

Overview of Proposed Project and Approach to Analysis

The Stanislaus Council of Governments (StanCOG) proposes to update the 1998 Regional Transportation Plan (RTP) to address anticipated growth and the associated transportation needs of Stanislaus County. In accordance with state and federal laws, StanCOG has the responsibility of preparing an RTP with a minimum 20-year planning horizon and updating the plan every 3 to 4 years to incorporate new projects and changes in policy direction.

The RTP alternatives presented and analyzed in this environmental impact report (EIR) document represent various combinations of several project categories, referred to hereafter as the *RTP components*. The components are:

- **Highway Projects.** There are several types of projects proposed for highway facilities in Stanislaus County. These include proposals to widen highways, construct or reconstruct interchanges, and create expressways on highway facilities.
- **Local Road Projects.** Local road projects are the largest category of proposed RTP improvements. These include road widenings, intersection improvements, expressways on local roads, new construction, and operational improvements.
- **Bicycle Projects.** Several bicycle facility projects are proposed. These include proposals to widen existing bikeways, install signage and/or striping for bikeways, and implement railroad-crossing improvements for bikeways.
- **Transit Projects.** These projects include passenger rail stations for high speed, intercity, and commuter rail services, as well as bus maintenance yards.
- **Aviation Projects.** Projects related to aviation systems are proposed. These projects include improvements to airport facilities such as runways, taxiways, parking lots, and hangars.

In this EIR, environmental impacts of the RTP are identified and analyzed by component, on the assumption that the RTP alternative that is ultimately selected will comprise some or all of the analyzed components.

Purpose of this EIR

The California Environmental Quality Act (CEQA) requires that state and local government agencies consider the environmental consequences of projects over which they have discretionary authority before taking action on those projects (Public Resources Code 21000 et seq.) CEQA also requires that each public agency mitigate or avoid, wherever feasible, the significant environmental effects of project it approves or implements.

An environmental impact report (EIR) is an informational document used in state, regional, and local planning and decision-making processes to meet the requirements of CEQA. The EIR for a proposed project must disclose environmental effects that cannot be avoided; growth-inducing effects; effects found not to be significant; and significant cumulative impacts of all past, present, and reasonably anticipated future projects. In addition, an EIR must identify potential methods of avoiding or reducing effects (i.e., mitigation measures) and alternatives to the proposed project or program.

This EIR has been prepared pursuant to CEQA and the State CEQA Guidelines (14 California Code of Regulations [CCR] 15000 et seq.) by StanCOG. The purpose of this EIR is to analyze, on a program level, the environmental effects of the RTP.

Scope of this EIR

This EIR analyzes a proposed update to the Stanislaus County region's RTP. The RTP components are analyzed at a program level. This EIR concentrates on the long-term environmental impacts of the RTP components and provides the basis for further project-level CEQA (and National Environmental Policy Act [NEPA]) compliance for implementation of future transportation projects.

The following topics are analyzed in this EIR:

- land use and planning;
- agricultural lands;
- population and housing;
- biological resources;
- cultural resources;
- hydrology and water quality;

- geology, soils, and hazardous materials;
- transportation, traffic, and access;
- air quality;
- noise;
- energy conservation;
- aesthetics; and
- cumulative and growth-related impacts.

Relationship of this EIR to Regional Transportation Plan

The RTP is a planning and policy document that identifies long-range transportation needs and funding priorities for the region. The RTP is intended to provide guidance and direction to the cities and to the County in determining priorities for transportation projects and expenditures. The RTP is implemented through subsequent project-specific transportation programming by local jurisdictions, transportation agencies, and the California Department of Transportation (Caltrans).

This EIR identifies the potential environmental impacts of implementing the 2001 RTP. Because CEQA requires that the mitigation measures identified in this EIR be fully enforceable, mitigation measures identified in this EIR must be incorporated into the policies of the RTP or into the conditions for approval of individual projects proposed within the RTP to the extent that StanCOG is empowered to implement mitigation measures.

Simultaneously, to the extent that RTP policies would contribute to avoidance or reduction of potential environmental effects, this EIR will account for avoidance or reduction of potential environmental effects in considering their significance. A *significant* effect is one that would lead to a substantial adverse change in the physical conditions of the area affected by the RTP.

Environmental Review Process

Purpose of a Program EIR

The State CEQA Guidelines encourage agencies to use a program EIR in circumstances involving implementation of a series of related projects. A program EIR is an environmental document that provides a framework for future environmental analyses. Environmental analyses of individual projects within the RTP would be tiered off this program EIR, as identified in State CEQA Guidelines, Section 15152:

- a. “Tiering” refers to using the analysis of general matters contained in a broader EIR (such as one prepared for a general plan or policy statement) with later EIRs and negative declarations on narrower projects; incorporating by reference the general discussions from the broader EIR; and concentrating the later EIR or negative declaration solely on the issues specific to the later project.
- b. Agencies are encouraged to tier the environmental analyses which they prepare for separate but related projects... . This approach can eliminate repetitive discussions of the same issues and focus the later EIR or negative declaration on the actual issues ripe for decision at each level of environmental review.

This approach reduces repetitive analysis of issues that may be relevant to multiple projects. In this case, use of a program EIR allows StanCOG (the lead agency) to characterize the RTP as the “project” being analyzed and approved and to consider broad policy alternatives and program-wide mitigation measures early in the facilities planning effort.

Future Environmental Review

This EIR is the first tier of environmental documents prepared and later would be augmented by second-tier environmental documents when additional details for those specific transportation projects are developed during the engineering design process. Specific projects included in the RTP would be reevaluated when they are proposed for implementation. Planning for each specific project would involve refining project information to indicate the type of project to be implemented, location of the project, and a description of actions to be taken throughout project implementation.

Subsequent environmental documents would incorporate by reference appropriate information from this program EIR regarding secondary effects, cumulative impacts, broad alternatives, and other relevant factors. Subsequent environmental documents would focus solely on site-specific issues that have not been considered in this program EIR. If activity were later found to have effects that were not examined in this program EIR, additional CEQA review would be required. If StanCOG finds that implementation of a later activity would have no new effects and that no new mitigation measures would be required, that activity would require no additional CEQA review.

Report Organization and Terminology

Organization

The content and format of this EIR are designed to meet the requirements of CEQA and the State CEQA Guidelines. The report is organized into the

following chapters so that the reader can easily obtain information about the RTP:

- The “Executive Summary” presents a summary of the proposed RTP and alternatives; a summary of the impacts and mitigation measures; and impact conclusions regarding cumulative impacts, growth inducement, irreversible environmental changes, and known areas of controversy. The *environmentally superior alternative* is also identified.
- Chapter 1, “Introduction,” provides background information on the RTP and an overview of the EIR.
- Chapter 2, “Description of Regional Transportation Plan Alternatives,” describes the RTP objectives, alternative development process, and alternatives.
- Chapters 3–15 are each devoted to an issue area, describing the existing conditions or setting; specific impacts that would result from implementation of the RTP; and mitigation measures, if available, that would eliminate or reduce significant impacts.
- Chapter 16, “Report Preparation,” lists the individuals involved in preparing this draft EIR.
- Chapter 17, “References Cited,” identifies the documents used (printed references) and individuals consulted (personal communications) during preparation of this EIR.

Technical appendices and comment letters are included at the end of the report.

Terminology Used to Describe Impacts

This report establishes thresholds of significance based on State CEQA Guidelines and StanCOG’s adopted thresholds of significance.

This report identifies the following types of impacts:

- a *less-than-significant* impact is considered to cause no substantial adverse change in the environment and requires no mitigation measures,
- a *significant* impact is considered to cause a substantial adverse effect on the environment but can be reduced to a less-than-significant level by implementing mitigation measures,
- a *significant unavoidable* impact is considered to cause a substantial adverse effect on the environment for which feasible mitigation measures are not available to reduce the impact to a less-than-significant level, and
- a *beneficial* impact is considered to cause a positive change in the environment.

This EIR also recommends mitigation measures to reduce impacts of the project. The State CEQA Guidelines (Section 15370) define mitigation as:

- a. avoiding the impact altogether by not taking a certain action or part of an action;
- b. minimizing the impact by limiting the degree or magnitude of the action and its implementation;
- c. rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- d. reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- e. compensating for the impact by replacing or providing substitute resources or improvements to the environment.

Chapter 2

Description of Regional Transportation Plan Alternatives

Introduction

This chapter identifies the location of the study area governed by the RTP; describes the background for the preparation of the RTP and for this EIR; lists the objectives of the RTP; summarizes the RTP components; and summarizes alternative RTP strategies being considered by StanCOG. This chapter also outlines the public participation process associated with development of the RTP and this program EIR, identifies the lead and responsible agencies associated with the preparation of this EIR, and describes their subsequent roles and future actions.

Project Location

The study area for the 2001 RTP, Stanislaus County, is shown in figure 2-1. Located in the north San Joaquin Valley in Central California, Stanislaus County encompasses 1,521 square miles of land and is bounded by Santa Clara County to the west, San Joaquin County to the north, Calaveras and Tuolumne Counties to the east, and Merced County to the south. The 2000 census indicates that the current county population is 446,997, representing more than a 20% increase since 1990. Census projections indicated that, in 2020, Stanislaus County will experience a growth rate of nearly 60% from 2000. The county has nine incorporated cities within its boundaries: Modesto, Ceres, Turlock, Riverbank, Hughson, Oakdale, Waterford, Patterson, and Newman. Proposed RTP transportation improvement projects are located on state highways, regionally significant roads, and some local streets, as well as within railroad rights-of-ways and public lands.

Background

StanCOG is the designated regional transportation planning agency (RTPA) and congestion management agency for Stanislaus County. Formerly known as the

Stanislaus Area Association of Governments (SAAG), StanCOG is governed by a Policy Board that consists of representatives from the nine member cities and Stanislaus County, as well as an ex-officio member from Caltrans. The Policy Board provides direction to agency staff and is supported by both a Technical Advisory Committee and a Citizen's Advisory Committee. StanCOG manages the allocation of federal and state funds to transportation projects in the county.

In accordance with state and federal laws, StanCOG has the responsibility of preparing an RTP with a minimum 20-year planning horizon and updating the plan every 3 to 4 years to incorporate new projects and changes in policy direction. The California Transportation Commission (CTC) further requires that having a current, adopted RTP is a condition of acceptance of the Regional Transportation Improvement Program (RTIP). The RTIP is the programming document for the region, and is submitted for inclusion in the State Transportation Improvement Program (STIP). The RTP must be adopted within 3 to 4 years of the date of STIP adoption in order for projects in the RTP to subsequently receive state or local funding. StanCOG has the ability to allocate funding from two sources, the regional Surface Transportation Program (STP) and the STIP.

