CHAPTER 2 EXISTING FACILITY

2.1 Route 99 Background

To accomplish the goals and objectives of the Route 99 Corridor Enhancement Master Plan, it's important to first take a look at the corridor as it is today. The background of the corridor, as well as its physical characteristics and the resources surrounding it, can set the stage to plan for the future.

Description

As stated in the Introduction, the Master Plan covers 274 miles of Route 99, a 416-mile-long route. Along this 274-mile segment of Route 99, 131 miles are located in urban areas, and 143 miles are in rural areas. Only 23 miles are considered "freeway gaps" (see Section 2.2.3). These three gaps are currently planned for conversion to full freeway standards.

The Annual Daily Traffic in the area ranges from a current level of 32,000 vehicles near Interstate 5 in Kern County to over 100,000 vehicles in Bakersfield, Fresno, Modesto and Stockton. The projected traffic range in 2025 is from 63,000 to 174,000 vehicles. Truck traffic accounts for anywhere from 12 percent in the Ceres area to nearly 30 percent near Interstate 5.

Urban versus Rural Areas

Nine major cities along this corridor are identified as urbanized areas, which are defined by a population of 50,000 or greater as determined by the U.S. Census Bureau. The nine urbanized areas along this segment of Route 99 are Bakersfield, Visalia, Fresno, Merced, Turlock, Modesto, Manteca, Stockton, and Lodi. Other cities are emerging as urbanized areas, and may be treated as urbanized rather than rural for planning purposes. Figure 1-4 identifies all the counties and communities along Route 99.

Providing and maintaining a safe highway facility is a priority for Caltrans. The State applies different standards, and subsequent treatment, on the rural and urban portions of Route 99. Urbanized areas, for instance, are usually characterized by:

- Interchanges spaced closer together.
- More through and auxiliary lanes to handle greater traffic volumes, to increase capacity, and to decrease time delays for a mix of local and regional traffic.
- More attention to landscaping, soundwalls, and fencing to enhance aesthetics.
- Depressed or elevated freeways to provide separation from local roads.
- Greater need for storm water runoff storage, although environmental concerns are changing the way storm water runoff is managed in both urban and rural areas.
- Increased emphasis on walkways, lighting, and Intelligent Transportation Systems such as ramp meters and changeable message signs.

In contrast, these traits are not typically found in rural areas. The different needs of urbanized and rural areas should be taken into account when making choices along Route 99 or when considering the issues discussed in the following section.

EXISTING FACILITY

The Importance of Route 99

As the principal north/south freeway in the Central Valley, Route 99 is also a major connector to all east/west routes that link to the San Francisco Bay Area, the Central Coast, and the Sierra Nevada Mountains. Its importance to the movement of people, goods, and services is shown by its designation as:

- **A major route in the most productive agricultural region in the world, critical to the economic vitality of the state.**
- **A State High Emphasis Focus Route on the Interregional Road System. Because of this, there are many capacity improvements noted in the 1998 Interregional Transportation Strategic Plan and the 2000 Supplement to the plan.**
- **A "Priority Global Gateway" for goods movement in the Global Gateways Development Program (January 2002).**
- **A highway on the National Highway System as part of the Strategic Highway Corridor Network, (STRAHNET) under the Federal-aid Surface Transportation Program .**
- **Part of the National Network of the Surface Transportation Assistance Act (STAA) for large trucks.**

2.2 Physical Characteristics and Issues

Much of Route 99 was constructed in the late 1950s and early 1960s. Today's physical issues on the route, which are discussed below, are primarily related to safety factors, limitations created by the original geometry, and increased traffic volumes in places where there is congestion.

2.2.1 Highway Safety

Creating a safe driving environment has been, and continues to be top priority. A major focus has been on roadside safety, both in the median and on the highway shoulder. A considerable number of median barrier projects are currently in design and construction. These projects will avoid affecting trees or other plantings whenever possible. Along the side of the road, the emphasis has been on providing a clear recovery zone, which is the distance from the edge of the traffic lane to the nearest object.

