeast portion of the City of San Bernardino. The Base is presently considering the feasibility of a joint use agreement for commercial aircraft to utilize Norton AFB. The Redlands Municipal Airport is located 3 miles east of the project area.

8.8.1.5 Arterials

The circulation system within the proposed East Valley Corridor project is bisected and dominated by I-10. As such, within the study area, access to the regional highway system is first obtained through access to I-10.

In general, the study area has good access to the regional highway system. Four arterials (Alabama Street, California Street, Mountain View Avenue, and Tippecanoe Avenue) have an interchange with I-10. Another arterial, San Bernardino Avenue, has an interchange with SR-30.

Arterial access to the study area from the south, east, and west is adequately provided via the four closely spaced interchanges along I-10. However, arterial access to the study area from the north and northwest is severely limited by the physical presence of the Santa Ana River and Norton AFB. Consequently, the connection of the local streets system in this portion of the study area to those in the surrounding communities is limited. The cost and difficulty of roadway construction across the Santa Ana River Wash is a major concern. The only arterial access into this portion of the study area from the north is provided by Alabama Street, which crosses the wash adjacent to SR-30. The Alabama Street crossing is a low water crossing with a culvert and is subject to inundation and washing out.

Adding to the isolation of the study area from the communities to the north is Norton AFB, which lies north of the wash. Tippecanoe Avenue, at the west end of the study area, crosses the wash but does not directly connect the study area to the north; it ends at the main entrance to the base, where it intersects with Mill Street.

Access to and from the west is similarly constrained. San Bernardino Avenue is identified on San Bernardino County's circulation element as continuous from Redlands to downtown San Bernardino. While San Bernardino Avenue is continuous from Redlands through the study area, the street ends at Tippecanoe Street, east of the Santa Ana Wash and just west of the planning area.

The portion of the study area located south of I-10 is better served by arterial access. Adjacent to the freeway, Redlands Boulevard provides east/west circulation through the study area. This facility is continuous from Redlands through Loma Linda to San Bernardino.

Farther south, Barton Road, a high speed, divided major arterial, forms the southern boundary of the project area. This facility provides excellent access into the study area from both the east and the west and connects to the I-215/SR-91 freeway to the west. That connection requires the traversing of a low ridge off Blue Mountain which results in a reduced cross-section due to the steeper terrain west of its intersection with Washington Street. Because it avoids Blue Mountain and provides a more direct connection, access to I-215/SR-91 from Barton Road can be expected via Washington Street.

Except for the commercial corridor adjacent to I-10 and generally bounded by Redlands Avenue to the south and Lugonia Avenue to the north, the local street system has not yet been developed to County standards. Curb, gutters, and sidewalks are absent and pavement widths are less than standard. Currently, traffic in the study area is generally light although some congestion is occurring at intersections in the commercial corridor during peak hours. The majority of the traffic uses Alabama Street, Redlands Boulevard, and Lugonia Street. This pattern reflects commercial development and some freeway bypass activity. Existing average daily traffic volumes as well as intersection turning movements with the proposed East Valley Corridor study area are shown in the Ludwig Engineering Report, Appendix A, Tables 9 and 10.

8.8.2 Project Impacts

The traffic generated by the proposed land uses was estimated in the Circulation Plan Analysis by Ludwig Engineering. The project area was divided into 43 transportation zones and gross land use acreages and gross square footage for buildings were determined. The buildout trips for each zone were developed from the I.T.E. Trip Generation Manual (1983) and were reduced to account for duplicate trips and intrazonal trips. Additional details and assumptions are described in the Circulation Plan Analysis.

Regionally, Caltrans has forecast that I-10 will operate at level of service (LOS) "E" by 2005 and State Route 30 at LOS "D" by 2002. The traffic associated with the proposed project will increase regional traffic and may incrementally decrease the LOS on I-10 and State Route 30 at a faster rate. These increases on regional traffic are considered significant cumulative impacts that are not fully mitigated.

The projected daily traffic, peak hours, and directional traffic volumes are shown in Appendix A of the Circulation Plan Analysis. As expected, the projected traffic volumes would not be adequately handled by the existing below County standards arterials within the project area.

The impact on traffic from the projected development would be considered significant. Therefore, a circulation system was designed to accommodate projected traffic volumes. Though this proposed transportation network can be considered a mitigation measure, it was analyzed for service levels using the projected traffic volumes. As with most traffic networks, the results of this analysis showed that unacceptable congestion occurred at the intersections. The estimated service levels for the proposed network showed that a major constraint in the network is Alabama Avenue. The LOS at Alabama's intersections with Redlands Boulevard, I-10, Lugonia Avenue, and San Bernardino Avenue are rated "F", which is unacceptable and relates to unstable flow, long stoppages, long queues of traffic, and low to zero traffic volumes and speeds. The analysis also shows LOS "E" at the intersections of Mountain View and Redlands avenues and at California Street and Barton Road (LOS "E" conditions are volumes at or near capacity with unstable flow and temporary stoppages). Eleven additional intersections were determined to have LOS "D", which is often used as a design standard in urban areas. Refer to the Circulation Analysis Report for the specific level of services at major intersections.

The Specific Plan's objective for roadways and intersections is to provide capacities to maintain a minimum level of service "C". LOS "C" is considered the recommended ideal design standard. The projected traffic generated by the proposed land uses would produce levels of service below the Specific Plan's objective and is therefore considered a significant environmental impact that is not fully mitigated by the proposed circulation network nor by additional mitigation measures discussed below.

8.8.3 Mitigation Measures

The East Valley Corridor Specific Plan has stated goals, policies, and objectives regarding transportation needs within the project area. The principal goal is to design a comprehensive, functional, and efficient circulation system of sufficient capacity to accommodate projected traffic demands at all phases of development, which is consistent with regional master transportation plans. Many of the policies and objectives as listed in Section EV2.0220 on Transportation in the Specific Plan are discussed in the sections below.

Measures to mitigate traffic impacts of the proposed East Valley Corridor project and ultimate General Plan buildout were developed with consideration given to any implementation constraints within the study area. For example, where major roadway widening would not be feasible, transportation system management measures may be provided. The mitigations are addressed below, in general order from most intensive to least intensive. These measures will be implemented as