Description of the RTP

RTP Objectives

The 2001 RTP identifies the long-range transportation needs and funding priorities for the Stanislaus County region. The previous RTP was prepared in 1998, but was not substantially updated. The last comprehensive update occurred in 1993. The 2001 update of the RTP is intended to be a thorough examination of multimodal transportation needs and has a planning horizon of 20 years. For 2001, the RTP includes projects proposed by the nine member cities of the StanCOG region, the County, and Caltrans. Because StanCOG would not construct or operate any of the projects proposed in the RTP, the RTP is considered a planning and policy document that identifies long-range transportation needs and funding priorities for the region. The RTP is intended to provide guidance and direction to the cities and to the County in determining priorities for transportation projects and expenditures.

In developing the 2001 RTP, the StanCOG Policy Board has defined specific goals that the plan is intended to achieve. These goals are to

- improve mobility for people and freight,
- operate the regional transportation system safely and efficiently,
- support the economic and community vitality of the region,
- preserve and enhance environmental quality, and
- promote equity for system users.

The 2001 RTP analyzes a variety of alternative strategies that consist of projects designed to meet these objectives. This EIR focuses on one aspect of these goals: the preservation and enhancement of environmental quality. The following are representative of some of the basic policies considered in the RTP and in this EIR:

- Promote a balance between land use and transportation decisions that will make Stanislaus communities more livable, attractive, and economically vibrant.
- Support the expansion of the State Highway System to reduce congestion, enhance goods movement, and support a vital economy.
- Support the development of an integrated Regional Expressway System.
- Support the roadway-related recommendations of the regional Bicycle Action Plan.
- Promote the development of an integrated regional public transportation network to facilitate all types of travel.
- Support the integration and coordination of rail and bus services to provide seamless connectivity between modes and service providers.
- Promote the development of a regional transportation system that facilitates travel by alternative transportation modes.
- Consider the impacts of transportation projects on natural resources when making transportation decisions.

This EIR has been prepared as a program-level document, which will allow StanCOG to look at the broad, regional effects of a program of actions before adopting the new RTP. This EIR does not analyze the specific impacts of the individual projects. Specific impacts will be the subject of project-level EIRs, to be prepared by local lead agencies after the projects have been more clearly defined and when more detailed studies have been prepared by project proponents.

RTP Action Elements

The basis for the RTP stems from several *action elements* that were developed at the direction of the Policy Board. These elements and their primary objectives are shown in table 2-1. The purpose of the action elements is to provide the RTP decision-makers with a framework for developing various elements and outcomes of the RTP.

Table 2-1. Action Elements of the 2001 RTP

Element	Objective
Air Quality and Environment	<ul style="list-style-type: none"> ■ Create a regional transportation system that contributes to reductions in air pollution. ■ Create a transportation system that promotes conservation and preservation of natural resources. ■ Increase reliance on cleaner fuel vehicles and technology to reduce air pollution. ■ Develop statewide and national environmental policies and programs to relieve air pollution.
Finance	<ul style="list-style-type: none"> ■ Develop a comprehensive financing strategy to implement regional transportation improvements needed to achieve the RTP goals. ■ Adopt funding policies to ensure implementation of the RTP.
Goods Movement	<ul style="list-style-type: none"> ■ Develop a roadway system that efficient move goods and freight within and through the region. ■ Develop an advanced planning process to ensure that infrastructure needs of future economic centers are provided in a timely manner.
Land Use	<ul style="list-style-type: none"> ■ Improve the jobs to housing balance in the Stanislaus County region to reduce long-distance commuting and air pollution. ■ Integrate transportation and land use planning with transportation system carrying capacity. ■ Create a transportation system that supports local land use plans.
Monitoring	<ul style="list-style-type: none"> ■ Seek full implementation of the policies and recommendations of the RTP. ■ Implement RTP priorities in a timely manner. ■ Provide timely and accurate information on the benefits of RTP implementation.
Roads	<ul style="list-style-type: none"> ■ Develop a state highway system that facilitates interregional and regional travel, safely and efficiently. ■ Develop a regional transportation system that safely and efficiently moves people and goods between cities and to the state highway system. ■ Develop a roadway system that supports efficient goods movement within and through the region development within and through the region. ■ Construct a transportation system that supports the use of alternative transportation modes.
Transit	<ul style="list-style-type: none"> ■ Create an efficient, reliable and attractive public transportation system for the Stanislaus County region. ■ Implement a system of rail passenger services to facilitate intercity and interregional travel. ■ Coordinate regional, intercity, and interregional public transportation services to provide efficient and timely transfers between modes and service providers.

RTP Components

The RTP alternatives identified by StanCOG (see page 2-7) represent various combinations of several project categories, referred to as the *RTP components*. The components are:

- Highway projects
- Local road projects
- Bicycle projects
- Transit projects
- Aviation projects

In this EIR, program-level impacts are identified and analyzed by component, on the assumption that the RTP alternative that is ultimately selected will comprise some or all of the analyzed components.

Highway Projects

StanCOG is primarily responsible for disbursing funds for the streets and highways in Stanislaus County. Therefore, most projects in the RTP alternatives involve roadway construction. Caltrans has jurisdiction over maintenance and construction activities on state highways and interstates within the county.

The RTP alternatives include several types of projects proposed for highway facilities. These projects include proposals to widen highways, construct or reconstruct interchanges, and create expressways on all highway facilities in the region.

Local Road Projects

Countywide local road projects are the largest category of RTP improvements. Each city or community in the county submitted projects of this type for consideration in the RTP, in addition to those submitted by the County itself. These projects include proposals to widen roads, improve intersections, create expressways on local roads, complete new construction, and implement operational improvements. The City of Oakdale submitted more than 20 “New Candidate” projects for the Regional Expressway System, on regionally significant routes or other local roads. The Cities of Ceres and Newman have also proposed a number of projects for local roads. Local road projects likely would use the majority of STP funds for the region, but could also be funded through the STIP or the federal Congestion Mitigation and Air Quality (CMAQ) Improvement Program funds.

Bicycle Projects

Nearly 300 countywide bicycle facility projects are proposed. These projects include proposals to widen existing bikeways, install signage and/or add striping for bikeways, and implement bikeway railroad crossing improvements. The majority of these projects are addressed in StanCOG's Regional Bicycle Action Plan developed by staff in conjunction with the Bicycle Advisory Committee. This committee includes staff and community representatives from the cities, the County, Caltrans, the County Bicycle Club, StanCOG's Citizens' Advisory Committee, and a City Council member from Oakdale. Various federal, state, and local funds are available for these projects, which have been recognized in the RTP as an alternative mode of transportation.

Transit Projects

Another alternative mode of transportation is public transit. As the RTPA for the Stanislaus County region, StanCOG programs funds for transit service expansion, including funds for transit operations and for capital projects. Funds are available through CMAQ and Transportation Enhancement Activities (TEA), as well as under the state's Transportation Development Act (TDA).

The 2001 RTP includes transit capital projects. These projects include proposals to build passenger rail stations for high-speed, intercity, and commuter rail services, as well as to construct bus maintenance yards. The High-Speed Rail Authority is conducting a study that will evaluate several alignments through the Central Valley, with a station proposed in downtown Modesto. One or two stations, with parking facilities, could be constructed, depending on the outcome of the study. Additional trips are also proposed on the existing San Joaquin passenger rail service, provided by Caltrans/Amtrak. For the valley's newest commuter rail service, the Altamont Commuter Express, rail stations are proposed for Turlock, Ceres, and Salida, although the exact locations are still being considered. The Cities of Riverbank, Waterford, Turlock, and Modesto are all proposing to construct bus maintenance yards.

Aviation Projects

Projects related to aviation systems are proposed. These projects include proposals to improve airport facilities such as runways, taxiways, parking lots, and hangars. The majority of these projects would be constructed at the Modesto City-County Airport/Harry Sham Field, which is the largest of the region's three airports and is the only facility to serve commercial flights. Roadways and taxiways are proposed for construction or repaving. A project to construct several hangars at this airport is also proposed.

To the extent that StanCOG provides STP funds for the region, aviation projects may be considered as eligible for these funds if these projects are considered to

have “regional significance.” Although this funding would be considered a nontraditional funding source, airport projects technically are considered eligible.

Alternatives to the Proposed RTP

Alternatives Development Process

The State CEQA Guidelines require that a range of reasonable alternatives to the proposed project be considered. The range of alternatives should include those that could accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects.

StanCOG’s approach to developing alternatives for consideration was to identify deficiencies and needs in the county’s transportation system and focus different alternatives on these issues. These focused alternatives, or *strategies*, comprise projects selected to complement each other and address the specific issue or set of issues.

Before the decision was made to prepare an EIR, StanCOG began the process of developing these alternative RTP strategies. Transportation projects were nominated by the nine cities, the County, Caltrans, and other groups, such as the business and farming communities. This list of projects was submitted to the County Board of Supervisors, which forwarded the list to StanCOG. In developing the strategies for the 2001 RTP, StanCOG staff developed lists of “priority projects” for each alternative RTP strategy. These lists consist primarily of roadway construction projects selected from the New Candidate projects list and additional transportation projects known collectively as the *baseline*.

To develop the alternative RTP strategies, performance data were reviewed to determine the location of the most severe problems in the county. For example, for the “Congestion Relief” strategy, traffic data were reviewed and a map indicating the level of service (LOS) on roadways was created to identify streets and roads that are projected to be the most congested in 2025 (LOS ratings from A through F describe traffic delays experienced by drivers, and LOS F1 and F2 are considered the worst).

To determine whether a proposed project addressed one of the deficiencies, the “Unconstrained Projects” list was used as a reference; this list includes both New Candidate projects and city or County projects that have not requested funding from StanCOG. These are considered 100% locally funded projects. These projects are equally important to identify in the RTP because they help to alleviate performance deficiencies on the regional transportation system.

Next, projects that are requesting StanCOG controlled funds were located in the New Candidates project matrix. In some cases, more than one project was needed to fully address the identified deficiency. All of the projects that address the deficiency were then added to the priority project list for that alternative. The

“cost to be paid by StanCOG” for the project was then deducted from the total available funding, beginning at \$282.5 million.

Projects were added to the priority project list, in priority order, until all of StanCOG’s funds were used. As projects were added to the project list for each alternative RTP strategy, the cost was deducted from the available fund until all of the \$282.5 million was spent. In most cases, the amount spent slightly exceeded the available funds to ensure that all funds were fully used.

Projects were then prioritized for each of the alternative strategies. Prioritized projects that fell within the top 50% of the available funding for each alternative ranked *high*. Subsequent projects that were ranked within the remaining 50% were ranked as *moderate*. Projects that did not have adequate funding or meet the prioritization requirements were ranked *low*.

After the project ranking was completed for each of the alternative strategies, the total funding available was reevaluated. Using the data provided for each alternative, projects that ranked as *high* and *moderate* were reviewed to ensure that only those projects with the greatest benefit per their economic cost were included in the strategy. The strategies represent projects that offer maximum benefit to County roads and streets through a balance of cost and benefit.

The RTP will consist of a priority project list of transportation projects that will be selected by the Policy Board.