Beginning in earnest in the late 1960s, and continuing through today, removal or modification of fixed objects has made the roadside significantly safer. These changes include:

- Removing large metal post signs between the highway and exit lanes.
- Putting lamps and signs on bases that break away when a vehicle hits them.

Figure 2-1
Surface cracking on Route 99

- Selectively removing unyielding objects from the roadside or adding barriers or cushions to absorb the energy of a collision, or shield fixed objects.

Safety improvements have also been made to barriers and end treatments. Today, rehabilitation or capacity improvement projects offer an opportunity to incorporate cost-effective roadside safety and design features.

In recent years, there has been increased involvement by public

EXISTING FACILITY

and environmental groups as decisions are made regarding many issues. This includes decisions on safety-related improvements, such as the removal of trees from the median and roadside areas. Caltrans must balance the need to maximize safety with environmental benefits.

Figure 2-2
Concrete Safety-Shaped Median Barrier

conditions. These median barriers are capable of preventing nearly all of the cross-median accidents.

The median barrier design appears to be simple, but in reality must include many factors to be effective. Median design must consider safety, right-of-way, drainage, planting, aesthetics, maintenance, traffic, available median width, and future construction. Caltrans devotes great attention to median barriers and is continually reviewing the criteria for placement and replacement of these barriers.

Figure 2-3
Thrie-Beam Median Barrier

Median Barriers

Median barriers are used on divided highways to reduce the risk of an out-of-control vehicle crossing the median and colliding with opposing traffic. The approved standard types of median barriers for new installation are concrete safety-shaped barriers (Figure 2-2) and metal thrie-beam barriers (Figure 2-3). Temporary concrete barriers may be used under certain

EXISTING FACILITY

Median widths are measured from the edge of the traffic lanes in one direction of travel to the same edge of the traffic lanes in the opposite direction. In other words, median shoulders are included as part of the median width.

Median widths are divided into four categories as follows:

- Equal to or less than 36 feet,
- Greater than 36 feet to less than 46 feet,
- Equal to 46 feet,
- Greater than 46 feet.

The median widths vary significantly in a corridor of this length. For median widths equal to or less than 36 feet, concrete barriers are preferred; thrie-beam barrier is typically used in wider medians or medians with existing plantings.

Much of the existing route segments that were not originally planned for an ultimate eight-lane roadway will have significant problems with future widening in urban areas. As traffic increases, these segments of the route will require extra effort in terms of planning, design, and reaching an agreement with the community. Alternatives with impacts must be carefully developed and presented to the communities involved. These alternatives could include new alignment, new right-of-way on one or both sides of the existing freeway or significant retaining walls to contain a wider freeway within the available right-of-way.

Placement of median barriers will play a major role in future development of the Route 99 Corridor.

Rest Areas

Rest areas are recognized as an important part of the Department's traffic safety efforts. Driver fatigue and drowsiness, along with unsafe roadside parking, are significant problems that may be reduced when rest areas, or other safe stopping opportunities, are available.

Caltrans provides "Safety Roadside Rest Areas" for motorists to stop and rest for short periods (Figure 2-4). These rest areas

Figure 2-4
One of the three rest areas on Route 99 between Bakersfield and Lodi

EXISTING FACILITY

include parking areas, drinking water, toilets, tables, benches, telephones, and information panels. Some rest areas may also include other facilities for motorists.

In 1962, the Rest Area Program developed spacing guidelines of approximately 30 miles between rest areas. In 1972, the spacing was increased to 60 miles. However, the gap between rest areas on Route 99 is significantly greater than this.

There are currently three rest areas along the Route 99 Corridor. Two are located in Tulare County, Phillip S. Raine and Chester H. Warlow. One rest area, Enoch Christoffersen, is in Stanislaus County. The map of existing and proposed rest areas is shown in Figure 2-5.

With the exception of the distance between the Chester H. Warlow and the Phillip S. Raine rest areas, the distance between rest areas is greater than desired.

Existing rest areas are severely under capacity, resulting in a critical shortage of available parking spaces. This has the greatest impact on the large number of truckers moving goods within the Central Valley. Many local cities have ordinances that restrict overnight truck parking on city streets. As a result, weary truckers keep driving on the highway or park illegally along many highway ramps.

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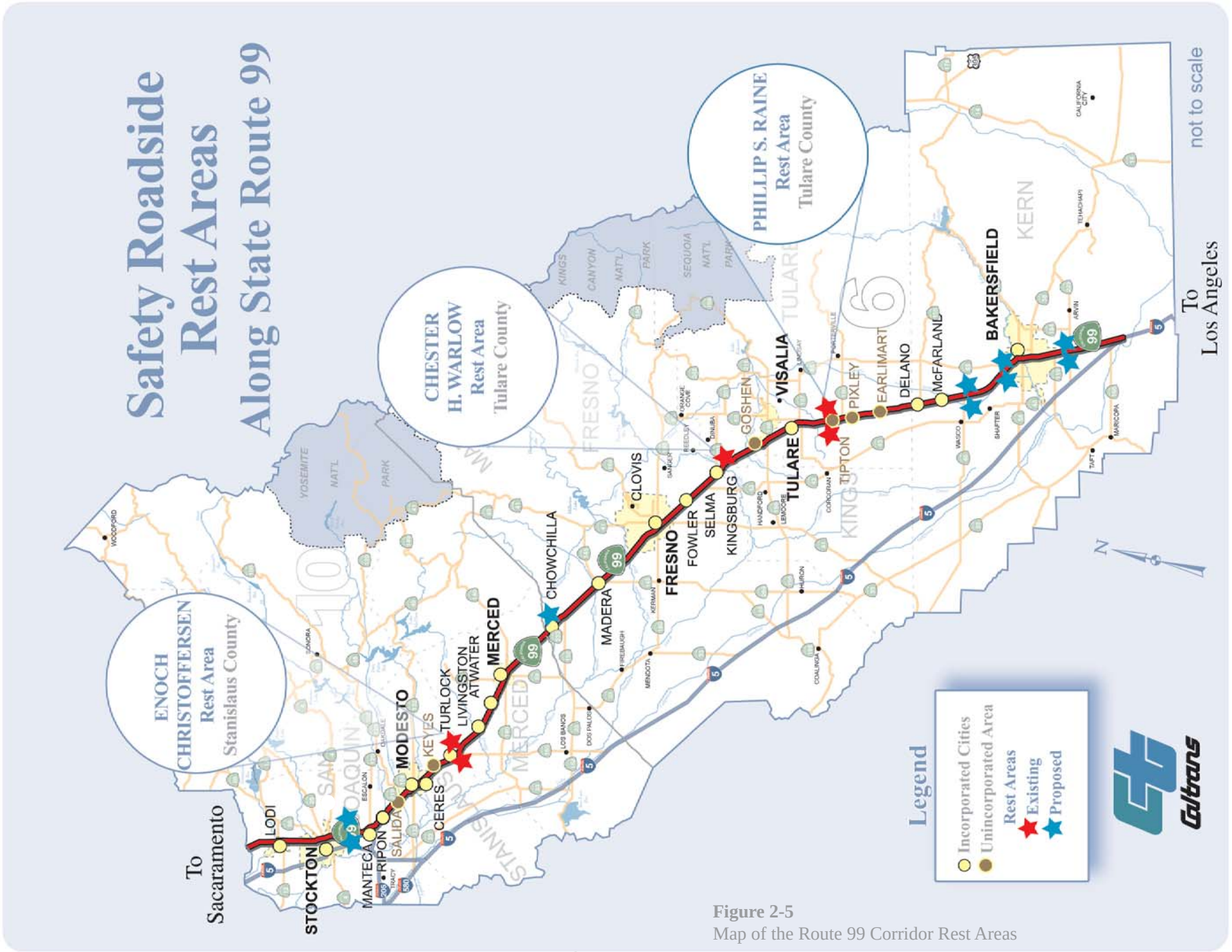