Description of Alternatives

During the development of the proposed RTP, StanCOG developed strategies that are analyzed in this program EIR as the range of reasonable alternatives for the proposed RTP. Alternative 1 represents the full range of projects proposed for the county, and is therefore called the “Unconstrained” Projects Alternative (Appendix A). Alternative 1 would exceed the amount of funding available to the region through StanCOG and is considered a fiscally unconstrained option. StanCOG also recognized that the RTP could consist of subsets of Alternative 1 that would focus resources on particular county needs; four of these focused strategies were identified, and are referred to herein as *subalternatives* to Alternative 1. These four subalternatives (1a–1d) focus on projects that would require funding through StanCOG and represent fiscally constrained alternatives because they were developed to fit within the financial forecast prepared by StanCOG. The forecast represents projections of funding from known funding sources during the 25-year planning horizon. Alternative 2, the No-Project Alternative, represents the current RTP adopted in 1998 and is also considered a fiscally constrained option. StanCOG could adopt any one of these alternatives as the preferred strategy for the RTP. These alternatives are described in more detail below.

Alternative 1: “Unconstrained” Projects

This alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. These projects would exceed the amount of funding available from StanCOG and includes additional funding sources not available to StanCOG. Appendix A presents a table of these projects, proposed to 2025. Appendix B provides tables that group the projects by facility (transportation mode) and project type.

Subalternative 1a: Maintenance, Safety, and Community Enhancement Strategy

This subalternative consists of a priority project list that focuses on local road maintenance throughout the county. Also included in this subalternative are projects that would provide safety improvements and improve access to and within communities. The projects include widening State Route (SR) 99 from the Merced County line to Ceres; widening expressways and local roads on SR 165, westbound SR 132, and Albers Road; constructing several interchanges at the SR 99/SR 165 and SR 99/Briggsmore Avenue intersections; and implementing operational improvements to Las Palmas Avenue. Subalternative 1a is described in Appendix C.

Subalternative 1b: Congestion Relief Strategy

For this subalternative, traffic LOS ratings were used to identify streets and roads projected to be the most severely congested in 2025. The projects on the priority project list for this subalternative focus on alleviating congestion in the region. These projects include implementing a regional ridesharing program; widening SR 99 from Ceres to SR 219; constructing several interchange improvements on SR 99; and widening expressways on Santa Fe Avenue, westbound SR 132, Albers-Geer Road, and Faith Home Road or Washington Road. A new interchange at SR 99 and SR 132 is also proposed. This subalternative also includes an extension of the Altamont Commuter Express (ACE) Commuter Rail service to Modesto. Subalternative 1b is described in Appendix C.

Subalternative 1c: Economic Opportunities Strategy

This subalternative was developed from a priority project list that focuses on interchange improvements and highway and expressway widenings that would improve access to business parks in the region. These projects include implementing interchange improvements on SR 99 at West Main Street, Service/Mitchell, Briggsmore, and Kiernan avenues, as well as widening SR 99 from Ceres to Kiernan Avenue and from West Main Street to Patterson. Projects related to Interstate 5 (I-5) include a new interchange at Sperry Road and

widening of Sperry Road to a four-lane expressway between SR-33 and I-5. Widening Faith Home Road or Washington Road between Yosemite Boulevard and SR 99 is also proposed; this project would create a new four-lane expressway. Projects on SR 132 include constructing a new interchange at SR 99 and widening SR 132 to a four-lane expressway from the San Joaquin River to Dakota Avenue. Subalternative 1c is described in Appendix C.

Subalternative 1d: Combined Projects Strategy

This subalternative was proposed by the Citizen's Advisory Committee and endorsed by the Technical Advisory Committee. The projects in this subalternative were drawn from the existing baseline and New Candidate project lists and exceed the amount of transportation funds available to StanCOG. The subalternative consists primarily of improvements to SR 99 and SR 132. Interchanges at Hatch Road, Standiford Avenue, Kiernan Avenue, and Lander Avenue are proposed for SR 99. In addition, an eight-lane widening from Ceres to Kiernan Avenue is proposed. For eastbound SR 132, a new interchange and dedicated lanes for truck traffic are among the improvements proposed. A four-lane expressway from I-580 in San Joaquin County to SR 33 and from the San Joaquin River to Dakota Avenue is also being considered in this strategy. Subalternative 1d is described in Appendix C.

Alternative 2: No Project, or "Current Plan"

For the purposes of CEQA analysis, an alternative that represents no change to the existing environment (status quo) is the No-Project Alternative. In this case, the status quo would represent no change to the existing RTP (Current Plan) that was approved in 1998. The projects in this plan included expansion of public transit services, local airport improvements, local street maintenance, intersection and safety improvements, and highway interchanges and expressways. Many of these projects are also included in the proposed RTP. The key difference between the No-Project Alternative and Alternative 1 is that the Current Plan does not include the New Candidate projects that have been identified since the last update.

Alternatives Removed from Further Consideration

The State CEQA Guidelines require that this EIR identify any alternatives that were considered by StanCOG but were rejected as infeasible during the scoping process and briefly explain the reasons underlying StanCOG's determination that these alternatives would not be considered in this EIR. During the development of the RTP alternatives, StanCOG received public comments. All comments and recommendations on the development of the RTP were included in the development of the alternatives, and none were rejected as infeasible during the scoping process.

Public Participation

StanCOG has provided, and will provide, opportunities for the public to participate in the development of the RTP and in the environmental review processes. These opportunities are summarized below.

Proposed RTP

State RTP guidelines require that public involvement be a major component of the regional transportation planning process. StanCOG is required to provide a reasonable opportunity for members of the public to participate in the RTP development process. Private and public transit operators, freight operators, air and environmental agencies, as well as the general public and other interested or affected parties must be given information, notified in a timely manner of participation opportunities and requirements, and provided with access to submit their input. Low-income persons, minority households, and tribal governments must be given explicit consideration.

StanCOG has held several meetings of its Regional Transportation Forum that have afforded the public the opportunity to assist in developing the project priority lists and the alternative RTP strategies.

In addition, meetings of the Policy Board, Technical Advisory Committee, and Citizens Advisory Committee have been open to the public at all times.

Program EIR

Public participation is an important component of the environmental review process. StanCOG distributed an NOP for the EIR on December 20, 2000, to identify issues of concern regarding the RTP and to incorporate comments into the analysis for the draft program EIR. The NOP and comment letters are provided in Appendix D.

StanCOG will conduct a public hearing to present the results of the draft EIR and solicit comments. The purpose of this hearing will be to provide agencies and the public with opportunities to comment on or express concerns regarding the draft EIR. These comments will be addressed in the final EIR.

StanCOG will also hold a public hearing before certifying the final EIR, during which agencies and the public can provide additional comments on the issues addressed in that document.

Lead and Responsible Agencies and Required Approvals

StanCOG

As the lead agency under CEQA, the StanCOG Policy Board will select the preferred alternative for the RTP and certify the program EIR. This EIR was prepared for StanCOG's use in its review and approval of the 2001 RTP. This program EIR is intended to be used solely for the consideration for approval of the 2001 RTP and should not be used for the approval of individual projects included in the 2001 RTP. However, information in this document may be referenced as applicable.

Other Agencies

The preparation of this program EIR does not relieve the proponents of projects listed in the 2001 RTP from the responsibility of complying with the requirements of CEQA (and/or NEPA for projects requiring federal funding or approvals). This EIR represents the first tier of environmental review for the projects proposed in the 2001 RTP. The lead agency responsible for reviewing individual projects will determine the level of further environmental review needed, as project details are refined. These agencies may reference the discussion of regional impacts in this EIR as a basis of their assessment of regional or cumulative transportation impacts.

Introduction

This chapter presents an overview of existing land uses in Stanislaus County and provides a program-level evaluation of the potential impacts of the RTP on land use and planning in the county. The combined impacts of the RTP alternatives are qualitatively discussed at the end of this chapter. A discussion of the measures that would be used to mitigate significant impacts is also presented.

Setting

General Land Use in Stanislaus County

Land use in Stanislaus County is predominantly agricultural, with most of the county zoned A-2, General Agriculture, under the Stanislaus County General Plan (figures 3-1 and 3-2). However, for the past 40 years, the county has been changing from a rural agricultural region to an area that includes incorporated cities and towns. This conversion from nonagricultural land uses to other uses has occurred predominantly along local highways and freeways.

To help guide the development of unincorporated lands (including agricultural lands) within urban spheres of influence and city plan boundaries, the county approved the Urban Transition land use concept in 1973. Land uses within the Urban Transition designation are zoned A-2, and some are under Williamson Act contracts (see chapter 4, "Agricultural Lands"). Landowners with agricultural lands under Williamson Act contracts receive an incentive to maintain the agricultural land use of farmlands. Lands designated as "Urban Transition" are intended to remain in agricultural use until development consistent with a city's general plan is approved. In 1984, the Local Agency Formation Commission (LAFCO) adopted *spheres of influence* for the incorporated cities in the county, as required by state law, to help further define city boundaries and jurisdiction. These spheres define areas that cities are likely to annex in the future. The designation allows cities to influence land use policies within their spheres of influence.

Plan Area Land Uses

The project area for the 2001 RTP includes land throughout Stanislaus County. Most of the proposed transportation roadway improvements would be located adjacent to or within existing transportation routes. The region's major transportation routes include I-5, SR 4, SR 33, SR 108, SR 120, SR 165, SR 132, and SR 219. Incorporated cities along these routes are Patterson and Newman on State Route 33; Modesto at the crossroads of SR 99, SR 108, and SR 132; Turlock and Ceres on SR 99; Riverbank on SR 108; Oakdale along SR 108 and SR 120; and Waterford on SR 132. Unincorporated developments include Crows Landing on SR 33; Empire along SR 132, Keyes on SR 99; La Grange on SR 132; Salida on SR 99 and SR 219; and Westley on SR 33.

General land uses found in the county, including uses along major transportation routes and in urban and agricultural areas, are described below. These descriptions were developed based on a site visit to the county and review of relevant general plans and other planning documents in the county and cities located in the county. The descriptions are not intended to depict precise land uses. Figure 2-1 shows the locations of the cities, unincorporated areas and transportation routes in the county.

Land Uses along Major Transportation Routes

Interstate 5

I-5 is a four-lane divided freeway running north and south through western Stanislaus County. Land use west of I-5 consists predominantly of undeveloped open space used for grazing. Additional uses include agriculture (orchards), single-family housing and buildings associated with agricultural uses, and visitor services or commercial uses at access points. The Fink Road county landfill is located west of I-5, south of the Fink Road interchange. A tall chain-link fence runs along the landfill property boundary. Also located in this area is the Covanta Energy waste-to-energy station. The California Aqueduct, the Delta Mendota Canal, agricultural uses and related dwellings, buildings, and open space lie to the east. In addition, freeway commercial uses are found at access points to the freeway. Power lines traverse the freeway at several locations and continue along the foothills to the west. The freeway crosses several creeks, including Kern, Del Puerto, Solado, Crow, and Orestimba Creeks. Orestimba Creek supports mature riparian vegetation. A vista point is located approximately 3 miles south of the I-5/North Patterson exit. The vista point overlooks the California Aqueduct and valley farmland. The entire segment of I-5 in Stanislaus County is a designated state scenic highway.