Figure 2-5
Map of the Route 99 Corridor Rest Areas

EXISTING FACILITY

2.2.2 Highway Capacity Needs

The current capacity on Route 99 is not always adequate, especially on urban segments. As traffic volumes have increased, congestion from traffic merging on and off the freeway has gotten worse. This is evident by reduced speeds and bottlenecks, especially during commute hours. Upgrades to the system have included adding lanes to both Route 99 and its ramps to provide more capacity. However, congestion persists in many urban areas during peak periods.

The percentage of truck traffic on Route 99 may have the greatest effect on capacity. Other physical characteristics that affect capacity include the number and width of lanes; the location, spacing, and type of interchanges; the presence and width of shoulders; the condition of the pavement; and gaps in the freeway system. There will be a significant need to add lanes on Route 99 over the next 25 years, but right-of-way and environmental constraints will put limits on what can be built.

Truck Volumes on Route 99

Kern County	*29%*
Tulare County	*27%*
Fresno County	*22%*
Madera County	*24%*
Merced County	*21%*
Stanislaus County	*19%*
San Joaquin County	*19%*

State-wide Average Truck Volumes

9%

Figure 2-6
Truck Traffic on Route 99

2.2.3 Operational and Structural Needs

Gaps in the freeway segments along Route 99, the spacing and types of interchanges, and the condition of the pavement—play a major role in both the current and future capacity of the corridor in certain areas.

Freeway Gaps

The average motorist is inclined to drive Route 99 as if it were all freeway. In fact, Route 99 has segments that are not freeway. These segments include at-grade intersections where cross traffic enters and leaves the expressway without the benefit of an interchange (Figure 2-7). These segments are called "freeway gaps" and are in reality expressways. Caltrans is aware of these gaps and continually monitors the traffic volume and turning movements. Many gap segments have been converted to freeway, eliminating signal lights and congestion. Increases in traffic typically create the need to convert expressway segments to freeway. Land use changes can also trigger the requirement to convert from expressway to freeway.

Figure 2-7
A pickup crosses traffic at a "freeway gap" on Route 99

Interchanges

No single design feature has a greater impact on the urban corridor than the interchange. An interchange is a high-volume intersection characterized by a grade separation between the highway and the cross street that is accessed by a ramp. The ability to accommodate high volumes of traffic safely and efficiently through interchanges depends largely on the type of ramp, ramp volumes, and conditions between the ramp connections and local roads. Today, simple modifications to existing interchanges on Route 99 are limited by the State-owned right-of-way and local development. Spot congestion or bottlenecks are becoming more common as traffic volumes increase (Figure 2-8).

EXISTING FACILITY

Many Route 99 urban interchanges have limited room for vehicles waiting to enter or leave the highway. They also have short deceleration and acceleration lengths. This creates congestion when high volumes of traffic back up on ramps, when drivers must slow down on the freeway, or when slow-moving trucks interrupt the traffic flow.

Limited spacing between interchanges has a negative impact on the flow of traffic. This is evident in urban areas during peak commute periods when the traffic is forced to slow because of traffic entering and exiting the highway. Whenever possible, spacing between interchanges needs to be increased to reduce congestion. In the future, this may result in closing some interchanges to improve spacing.

Changes to improve the operation of existing interchanges are typically constrained by development next to the freeway, environmental issues, and cost. Minor changes to the existing geometry have provided some improvements, but more backups can be expected unless modifications are made.

Pavement

Today, trucks make up as much as 30 percent of the traffic on Route 99 compared to a state-wide average of about 9%. Extra stress from the weight and amount of truck traffic on a aging pavement is the biggest factor in the poor pavement conditions (Figure 2-1). A bumpy ride is the most obvious sign of pavement failures. The poor ride is caused by faulting (settlement across concrete joints), concrete pavement or supporting base failures, and aging asphalt overlays that need more frequent rehabilitation. The best long-term solution is complete concrete pavement reconstruction. However, because of construction duration constraints, reconstruction of concrete pavement is problematic and costly.

Figure 2-8
Congestion on Route 99

2.2.4 Highway Appearance

Aesthetics and landscaping are vital to the corridor because they affect the perceptions of travelers and residents about the region. These perceptions can in turn influence economic growth and quality of life in the communities along the corridor.

Aesthetics is most often associated with the creation of a pleasing appearance or effect. In transportation design, aesthetics may be defined as dealing with the visual integration of the highway into its surroundings. An aesthetically pleasing transportation corridor can either blend into or complement its setting.

The Route 99 corridor is an integral part of the communities that it crosses and it also acts as the gateway to urbanized areas. The highway and adjacent roadsides are the first and frequently the only impression travelers have of a community. Community pride and commerce are, therefore, affected by the highway's appearance.

Highway Structural Themes

Along the corridor, various transportation improvements have affected the appearance of the route. These improvements range from lane additions to new interchanges, as well as various improvements for safety and operation of the roadway. Because many of the improvements have occurred incrementally, over several decades, there is no unifying theme or appearance for the route. A variety of old and modern bridges, sign panels, landscape types, fences, and overhead lighting fixtures have been installed over the life of the roadway. The lack of cohesive elements has left the corridor with a diminished aesthetic quality, cluttered roadsides, and no community identity.

In recent years, soundwalls have also sprung up along Route 99. These soundwalls have been added to reduce noise impacts associated to increased volumes of traffic. Many of these walls have been placed without the benefit of planting and have become graffiti-covered. Others are in need of repair, restoration, or replacement.

In the view outside of Caltran's right-of-way, travelers often look out at abandoned buildings, junkyards, billboards, microwave towers, and trash. Communities have the opportunity to work together to adopt zoning laws and other ordinances to clean up unsightly locations. On the positive side, they may consider preserving old structures such as water towers and barns for their historical and picturesque qualities.

Communities that line Route 99 are increasingly demanding that the highway "look good." The Route 99 corridor has the potential to reinforce community identity and establish a sense of entry into these communities.

Planting Types

In the development of State Highway roadside policy, two types of planting have evolved—"Functional Planting" and "Highway Planting." The roadsides along the Route 99 corridor include a mix of these two planting types.

EXISTING FACILITY

"Functional Planting" is visible between communities, along the rural segments of the Route 99 corridor. As the name indicates, "Functional Planting" is utilitarian and made up most of the original planting along the entire length of the Route 99 corridor. It was composed of eucalyptus trees used to help delineate the route and identify structures, and oleander shrubs used in the median to shield drivers' eyes from the tiring effect of oncoming headlights. The trees also helped to relieve the monotony in the long stretches of rural freeway. Groundcover vegetation along the rural segments is mainly non-native grasses, planted as erosion control.