State Route 132

SR 132 is a two-lane undivided highway that runs from east to west across the northern part of the county. The cities of Modesto and Waterford and communities of Empire and La Grange are located along SR 132. Agricultural land uses border the highway from the western border of the county toward Modesto. These uses include row crops, vineyards, orchards, open space, and single-family dwellings and buildings associated with agricultural uses. The San Joaquin River passes under the highway near the northern border of the county. Commercial and residential land uses are more frequent as the highway approaches Modesto. In Modesto, land uses include residential, commercial, public, and industrial. Between Modesto and Empire are commercial, industrial, and public land uses. East of Empire, uses are primarily agricultural, with associated residences and outbuildings. Gas stations and markets dot the highway throughout the county. Land uses in Waterford are primarily residential, but include commercial and public uses. East of Waterford, land uses along the highway consist of agriculture and open space. Along this part of the highway, the Tuolumne River and its associated riparian corridor run parallel and south of SR 132. Also south of the highway are sand and gravel quarries, the town of Roberts Ferry, a cemetery, the Turlock State Park and Reservoir, and Tuolumne River Resort. North of the highway is the Modesto Reservoir and Regional Park. Near the eastern border of the county, SR 132 passes through the historical community of La Grange. Land uses in this corridor comprise commercial and some residential uses. The Tuolumne River crosses under the road 2 miles west of La Grange. Rodeo grounds border the highway just east of La Grange. Beyond the rodeo grounds to the eastern border of the county, undeveloped open space predominates.

State Routes 108 and 120

SR 108 begins in downtown Modesto at K and 9th Streets and travels through Riverbank to downtown Oakdale. SR 120 enters the county northwest of Oakdale and runs through that city, where it meets SR 108. These highways merge through the remainder of the county.

Along SR 108 in Modesto, land uses are primarily urban and include residential, commercial, and public uses. Between Modesto and Riverbank, land uses comprise both urban and agricultural uses, like other areas of the county. However, agricultural parcels along this stretch of highway are much smaller. Residential uses exist in and just outside of Riverbank. Other land uses in Riverbank are commercial, public, and recreational uses. Development in Riverbank occurs predominantly on the south side of SR 108/120.

Along SR 120 northwest of Oakdale, land uses are predominantly agricultural. Land uses along the highway through Oakdale are commercial. East of Oakdale lies a Christmas tree farm and residential development. Beyond Oakdale's sphere of influence to the county line is undeveloped open space used for

grazing. The Stanislaus River and associated parks are located on the north side of SR 108/120.

State Route 33

SR 33 runs from north to south and parallels I-5 on the east. The highway traverses the cities of Patterson and Newman and the communities of Crows Landing and Westley. Outside these areas, the main land use is agriculture, including orchards, row crops, and alfalfa farms. Structures associated with agricultural land use dot the landscape. Within the cities and communities, commercial land uses flank the highway. Adjacent to SR 33 is the Union Pacific Railroad line. Railroad storage facilities are located in Crows Landing and Westley between the railroad and the highway. SR 33 crosses several creeks.

State Route 99

SR 99 is a six-lane, predominantly divided highway that runs from north to south through the central part of the county. The cities of Modesto, Ceres, and Turlock, as well as the communities of Salida and Keyes, are located along SR 99. This is the most populated highway corridor in the county, and its land uses are primarily urban. North of Modesto, the highway corridor supports commercial land uses. Adjacent land uses within Modesto include commercial, residential, and public land uses. Between Modesto and Turlock, residential, industrial, and agricultural uses border the road. Throughout Turlock, land uses are agricultural, commercial, and public. Railroad tracks and electric towers border the highway in various locations along the highway. Just south of Stanislaus County, SR 99 narrows to two lanes.

State Route 165

SR 165 is a two-lane highway that runs from north to south along the southern part of Stanislaus County. SR 165 terminates at SR 99 in Turlock. Land uses along this highway are primarily agriculture and undeveloped open space. At the intersection of SR 99, some commercial uses line the highway.

State Route 219

SR 219 connects SR 108 to SR 99. An industrial park borders SR 219 along the south from SR 108 west to SR 219. Additional land uses along this stretch are agricultural, public, residential, and commercial. Union Pacific Railroad tracks in Salida lie at the terminus of SR 219 and SR 99.

Urban Uses

Stanislaus County contains nine incorporated cities and 14 unincorporated communities. The four largest urban areas of the county are Modesto, Ceres, Turlock, and Oakdale. Modesto is one of the largest cities in the northern San Joaquin Valley. Modesto has an established commercial downtown area surrounded by older residential neighborhoods. Modesto's boundaries have spread, with residential, commercial, and industrial development typical of growth in the latter half of the 20th century. Ceres has developed as a suburb of Modesto. Turlock has a similar development pattern to Modesto, but is less densely populated. Turlock is also home to California State University, Stanislaus. Oakdale has a small historic district surrounded by recent growth, and has retained a greater degree of agricultural uses than Modesto. These four cities contain higher-density commercial and industrial uses and are supported by multilane arterial roadways.

Suburban/Rural Uses

The towns of Riverbank, Hughson, Patterson, Waterford, and Newman are suburban areas that maintain agricultural uses. These cities contain small downtown areas with established neighborhoods. New subdivisions are being developed on the outskirts of these communities. The local roadways generally consist of local two-lane roads, which are connected by highways across the county.

Rural/Agricultural Uses

As described above, the majority of land in the county is used for agricultural production and open space. These uses can be broadly categorized by describing north-south strips of the county. From the western boundary to approximately I-5 are foothills used for rangeland and open space. From I-5 to the San Joaquin River, there is a mixture of orchards and row crops. Moving east from the San Joaquin River, uses of the landscape gradually change to row crops and dairies. Throughout this area are isolated agricultural industrial uses (e.g., milling plants and nut processing plants) and mining operations. East of County Route J-9, rural land uses tend toward orchards, dairies, and open rangeland. At the eastern boundary of the county, land uses almost strictly consist of open space and rangeland.

Relevant Plans, Policies, and Regulations

Federal

No relevant federal policies related to land use are relevant to the RTP.

State

State Lands Commission Significant Lands Inventory

The Tuolumne River in Stanislaus County is state sovereign land under the jurisdiction of the State Lands Commission. Any activities within the ordinary low-water mark are subject to the commission's leasing jurisdiction.

The State Lands Commission's Significant Lands Inventory (or "Inventory of Unconveyed State School Lands and Tide and Submerged Lands Possessing Significant Environmental Values"), identifies the Tuolumne River as category B, Limited Use, having significant environmental values. Category B is defined as lands "in which one or more closely related dominant, significant environmental values is present. Limited uses that are compatible with, and non-consumptive of, such values may be permitted" (Sanders 2001).

The State Lands Commission has jurisdiction and authority over the Tuolumne River, so RTP component projects that affect these lands would be subject to the leasing and/or purchasing requirements of the State Lands Commission. To provide permanent protection of environmentally significant values, the project must be designed to be consistent with the use classifications assigned under the Significant Lands Inventory. If such consistency cannot be accomplished through mitigation or alteration of the project, the State Lands Commission would generally deny granting a lease for the project.

Local

The following lists land use policies that could affect or be affected by the RTP. Policies may either support or conflict with proposed project improvements. The policies listed below were excerpted from the Land Use, Open Space, Agriculture, Conservation, Natural Resources, Transportation and Circulation Elements of the Stanislaus County General Plan, and from the general plans of incorporated cities in the county. In addition, excerpts from the long-range plans of transportation system modal components are included.

Stanislaus County General Plan

The Stanislaus County General Plan states that agricultural lands in the county are of economic and agricultural importance to the entire nation. The General Plan agricultural land use designation is consistent with areas identified as suitable for open space. This land use designation precludes incompatible urban development in agricultural areas.

The following Stanislaus County land use policies may affect the RTP. The general plan includes community plan policies for unincorporated developments in the county, such as Denair.

- **Land Use Policy 6.** Preserve and encourage upgrading of existing unincorporated urban communities.
- **Land Use Policy 14.** Uses shall not be permitted to intrude into or be located adjacent to an agricultural area if they are detrimental to continued agricultural usage of the surrounding area.
- **Land Use Policy 22.** Future growth shall not exceed the capabilities/capacity of the provider of services such as sewer, water, public safety, solid waste management, road systems, schools, health care facilities etc.
- **Land Use Policy 23.** New development shall pay its fair share of the cost of cumulative impacts on circulation and transit systems.
- **Circulation Policy 4.** A circulation system shall be developed that provides for streets in all classifications as necessary to provide access to all parts of the county based on the anticipated land use.
- **Conservation/Open Space Element Goal 1.** Encourage the protection and preservation of natural and scenic areas throughout the County.
- **Conservation/Open Space Element Goal 3.** Provide for the long-term conservation and use of agricultural lands.
- **Denair Community Plan Land Use Goal 1.** Reinforce Denair's small rural town character.
- **Denair Community Plan Land Use Goal 3, Policy 1.** Provide for the non-motorized needs of the Denair Community; provide safe and convenient pedestrian and bicycle facilities to various destinations throughout the community of Denair.
- **Denair Community Plan Goal 2.** Provide a well-defined community edge between Denair and adjacent agricultural land, as well as between Denair and the City of Turlock.

Stanislaus County Regional Aviation System Plan

This plan discusses the issue of land use compatibility between airport uses and non-airport uses for Modesto and Oakdale. The primary responsibility for land use compatibility lies with the cities and counties that have control over land use zoning and development around the airport. The plan states

There is a potential that land uses incompatible with airport operations may develop on properties surrounding the airport, therefore, the continued application of development restrictions contained in Stanislaus County's Airport Land Use Commission Plan is an appropriate method for ensuring that only

compatible uses are developed in areas impacted by airport operations (Stanislaus Council of Governments 1998).

Stanislaus Council of Governments Regional Bicycle Action Plan

The Stanislaus Council of Governments Regional Bicycle Action Plan contains the following relevant objective:

- **Objective 4.** New development should encourage, rather than discourage, access by bicycles.

Modesto

Land Use Policies

The City of Modesto is divided into 25 comprehensive planning districts. The Modesto Urban Area General Plan identifies land use policies for these districts. These land use policies are categorized as overall land use policies, “neighborhood plan prototype” policies, and Neotraditional Planning Principles. For this program-level EIR, no applicable land use policies were identified in the Modesto Urban Area General Plan. However, future environmental analyses for individual RTP projects within Modesto’s sphere of influence would include review of these land use policies, which may be revised in the future.

Agriculture Policies

The following policy is contained in the Modesto General Plan:

- **Agriculture Policy 3c.** The city shall encourage the County to retain agricultural use on lands surrounding the General Plan area and on lands within the General Plan area pending their annexation to the city or development by mutual agreement with the county.