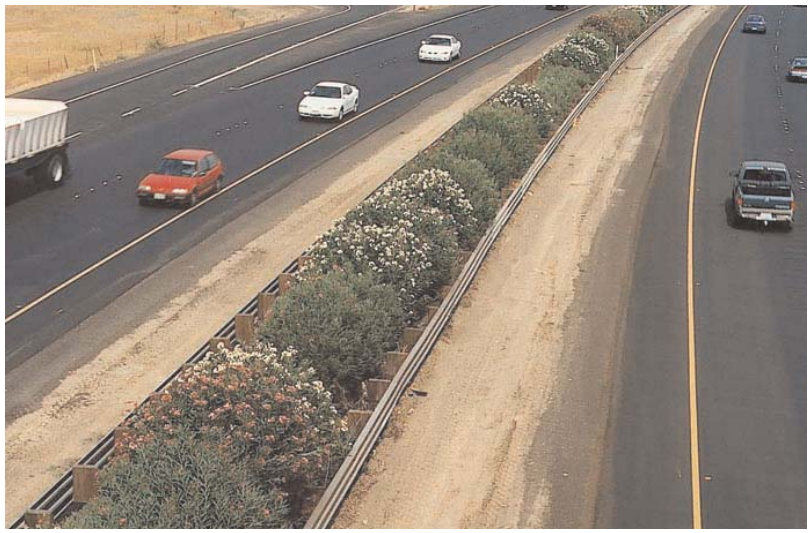

Figure 2-9
Oleander shrubs in the median on Route 99

Oleander planting in the median has come to symbolize Route 99 (Figure 2-9). In recent years, many miles of this signature element have been removed. Many more miles have been identified for removal, to help make way for additional lanes of traffic and the installation of median barriers,

Throughout the corridor, "Highway Planting" signifies urban areas. "Highway Planting" goes beyond pure function. It improves aesthetics and makes the roadway more compatible with the surrounding urban environment of neighborhoods and businesses (Figure 2-10). Highway planting includes trees, shrubs, and groundcovers with automatic irrigation systems. Although aesthetic in nature, this landscape also serves many functional purposes, such as controlling dust and erosion, providing fire and weed control, delineating the route, and providing headlight screening (Figure 2-9). Planting is also used to screen objectionable views of adjacent properties, as well as to screen the roadway from the community. In addition, roadside planting can act as a frame for distant vistas.

Roadway improvement projects have affected some of these landscaped areas. However, it is Caltrans policy to restore or replace the landscape following roadway construction projects. Many "Highway Planting" areas along the Route 99 corridor have also exceeded the intended "lifespan" for the landscape. Portions of these areas have undergone recent "Landscape Restoration" projects, and many more will be upgraded in the future.

2.3 Roadside Management

Controlling litter, weeds, and graffiti along California highways is becoming more and more of a challenge as lane miles and interchanges are added. This is especially true in tight budget times when maintenance must compete with safety and preservation needs. Adequate maintenance of the landscape requires about one worker

Figure 2-10
"Highway Planting" on Route 99

for every 15-20 acres. Currently, statewide average is approximately one worker for 40 acres. Between 1986 and 1997, there has been a 45 percent increase in highway planting areas, with a 16 percent decrease in landscape maintenance workers.

Aging highway and roadside facilities, combined with a continued

Figure 2-11
Landscaping on an off-ramp

increase in roadside landscaping, a smaller work force, and increased efforts to control graffiti and litter, have reduced the ability of maintenance staff to keep highway facilities in "as built" condition. Figures 2-11 and 2-12 show good examples of landscaping alongside Route 99. The creation and retention of a positive highway appearance requires ongoing attention to the following issues:

- **Litter Collection**

Litter on the roadsides generates some of the highest volume of complaints from the public and elected officials. Ultimately, roadside

EXISTING FACILITY

litter is a continuing and growing problem without a complete solution.

The Adopt-A-Highway program augments a larger maintenance staff to help combat litter. This is a volunteer program that provides free labor to clean up litter. Along the 99 corridor, this program has been implemented, but with some gaps.

- **Graffiti Control**

Efforts to reduce the visibility of graffiti rely on quick response by maintenance forces. In many areas, Caltrans is experiencing a losing battle in this continuing effort. The only real solution to help deter graffiti is to fully implement the current policy to provide soundwall plantings.

Figure 2-12
Well-maintained roadside area on Route 99

Within the Adopt-A-Highway program, there is an "Adopt-A-Soundwall" element. Again, this is a volunteer program that provides free labor for this activity. Up to this time, this part of the program has not been used along the 99 Corridor.

- **Roadside Vegetation Management (Weed Control)**

Rural roadsides are composed of non-irrigated vegetation. These roadsides have often been planted with grasses and broad-leaved, non-woody plants for erosion control following roadway construction. This vegetation must be managed to improve the appearance of the roadsides, as well as to maintain sight distances and reduce the risk of fire.