Turlock

The Turlock General Plan contains the following applicable policies:

- **Land Use Growth Management Policy 2.7-c.** Ensure the adequacy and quality of public services and facilities for all residents.
- **Land Use Planning Area and City/County Relationships Policy 2.8-e.** Support Stanislaus County and Merced County policies that promote continued agricultural activity on lands surrounding the urban areas designated on the General Plan Diagram.
- **Land Use Policy 2.8-e.** Seek Stanislaus County cooperation in designating unincorporated land for uses compatible with adjacent City lands.

- **Land Use Policy 2.8-g.** Cooperate with County agencies in planning for transportation improvements and other major projects affecting multiple agencies.
- **Transportation Policy 5.5-b.** Maintain compatibility of Turlock Airport operations with development in the surrounding area.
- **Open Space and Conservation Policy 6.1-a.** Retain Turlock's agricultural setting by limiting urban expansion to designated areas, providing additional industrial land suitable for agricultural industry, and minimizing conflicts between agriculture and urban activities.

Hughson

The Hughson General Plan contains the following applicable policies:

- **Land Use Objective 5.** To conserve agricultural land to the maximum practical extent that is commensurate with the orderly growth and development of the City.
- **Land Use Objective 6.** To coordinate with Stanislaus County and Local Agency Formation Commission in planning for and regulating the use of land in unincorporated portions of the planning area.
- **Land Use Policy for Urban Growth Management b: Unincorporated Land Designated for Urban Development.** To protect land designated for urban development or as an urban reserve within the unincorporated portions of the planning area from premature development, the City requests Stanislaus County maintain existing agricultural zoning on all unincorporated land designated for urban uses or as agricultural open space.
- **Land Use Policy for Urban Growth Management c: Unincorporated Land not designated for Urban Development.** The city encourages the County to utilize the following guidelines in planning for this land: (i) The City should be the provider of urban services and control within the planning area. Urban development should occur within the City. (ii) The primary use of unincorporated land should be for agricultural and rural uses. Emphasis should be placed upon the preservation of productive or potentially productive agricultural land.
- **Open Space Objective a.** Recognize that open space land is a limited and valuable resource which must be conserved whenever possible.
- **Open Space Objective b.** Discourage premature and unnecessary conversion of open space land to urban uses. Adopt land use policies which promote contiguous development and urban infilling.
- **Open Space Conservation Policy 1.** Preserve and properly utilize the community's agricultural resources through the following measures: b) Preserve and manage the agricultural resources of the Hughson Planning Area for current and future use. c) Designate lands which should be

preserved in agricultural use. Limit use of these designated agricultural lands to agricultural uses.

Oakdale

The Oakdale General Plan states that the City of Oakdale wants to maintain the Stanislaus River corridor as an asset to its community, and has recommended that land use changes around the corridor be carefully coordinated with other affected or responsible governmental agencies. In addition, the City of Oakdale has developed a greenbelt around the city's central core, to maintain an open space buffer between the city and nearby communities. Much of the open space has been designated for agricultural use with the intent to retain the land in a nonurban development status. The 1994 Oakdale General Plan contains two alternative land use maps, each showing a potential location for an SR 120 bypass route, with land uses designated to reflect the proposed route. Adoption of the final map is dependent upon the ultimate location of SR 120 bypass route.

The Oakdale General Plan contains the following applicable policies:

- **Land Use 2.** Ensure that the City's planning activities are coordinated with other affected or responsible governmental agencies.
- **Land Use 4.** Discourage land use activities in the unincorporated territory and within and adjacent to the Planning Boundary which could interfere with the implementation of the General Plan.
- **Land Use Implementation Policy 1a.** 120 Bypass Corridor #1: East of South Stearns, to the general Atlas Road alignment, to be designated [Reserved Single-Family Low-Density Residential] SFLDR, [Low-Density Residential] LDR, [Medium-Density Residential] MDR, [General Commercial] GC. Area outside the 20-year Boundary should be deferred from inclusion into the boundary until there is either a programmed and funded Highway 108 bypass or local equivalent.
- **Land Use Implementation Policy 1b.** 120 Bypass Corridor(s) #2: East of South Stearns outside of the 2015 boundary are not to be considered for inclusion in the 20-year boundary. Those areas are designated Agricultural.
- **Land Use Implementation Policy 4.** Review and comment upon any land use or public works related application submitted to or proposed by other agencies which involves territory in or within reasonable proximity of the City of Oakdale's planning boundary.
- **Land Use Implementation Policy 6.** Participate in a joint resolution for planning with Modesto, Oakdale Irrigation District, local School Districts, and the County and City of Riverbank to deal with growth, orientation of development, development of transit corridors, highway extensions and the balance of facility and land uses on a case-by-case basis.
- **Land Use Implementation Policy 8.** Preserve all of those areas delineated in Land Use for open space and/or recreation uses, and all transportation

corridors designated for future extension of streets and highways, through the use of easements, opens space zoning and/or public dedication or purchase.

- **Land Use Implementation Policy 24.** That a minimum 50-foot green belt corridor is required along the south side of the railroad, between Crane Road and area designated industrial, for use both as a buffer and to facilitate the City's trail system for pedestrian, equestrian, and bicycle use.
- **Land Use Implementation Policy 26.** Develop written agreements with surrounding cities and agencies.
- **Open Space 1.** Recognize that open space is a limited and valuable resource which must be conserved, whenever reasonably possible.
- **Open Space 9.** Preserve unique and valuable natural resource areas.

Newman

The Newman General Plan contains the following applicable policies:

- **Land Use Goal 1A.** To provide for orderly, well-planned growth consistent with the limits imposed by the city's infrastructure and the city's ability to assimilate new growth.
- **Natural Resources Goal VIB.** To promote the continued productivity of agricultural land surrounding Newman and to prevent the premature conversion of agricultural land to urban uses.

Riverbank

The Riverbank General Plan contains the following applicable policies:

- **Land Use Goal IV Policy 6b.** A three-year capital improvement program shall be adopted and reviewed annually so that major public improvement programs are planned and an overall view can be obtained of the direction the city is taking.
- **Land Use Goal IV Policy 6c.** Growth should occur only as public facilities are available to serve it.
- **Circulation Goal 1 Policy 4.** A circulation system shall be developed that includes streets as necessary to provide access to all parts of the city based on anticipated land use.
- **Open Space and Conservation Element Goal III.** To continue use of agricultural land outside the current City Limits.
- **Open Space and Conservation Element Policy A-1.** The Stanislaus River and its adjacent riparian habitat will be left untouched despite future development of the city.

- **Open Space and Conservation Element Policy A-4.** The city shall oppose further breakdown of agricultural land within its general plan boundary.

Waterford

The Waterford General Plan contains the following applicable policies:

- **Land Use Goal 4.3.** To influence land use decisions of governmental agencies which may impact Waterford.
- **Land Use Goal 4.4.** To expand Waterford's Sphere of Influence based on the ultimate boundaries of development that the City can reasonably control and service and to discourage premature development in unincorporated areas surrounding the City.
- **Land Use Policy 4.4.3.** A new sphere of influence boundary shall include only those lands to which road, water, sewer and other facility/service connections can be extended within the next 25 to 30 years and, therefore, to those areas which will ultimately be annexed to the City.
- **Open Space and Conservation Goal 7.1.** To discourage the premature conversion of agricultural land to urban uses. To the extent possible, an agricultural area should be kept around the city to clearly set Waterford apart from the urban development of Modesto, Oakdale, and Riverbank.

Patterson

The Patterson General Plan contains the following applicable policies:

- **Goal 1A.** To provide for orderly, well-planned, and balanced growth consistent with the limits imposed by the city's infrastructure and the city's ability to assimilate new growth.
- **Goal I.A.3.** The City shall take full advantage of the development, planning, and infrastructure improvement opportunities afforded by larger undeveloped land parcels west of the present City limits.
- **Goal I.A.9.** The City shall interact with the County to ensure that development approved by the County on unincorporated lands within the Patterson Planning Area is developed to standards consistent with City standards, including architectural compatibility, provision of adequate infrastructure improvements, and provision of City sewer service.
- **Goal I.C.8.** The City shall support the development of a highway commercial area near the Interstate 5 interchange.
- **Goal VIII.A.7.** The City shall seek to maintain a distinct agricultural definition to the urban edge of the city as a means of emphasizing Patterson's small-town qualities and agricultural heritage.

Impacts and Mitigation Measures

Methods and Assumptions for the Impact Analysis

The general plan circulation and land use elements of Stanislaus County and the incorporated cities were reviewed for consistency with the RTP. In addition, a windshield survey through the county was conducted on July 20, 2001, to verify and map existing land uses in the project area. The windshield survey sampled transportation routes throughout the county and covered areas proposed for major improvements under the RTP. A more detailed land use impact analysis would be required during development of plans for individual RTP projects.

For the purposes of this analysis, land designated for agricultural use is also considered open space because a majority of the county's open space is designated as agriculture. Most cities also equate this designation with open space land use.

Criteria for Determining Significance

Appendix G of the State CEQA Guidelines and StanCOG's adopted thresholds of significance were used to determine whether the RTP components would have significant environmental impacts related to land use and planning.

State CEQA Guidelines

According to the State CEQA Guidelines, the RTP would have a significant impact on land use and planning if it would

- physically divide an established community;
- conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental impact; or
- conflict with any applicable habitat conservation plan (HCP) or natural community conservation plan (NCCP).¹

¹ There are currently no applicable HCPs or NCCPs for jurisdictions within Stanislaus County. It is therefore assumed the proposed project would not conflict with any applicable plan and there is no impact at this time. Please refer to chapter 6, "Biological Resources," for further discussion of this impact.

StanCOG Adopted Thresholds of Significance

According to the thresholds established by StanCOG, the RTP would have a significant impact on land use and planning if it would

- physically divide an established community;
- convert open space to a more intensive use,
- conflict with adopted local or regional plans, or
- be inconsistent with the adopted Vision Statement for Stanislaus County.

Impacts and Mitigation Measures of the Proposed RTP Components

The following is a qualitative evaluation of the potential impacts of the proposed 2001 RTP components. Subsequent project-level environmental analysis will likely be required before individual projects are approved and constructed.

Impacts Related to Highway Projects

Several types of highway projects are proposed for Stanislaus County. These projects include widening highways, constructing or reconstructing interchanges, and creating expressways on highways. The following evaluation identifies impacts related to these projects.

Impact LUP-1: Physical Division of an Established Community by Highway Projects

The majority of the proposed highway widenings would occur outside of the urban areas in the county. However, highway improvements in cities and communities are proposed for SR 33, SR 99, and SR 132. These improvements may affect the cities and communities of Newman, Patterson, Modesto, Ceres, Keyes, and Turlock. Proposed RTP highway projects that could result in dividing an established community include, but may not be limited to:

- widening SR 33 from three to five lanes within Patterson and Newman city limits;
- widening or construction lanes along SR 132 east of SR 99 to Empire, within Modesto city limits;
- widening SR-99 from six to eight lanes from the Merced County line to Ceres, which would cross Turlock and Keyes; and
- adding a passing lane on SR 132 from Empire to Waterford.

The proposed highway widenings in the RTP generally involve adding two lanes, regardless of the number of existing lanes. Widening highways by two lanes

could physically and visually increase the distance between land uses on opposite sides of the roadway. Widening roadways (i.e., from two to four lanes) would sometimes require adding signals, overpasses, or median divides that would decrease people's ability to easily cross or drive from one side to the other. Land uses along these highways in affected cities and communities include residential, commercial, and open space uses. Residential land uses would be particularly sensitive to the effects of widened highways.

The jurisdictions identified for the major highway widenings and interchange and expressway improvements have adopted general plan policies that help guide roadway improvements and development in the area. However, certain needed highway improvements could result in the physical division of established communities. This impact is considered significant. Implementation of Mitigation Measures LUP-1a and LUP-1b would reduce this impact to a less-than-significant level.

Mitigation Measure LUP-1a: Conduct Site-Specific Review of Project Design Improvements to Determine Effects on Established Communities

StanCOG shall ensure that project proponents consult with local planning staff to avoid or reduce the potential for physically dividing a community. At the time of subsequent project approval, a more detailed project-level analysis of land uses adjacent to proposed improvements shall be required to identify specific impacts related to physical division of existing communities. Analysis of new road widths and specific project locations in relation to existing roads would be analyzed when such design plans are available.

For projects proposed within city limits or unincorporated communities, project-level analysis would consist of coordination between project proponents and city and county planning staff to identify locations where community division could result from the improvements. Before approving funding for a specific project, StanCOG shall ensure that cities and the County, in determining the locations of potential impacts, will assess the sensitivity of communities to division, the proposed new roadway width and other project characteristics, and the adjacent land uses. If site-specific analyses indicate that a community could be physically divided by proposed improvements, StanCOG shall ensure that the following mitigation measure (Mitigation Measure LUP-1b) is implemented.

Mitigation Measure LUP-1b: Conduct Site-Specific Review of Project Design Improvements to Determine Effects on Established Communities and Design Project Improvements to Avoid or Minimize Physical Division of an Existing Community

For projects that could result in the potential division of a community, StanCOG shall ensure that project proponents avoid the physical division of communities by a project where feasible. Measures to avoid the division would include realignment of the roadway or interchange

improvements to avoid the affected area of residential communities or cohesive neighborhoods. Where complete avoidance of an area is determined infeasible, measures to reduce the impact would include alignment shifts to minimize the area affected; reduction of the proposed right-of-way take to minimize the overall area of impact; provisions for bicycle, pedestrian, and vehicle access across improved roadways; or reduction of the visual impact of the improved roadway using landscaping, paving materials, or road design. In addition, StanCOG shall require project proponents to comply with applicable city, county, or state design standards for highway, expressway, and interchange improvements.

Impact LUP-2: Conversion of Open Space to More Intensive Uses by Highway Projects

The proposed improvements would convert open space to transportation uses because most land uses along transportation routes are designated for agriculture uses (figure 3-2). For reasons described above, lands designated as agriculture are considered open space. Agricultural uses would be permanently displaced by proposed improvements, and most of the proposed open space conversion would occur in the County's jurisdiction. Typical agricultural land uses that could be converted would include orchards, grazing land, and row crops.

The percentage of land converted from open space/agricultural use as part of the proposed improvements would not be substantial in relation to the county's total agricultural acreage. Also, most converted land would be in the form of long, narrow bands adjacent to roadways, rather than large contiguous parcels. However, this impact could be significant because open space would be permanently converted to a more intensive land use. Implementation of Mitigation Measures LUP-2, LUP-3, and LUP-4 would reduce this impact to a less-than-significant level.

Mitigation Measure LUP-2: Design Project Improvements to Minimize Impacts on Open Space and Agriculture

StanCOG shall ensure that project proponents design improvements to minimize the amount of open space conversion. Design measures may include, but are not limited to, reducing the proposed roadway width or realigning the improvement to avoid open space and agricultural lands. Lands with significant economic, scenic, or local value, such as Prime or Important Farmland, shall be avoided whenever feasible.

Mitigation Measure LUP-3: Consult with and Implement Recommendations of City and County Planning Staff Regarding Open Space Conversion

StanCOG shall ensure that project proponents consult with affected cities and the County and implement their recommendations for reducing open space conversion impacts in each jurisdiction.

Mitigation Measure LUP-4: Locate Construction Staging Areas Away from Open Space and Agricultural Land Uses

StanCOG shall ensure that project proponents locate staging areas for the construction of the proposed improvements away from areas designated as open space or agriculture whenever feasible.

Impact LUP-3: Potential for Conflicts between Highway Projects and Relevant Land Use Plans

The proposed project improvements could conflict with county and city land use policies and designations. The County and each of the cities have developed policies regarding the preservation of agricultural land. The local jurisdictions intend to retain agricultural lands for economic purposes, open space values, as buffers, and to define adjacent cities. Conversion of these lands could conflict with local policies to prevent the premature conversion of agricultural lands to urban uses.

Some of the improvements would increase the amount of pavement and bring automobile traffic closer to residences, resulting in higher exposures of people to noise, visual disruption, and odors. This issue is discussed further in the Noise, Aesthetics, and Air Quality chapters of this EIR.

Project-level environmental analyses would need to determine whether individual projects are consistent with applicable plans and policies. Specific information about whether all RTP projects will be compatible with existing or future land use policies is not currently available; therefore, this impact is considered significant. Implementation of the following mitigation measures would reduce this impact, but not necessarily to a less-than-significant level for all proposed improvements. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure LUP-2: Design Project Improvements to Minimize Impacts on Open Space and Agriculture

This mitigation measure is described above, under Impact LUP-2.

Mitigation Measure LUP-3: Consult with and Implement Recommendations of City and County Planning Staff Regarding Open Space Conversion

This mitigation measure is described above, under Impact LUP-2.

Mitigation Measure LUP-5: Provide Buffers or Setbacks between RTP Improvements and Adjacent Sensitive Land Uses

StanCOG shall require project proponents to provide buffers or setbacks between the improvement and adjacent sensitive land uses where feasible and appropriate to minimize conflicts. Buffers may include vegetation, berms, or soundwalls. The size and type of buffer or setback shall be determined during the individual project design phase

Mitigation Measure LUP-6: Adopt Intergovernmental Review Thresholds and Review Guidelines

StanCOG shall review local land use plans and projects for consistency with the adopted RTP. To support the integration of RTP policies and projects into local land use plans and projects, and to reduce potential conflicts with land use plans, StanCOG shall adopt Intergovernmental Review thresholds and review guidelines to evaluate referrals from local governments, school districts, and other entities with adopted land use plans or jurisdiction over sensitive land uses.

Impacts Related to Local Road Projects

This section discusses impacts related to projects proposed for local roads. Local road projects are the largest category of proposed RTP improvements. These projects include proposals for widening roads, improving intersections, constructing new roads, and implementing operational improvements.

Impact LUP-4: Physical Division of an Established Community by Local Road Projects

Because a majority of local road projects could occur within incorporated areas, several cities could be affected by the improvements. Proposed local intersection improvements include widening lanes, generally by an additional two to four lanes, and constructing grade separations in local cities. Intersection improvements, especially grade separations, may create visual and physical barriers between adjacent land uses in cities, depending on the location and design of the interchanges. New construction proposed includes new roads, widened lanes, additional lanes, new bridge crossings, and completion of collector roads. Proposed operational improvements include lane, roundabout, and interchange reconstruction; bridge widening and rehabilitation; and railroad crossing improvements.

Because of the volume of improvements, it is assumed that local road projects present the greatest potential for impacts regarding the division of an established community and conflicts with city land use plans and policies. Therefore, this impact is considered significant. Implementation of the following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measure LUP-1a: Conduct Site-Specific Review of Project Design Improvements to Determine Effects on Established Communities

This mitigation measure is described above, under Impact LUP-1.

Mitigation Measure LUP-1b: Conduct Site-Specific Review of Project Design Improvements to Determine Effects on Established Communities and Design Project Improvements to Avoid or Minimize Physical Division of an Existing Community

This mitigation measure is described above, under Impact LUP-1.

Impact LUP-5: Conversion of Open Space to More Intensive Uses by Local Road Projects

This impact is similar to that described above highway projects, except most of the proposed local projects would be concentrated in more urbanized areas. Therefore, this component of the RTP would convert less open space and agricultural land to more intensive uses than highway projects. However, this impact would be considered significant because open space would be permanently converted to a more intensive land use. Implementation of the following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measure LUP-2: Design Project Improvements to Minimize Impacts on Open Space and Agriculture

This mitigation measure is described above, under Impact LUP-2.

Mitigation Measure LUP-3: Consult with and Implement Recommendations of City and County Planning Staff Regarding Open Space Conversion

This mitigation measure is described above, under Impact LUP-2.

Mitigation Measure LUP-4: Locate Construction Staging Areas Away from Open Space and Agricultural Land Uses

This mitigation measure is described above, under Impact LUP-2.

Impact LUP-6: Conflict between Local Road Projects and State Sovereign Lands as Identified by the State Lands Commission

As part of the RTP, local roadway improvements are proposed for the vicinity of the Tuolumne River, within Modesto city limits. This river has been identified as environmentally significant by the State Lands Commission. Proposed improvements must be consistent with use classifications under the Significant Lands Inventory or pursuant to Public Resources Code Section 6219. Proposed improvements in State Lands Commission jurisdiction must also be identified in project-level environmental documentation and analyzed for consistency with the use designation. If the project is not consistent, it would be denied by the State Lands Commission. Specific project design information is not available at this stage of analysis, but local roadway improvements in Modesto could affect State Sovereign Lands. This impact is considered significant. Implementation of the following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measure LUP-7a: Design Projects to Avoid State Sovereign Lands

StanCOG shall ensure that project proponents avoid State Sovereign Lands where feasible. After preliminary engineering plans have been developed, StanCOG shall ensure that project proponents have identified other potential project corridors or alignment locations that could avoid conflicts with State Sovereign Lands. If it is determined that State Sovereign Lands cannot be avoided, implementing the following mitigation measure (Mitigation Measures LUP-7b) would reduce the impact to a less-than-significant level.

Mitigation Measure LUP-7b: Meet State Lands Commission Requirements or Develop and Implement Mitigation Measures Consistent with Requirements

StanCOG shall ensure that project proponents meet the State Lands Commission's requirements for projects affecting State Sovereign Lands. Meeting requirements involve obtaining an easement, or leasing or purchasing affected lands. Additional requirements include altering the project design to avoid sensitive locations on the Tuolumne River or developing and implementing additional mitigation measures. StanCOG shall ensure that the project proponents consult with the State Lands Commission and jointly develop and implement design alternatives or mitigation measures as set forth by the Commission.

Impacts Related to Bicycle Projects

This section discusses impacts related to proposed bicycle facility projects. Several bicycle facility projects are proposed in the RTP. These include proposals to widen existing bikeways, install signage and/or stripe bikeways, and implement railroad crossing improvements for bikeways. The impacts of bicycle facilities on land use and planning would differ from those of highway projects, as described below.