Historically, Caltrans has managed vegetation primarily by mowing and using chemical controls. In 1992, Caltrans adopted a program to reduce the use of chemicals for vegetation management. A 50 percent reduction was met in 2000, with a target of 80 percent reduction by 2012.

- **Maintenance of Highway Planting**

The landscaped freeway, fully planted and irrigated, has become the expected look for urban areas. However, landscaping requires intensive and ongoing maintenance. Aging roadsides have become more difficult to maintain and often are in need of significant rehabilitation to bring them up to a level that is maintainable for Caltrans forces.

Landscape rehabilitation projects are implemented to protect the current investment in roadside improvements. However, these projects have to compete with higher priority roadway operations and safety projects.

2.4 Environmental Resources

Bound by the Sierra Nevada to the east, the Tehachapi Mountains to the south, and the Coast and Diablo Ranges to the west, the San Joaquin Valley represents a vast geographical area that encompasses diverse natural habitats and a rich cultural heritage. Any physical improvements to the Route 99 Corridor must be developed in a way that protects these unique biological and cultural resources.

- **Biological Resources**

Route 99 bisects the valley along its north/south route and provides travelers with a vista of cultivated fields and orchards, valley grasslands, oak savannas, riverbanks, and freshwater marshes.

Maintaining wildlife movement in these areas is critical to the health of the San Joaquin Valley ecosystem. Links between habitats allow species, such as the San Joaquin kit fox, to search for food, escape predators, and move with the seasons. With the intensive agricultural, industrial, and residential development that has occurred up and down the valley over the last century, waterways have become the primary means for animal movement. Route 99 crosses every major river between Stockton and Bakersfield, as well as numerous seasonal streams.

Figure 2-13
The San Joaquin Kit Fox

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Some of the key components to improving habitat links along these waterways include restoring the natural cycles in riparian (riverbank) systems; eradicating exotic plants; stabilizing stream banks; and restoring stream habitat for aquatic species and migrating birds. The U.S. Fish and Wildlife Service also identified the use of wildlife undercrossings as an important factor in the recovery of valley species (Figure 2-13)

- **Cultural Resources**

Traveling Route 99 opens windows into the history of California. Prior to western settlement, California natives known as Yokuts inhabited the valley floor. The Yokuts were the predominant Native American population between Stockton and Bakersfield. Little continuity exists between the valley floor as viewed from Route 99 today and the rich marshlands of the Yokuts. The damming of the rivers and agricultural cultivation have transformed the surface of the land, but valuable clues to the day-to-day lives of the Yokuts still exist beneath today's landscape. Archaeological remains of several village sites may still lie intact in the vicinity of Route 99.

Figure 2-14
The Mammoth Orange at Fairmead

Agriculture and transportation dominate the historic landscape next to Route 99. The Southern Pacific Railroad and later the Santa Fe Railroad and the San Joaquin Valley Railroad provided the valley with the opportunity to transport goods to the booming metropolises of Sacramento, San Francisco, and Southern California.

Many small towns sprung up at stops along the rail lines. Route 99 parallels the railroad tracks for a significant portion of its route. Aging farmhouses and barns in varying stages of decay dot the landscape, providing reminders of settlements reminiscent of the "Grapes of Wrath." Many of the barns were used for advertisements during the early 1900s. Remnants of the painted advertisements on barn roofs and sides are still visible from Route 99. Figure 2-14 shows the more recent cultural resource of the Mammoth Orange at Fairmead, an example of a hamburger stand that once dotted the route in times past.

Industrial development along the Route 99 Corridor in the San Joaquin Valley threatens to remove or conceal components of the historical landscape. A high density of outdoor advertisement

poses a significant threat to the integrity of the historic agricultural landscape.

Chapter 3 covers the long-range plans and priorities to address Route 99 needs.