Impact LUP-7: Physical Division of an Established Community by Bicycle Projects

As described in chapter 2, widened bikeways are proposed for existing transportation routes; however, additional roadway width needed for improvements would be minimal. The scale of this additional paving is not anticipated to physically divide an established community. Bikeway signage and striping and proposed railroad crossing improvements also would not physically divide an established community. Therefore, this impact is considered less-than-significant. No mitigation is required.

Impact LUP-8: Conversion of Open Space to More Intensive Uses by Bicycle Projects

Widened bikeways are proposed for existing transportation routes; however, additional roadway width needed for improvements would be minimal. Although some open space conversion could be necessary, the added width of proposed bikeways would be small. Bikeway signage and striping and proposed railroad crossing improvements also would not convert open space to a more intensive land use. This impact is considered less than significant. No mitigation is required.

Impacts Related to Transit Projects

The RTP includes transit facility projects. These projects include passenger rail stations for high-speed, intercity, and commuter rail services, as well as bus

maintenance yards. Below is a discussion of impacts related to proposed transit facilities.

Impact LUP-9: Physical Division of an Established Community by Transit Projects

Six bus maintenance yards are proposed under the RTP: three in Modesto, one in Riverbank, one in Turlock, and one in Waterford. Five of these six maintenance yards are proposed to be built in existing transportation and corporation yards. The sixth maintenance yard is proposed for Modesto's downtown area. Because the yards would be located in areas with similar existing uses, the construction of the proposed yards is not anticipated to physically divide any community.

For rail transit projects, adding four tracks and constructing multiple passenger rail stations could result in the physical division of existing communities, depending on the specific location of projects. Land use impacts related to these improvements would occur along existing rail lines and in the cities of Modesto, Turlock, Salida, and Ceres. Rail tracks for the proposed high-speed commuter rail would traverse the county from north to south and could include a line running through downtown Modesto (Modesto Station and Alignment Evaluation, May 2001). This impact is considered significant. Implementation of the following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measure LUP-1a: Conduct Site-Specific Review of Project Design Improvements to Determine Effects on Established Communities

This mitigation measure is described above, under Impact LUP-1.

Mitigation Measure LUP-1b: Conduct Site-Specific Review of Project Design Improvements to Determine Effects on Established Communities Design Project Improvements to Avoid or Minimize Physical Division of an Existing Community

This mitigation measure is described above, under Impact LUP-1.

Impact LUP-10: Conversion of Open Space to More Intensive Uses by Transit Projects

This impact is similar to that described for highway projects, except most of the proposed transit projects would be concentrated in more urbanized areas or localized along existing rail lines. Therefore, this component of the RTP would convert less open space and agricultural land to more intensive uses than highway projects. However, this impact is considered significant because open space would be permanently converted to a more intensive land use. Implementation of the following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measure LUP-2: Design Project Improvements to Minimize Impacts on Open Space and Agriculture

This mitigation measure is described above, under Impact LUP-2.

Mitigation Measure LUP-3: Consult with and Implement Recommendations of City and County Planning Staff Regarding Open Space Conversion

This mitigation measure is described above, under Impact LUP-2.

Mitigation Measure LUP-4: Locate Construction Staging Areas Away from Open Space and Agricultural Land Uses

This mitigation measure is described above, under Impact LUP-2.

Impact LUP-11: Conflict between Transit Projects and State Sovereign Lands as Identified by the State Lands Commission

As part of the RTP, proposed rail transit projects include adding four tracks and constructing multiple passenger rail stations. Proposed tracks may cross the Tuolumne River and therefore may be subject to State Lands Commission requirements, as described for local road projects. This impact is considered significant for reasons similar to those described above. Implementation of the following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measure LUP-7a: Design Projects to Avoid State Sovereign Lands

This mitigation measure is described above, under Impact LUP-6.

Mitigation Measure LUP-7b: Meet State Lands Commission Requirements or Develop and Implement Mitigation Measures Consistent with Requirements

This mitigation measure is described above, under Impact LUP-6.

Impact LUP-12: Physical Division of an Established Community by Transit Projects

Six bus maintenance yards are proposed under the RTP: three in Modesto, one in Riverbank, one in Turlock, and one in Waterford. Five of these six maintenance yards are proposed to be built in existing transportation and corporation yards. The sixth maintenance yard is proposed for Modesto's downtown area. Because the yards would be located in areas with similar existing uses, the construction of the proposed yards is not anticipated to physically divide any community. This impact is considered less than significant. No mitigation is required.

Impact LUP-13: Conversion of Open Space to More Intensive Uses by Transit Projects

Because five of the six maintenance yards would use existing similar land uses (corporation yards), and the sixth maintenance yard would be located in downtown Modesto, they are not likely to convert open space to a more intensive land use. This impact is considered less than significant. No mitigation is required.

Impact LUP-14: Conflict between Transit Projects and Any Applicable Land Use Plan

Because five of the six maintenance yards would be located on sites with existing corporation yards, and the sixth would be proposed for Modesto's downtown

area, they are not likely to conflict with existing land uses. However, bus maintenance yards may be considered an incompatible land use with certain adjacent land uses (i.e. commercial, residential, and open space uses). In a project where these maintenance yards would be built adjacent to incompatible land uses, implementation of Mitigation Measure LUP-5 would reduce the impact to a less-than-significant level.

Mitigation Measure LUP-5: Provide Buffers or Setbacks between RTP Improvements and Adjacent Sensitive Land Uses

This mitigation measure is described above, under Impact LUP-3.

Impacts Related to Aviation Projects

Projects related to aviation systems are proposed in the RTP. These projects include improvements to airport facilities such as runways, taxiways, parking lots, and hangars. Below is a discussion of impacts related to projects proposed for aviation facilities.

Impact LUP-15: Physical Division of an Established Community by Aviation Projects

Aviation improvements are proposed for the Modesto City-County Airport, Oakdale Airport, and Turlock Municipal Airport. The Modesto airport is completely bounded by industrial, residential, and open space land uses. Because improvements at this airport would not require intrusion into these land uses, the improvements are not expected to physically divide any existing communities. The Turlock and Oakdale Airports are outside of city limits, surrounded by rural and agricultural uses. Because communities are sparse in these areas, the proposed improvements are not anticipated to physically divide nearby communities. There would be no impact associated with the physical division of an established community. No mitigation is required.

Impact LUP-16: Conversion of Open Space to More Intensive Uses by Aviation Projects

Improvements at the Turlock Municipal and Oakdale Airports could require conversion of open space. The Turlock Airport is currently zoned A-1, General Agriculture, by Merced County. Proposed improvements for the Oakdale Airport include installation of lighted signs and extensions of pavement and lighting. Turlock Airport projects would include installation of fencing and drainage improvements. Because of the small scale and nature of the proposed improvements, impacts on open space are anticipated to be less than significant. Implementation of the following mitigation measures is recommended to reduce this impact further.

Mitigation Measure LUP-2: Design Project Improvements to Minimize Impacts on Open Space and Agriculture

This mitigation measure is described above, under Impact LUP-2.

Mitigation Measure LUP-5: Provide Buffers or Setbacks between RTP Improvements and Adjacent Residential Land Uses

This mitigation measure is described above, under impact LUP-3.

Impact LUP-17: Conflict between Aviation Projects and Any Applicable Land Use Plan

The Modesto City-County Airport is zoned M1, General Industrial, under the Modesto Urban Area General Plan. As project-specific plans are developed, the consistency of the proposed improvements with Modesto's land use policies, the Stanislaus County Regional Aviation System Plan, and the Airport Land Use Commission Plan would need to be analyzed.

The Turlock Municipal Airport is located outside of the Turlock city limits and is actually located in Merced County. The current Merced County zoning for this airport is A-1, General Agriculture. Much of the airport property is leased for agricultural use (City of Turlock 1992). Merced County has primary jurisdiction over the airport and any improvements. The City of Turlock is currently developing an airport master plan that may be inconsistent with proposed airport improvements. Proponents of Turlock Municipal Airport projects would be required to review the master plan, the Stanislaus County Regional Aviation System Plan, and the Comprehensive Land Use Plan for Turlock Municipal Airport for project consistency, as well as the Merced County Regional Aviation System Plan. Project proponents would also be required to comply with the City of Turlock Transportation Policy 5.5-b (see "Relevant Plans, Policies, and Regulations," above).

The Oakdale Airport is a city-owned municipal property, but is located outside of city limits. Zoning for the airport is PSP-Public, Semi-Public. As project plans are developed, proponents of Oakdale Airport projects would be required to consult with Oakdale staff to identify and resolve any potential land use conflicts.

The proposed project improvements could conflict with county and city land use policies and designations. This impact is considered significant. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure LUP-6: Adopt Intergovernmental Review Thresholds and Review Guidelines

This mitigation measure is described above, under impact LUP-3.

Combined Impacts and Mitigation Measures of the Proposed RTP Alternatives

Alternative 1: “Unconstrained” Projects

This alternative contains the most project components, because this alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. Therefore, because of the greater number of projects, it is likely that there could be more impacts on land use and planning under this alternative than under other alternatives and subalternatives. The combined impacts and necessary mitigation measures for this alternative are identified below.

Significant Impacts

Implementation of this alternative would result in the following significant land-use-related impacts:

- Impact LUP-1: Physical Division of an Established Community by Highway Projects
- Impact LUP-2: Conversion of Open Space to More Intensive Uses by Highway Projects
- Impact LUP-4: Physical Division of an Established Community by Local Road Projects
- Impact LUP-5: Conversion of Open Space to More Intensive Uses by Local Road Projects
- Impact LUP-6: Conflict between Local Road Projects and State Sovereign Lands as Identified by the State Lands Commission
- Impact LUP-9: Physical Division of an Established Community by Transit Projects
- Impact LUP-10: Conversion of Open Space to More Intensive Uses by Transit Projects
- Impact LUP-11: Conflict between Transit Projects and State Sovereign Lands as Identified by the State Lands Commission
- Impact LUP-14: Conflict between Transit Projects and Any Applicable Land Use Plan
- Impact LUP-16: Conversion of Open Space to More Intensive Uses by Aviation Projects
- Impact LUP-17: Conflict between Aviation Projects and Any Applicable Land Use Plan

Implementation of the following mitigation measures would reduce the impacts identified above to a less-than-significant level:

- Mitigation Measure LUP-1a: Conduct Site-Specific Review of Project Design Improvements to Determine Effects on Established Communities
- Mitigation Measure LUP-1b: Conduct Site-Specific Review of Project Design Improvements to Determine Effects on Established Communities and Design Project Improvements to Avoid or Minimize Physical Division of an Existing Community
- Mitigation Measure LUP-2: Design Project Improvements to Minimize Impacts on Open Space and Agriculture
- Mitigation Measure LUP-3: Consult with and Implement Recommendations of City and County Planning Staff Regarding Open Space Conversion
- Mitigation Measure LUP-4: Locate Construction Staging Areas Away from Open Space and Agricultural Land Uses
- Mitigation Measure LUP-7a: Design Projects to Avoid State Sovereign Lands
- Mitigation Measure LUP-7b: Meet State Lands Commission Requirements or Develop and Implement Mitigation Measures Consistent with Requirements

These impacts and mitigation measures are described in detail above, for the specific RTP components.

Significant Unavoidable Impacts

Implementation of this alternative would result in the following significant and unavoidable impact:

- Impact LUP-3: Potential for Conflicts with Relevant Land Use Plans due to Highway Projects

Implementation of the following mitigation measures would reduce the impacts identified above, but not to a less-than-significant level.

- Mitigation Measure LUP-2: Design Project Improvements to Minimize Impacts on Open Space and Agriculture
- Mitigation Measure LUP-3: Consult with and Implement Recommendations of City and County Planning Staff Regarding Open Space Conversion
- Mitigation Measure LUP-5: Provide Buffers or Setbacks between RTP Improvements and Adjacent Sensitive Land Uses
- Mitigation Measure LUP-6: Adopt Intergovernmental Review Thresholds and Review Guidelines

Alternative 1a: Maintenance, Safety, and Community Enhancement Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on land use and planning probably would be less extensive than would occur under Alternative 1.

Alternative 1b: Congestion Relief Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on land use and planning probably would be less extensive than would occur under Alternative 1.

Alternative 1c: Economic Opportunities Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on land use and planning probably would be less extensive than would occur under Alternative 1.

Alternative 1d: Combined Projects Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on land use and planning probably would be less extensive than would occur under Alternative 1.

Alternative 2: No Project, or “Current Plan”

There are fewer project components in the No-Project Alternative than in Alternative 1 because the currently adopted RTP, which would remain in place in lieu of the 2001 RTP, does not include the New Candidate projects that have been identified since the last RTP update. Therefore, it is likely that there would be fewer impacts on land use and planning under this alternative than under Alternative 1.

Chapter 4

Agricultural Lands

Introduction

This chapter provides a basic summary of the extent, distribution, use, quality, and productivity of agricultural lands in Stanislaus County. This information is based on literature and maps published by the Natural Resources Conservation Service (NRCS), the California Department of Conservation (DOC), Stanislaus County, and selected city governments within the county. This chapter also presents a program-level evaluation of the potential impacts of the RTP components on agricultural lands in the county and a discussion of the measures that would be used to mitigate impacts determined to be potentially significant. The impacts of the RTP alternatives are qualitatively compared to those of the RTP components in this chapter.

Setting

Overview

Early agricultural settlement of Stanislaus County began in the mid-1800s when ranchers began raising cattle and sheep to feed the substantial numbers of gold miners in the nearby Sierra Nevada. Shortly thereafter, the focus of agricultural production in the county shifted to dryland farming of grain crops on the fertile soils of the valley floor. As the county's population grew, irrigation was introduced, which stimulated further diversification of the county's agricultural economy.

The temperate climate, productive soils, and irrigation projects that spawned the early agricultural settlement in the county continue to sustain a diverse agricultural community that produces a wide range of commodities. These products include livestock and poultry; dairy products; fruit and nut crops, such as almonds, walnuts, peaches, and grapes; field crops, such as beans, barley, wheat, and irrigated pasture; vegetable crops, such as broccoli, cauliflower, spinach, and watermelon; seed crops; nursery products; and apiary products. In 2000, crops and livestock raised in the county generated a gross agricultural

income of more than \$1.1 billion dollars, making agriculture the leading industry in the county (Stanislaus County Department of Agriculture 2001). Agricultural production in the county also contributes significantly to the statewide and national economies, ranking among the top 10 counties in terms of dollars produced from agriculture (County of Stanislaus 1990). Employment and economic statistics (County of Stanislaus 1990) demonstrate that the impact of agriculture on the regional economy extends far beyond immediate production value by providing jobs and by returning currency to the regional economy in the form of dollars spent on agricultural production and processing. Although nonagricultural sectors of the economy (e.g., service and retail) have grown in recent years, agriculture likely will continue to be a leading industry in the county.

The large-scale land use pattern throughout most of the county is characterized by compact or relatively compact urban centers, such as Modesto and Turlock, surrounded by agricultural lands or lands that are designated for agricultural use. Approximately one half of the agricultural lands in the county are designated as broad-base agricultural lands, which are primarily used for a wide range of tree and row crops, irrigated pasture, dairies, and poultry operations. The remaining agricultural lands are classified as limited-base agricultural lands, which are primarily used for rangeland or nonirrigated pasture (Stanislaus County 1990).

Actual cropping patterns in Stanislaus County are relatively complex; therefore, only general or “coarse” cropping patterns will be described here. Rangeland and nonirrigated pasture dominate the foothills of the Sierra Nevada and Diablo Ranges, which compose the easternmost and westernmost portions of the county, respectively. Deciduous fruit and nut crops, the most extensive type of crops in the county, are grown primarily in the valleys and basins located between the foothill regions. The most extensive tracts of fruit and nut orchards, however, are located around the Modesto and the town of Montpelier, and in between I-5 and the San Joaquin River. Field crops, vegetables, nursery crops, and irrigated pasture are also grown in the valleys and basins between the foothills, but are most extensive between I-5 and the San Joaquin River, near the confluence of the Stanislaus and San Joaquin Rivers, between the San Joaquin River and the towns of Hatch and Chermugio, and in the vicinity of Oakdale, Claribel, and Denair. Semiagricultural lands, which include livestock feedlots, dairies, and poultry operations, are spread throughout portions of the county located between I-5 and the Sierra Nevada foothills. (Department of Water Resources 1995.)

Farmland Quality

Farmland quality refers to the ability of farmland to support various levels of crop or livestock production. Factors that affect farmland quality include the physical and chemical characteristics of a site’s soils (i.e., soil quality) as well as climate, moisture supply, topography, and the quality and availability of irrigation water. The Land-Capability Classification System developed by the Soil Conservation Service (SCS) and the Storie Index Rating System developed by the University of California are two land classification systems commonly

used to evaluate and rate the suitability of land for agriculture and other types of land use. In California, the Important Farmland Mapping and Monitoring Program (FMMP) administered by DOC is the primary system by which the extent, distribution, and quality of farmland is evaluated and monitored. Maps of Important Farmland are prepared periodically (approximately every 2 years) by the FMMP for most of the state's agricultural regions, based on soil survey information and land inventory and monitoring criteria developed by the Natural Resource Conservation Service (NRCS). The classification system employed by FMMP consists of eight mapping categories: five categories of agricultural lands and three categories of nonagricultural lands. The characteristics of these eight categories are summarized below.

- **Prime Farmland.** Prime Farmlands are lands with the combination of physical and chemical features best able to sustain long-term production of agricultural crops. The land must be supported by a developed irrigation water supply that is dependable and of adequate quality during the growing season. It also must have been used for the production of irrigated crops at some time during the 4 years before the mapping data were collected.
- **Farmland of Statewide Importance.** Farmland of Statewide Importance are lands with agricultural land use characteristics, irrigation water supplies, and physical characteristics similar to Prime Farmland but with minor shortcomings, such as steeper slopes or less ability to hold and store moisture.
- **Unique Farmland.** Unique Farmlands are lands with lesser quality soils used for the production of California's leading agricultural cash crops. These lands are usually irrigated but may include nonirrigated orchards or vineyards as found in some of the state's climatic zones.
- **Farmland of Local Importance.** Farmlands of Local Importance are important to the local agricultural economy, as determined by each county's board of supervisors and a local advisory committee. In Stanislaus County, Farmlands of Local Importance are farmlands that grow dryland pasture, dryland small grains, and irrigated pasture.
- **Grazing Land.** Grazing Lands are lands on which the existing vegetation is suited to the grazing of livestock.
- **Urban and Built-Up Land.** This category describes land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.
- **Other Land.** This category encompasses land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; vacant and nonagricultural land surrounded on all sides by urban development; confined livestock, poultry, or aquaculture facilities; strip mines; borrow pits; and water bodies smaller than 40 acres.

- **Water.** This category describes perennial bodies of water with an extent of at least 40 acres.

An Important Farmland map has been produced for portions of the county east of the San Joaquin River and south of the Stanislaus River (California Department of Conservation 1999). Most of the land located west of the Sierra Nevada foothills and east of the San Joaquin River is classified as Important Farmland (i.e., either Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance). Most of the land located in the foothills east of Claribel, Hickman, and Montpelier is classified as grazing land. An acreage summary of FMMP mapping categories in the county is presented in table 4-1.

The area mapped by the DOC for Important Farmlands corresponds exactly with the portion of the county where soils have been classified and mapped by the SCS (California Department of Conservation and U.S. Geological Survey 1999), and also corresponds roughly with the portion of the county that is used most intensively for agriculture. Land located north of the Stanislaus River and west of the San Joaquin River is located outside of the soil survey boundaries and, consequently, has not been inventoried by the FMMP.

Table 4-1. Acreage Summary of FMMP Mapping Categories in Stanislaus County (California Department of Conservation 1999)

Important Farmland Category	Acres in County
Prime Farmland	166,560
Farmland of Statewide Importance	27,398
Unique Farmland	48,995
Farmland of Local Importance	37,653
Important Farmland Total	280,606
Grazing Land	116,644
Farmland Subtotal	397,250
Urban and Built-Up Land	50,481
Other Land	24,970
Water	5,541
Nonfarmland Total	80,992
Total Area Inventoried	478,242

Williamson Act Contract Lands

The California Land Conservation Act, better known as the Williamson Act, was enacted by the California State Legislature in 1965 to encourage the preservation of agricultural lands. The Williamson Act program permits property tax

adjustments for landowners who contract with a city or county to keep their land in agricultural production or approved open space uses for at least 10 years. Lands covered by Williamson Act contracts are assessed on the basis of their agricultural value instead of their potential market value under nonagricultural uses. In return for the preferential tax rate, the landowner is required to contractually agree to not develop the land for a period of at least 10 years.

Williamson Act contracts are renewed annually for 10 years unless a party to the contract files for nonrenewal. The filing of a nonrenewal application by a landowner ends the automatic annual extension of a contract and starts a 9-year phase-out of the contract. During the phase-out period, the land remains restricted to agricultural and open-space uses, but property taxes gradually return to levels associated with the market value of the land. At the end of the 9-year nonrenewal process, the contract expires and the owner's uses of the land are restricted only by applicable local zoning.

The Williamson Act defines *compatible use* of contracted lands as any use determined by the county or city administering the agricultural preserve to be compatible with the agricultural, recreational, or open-space use of land within the preserve and subject to contract (Government Code, Section 51202[e]). However, uses deemed compatible by a county or city government must be consistent with the principles of compatibility set forth in Government Code, Section 51238.1.

As of 1998, Stanislaus County contained a total of 693,337 acres of land contracted under the Williamson Act. At the time this EIR was prepared, there was no readily available information that accurately depicted the distribution of these lands within the county. However, because the lands under contract in the county include both highly productive cropland and less productive cropland and rangeland, it is likely that Williamson Act contract lands are distributed widely throughout most of the county.

Relevant Plans, Policies, and Regulations

The following section lists local agricultural land-use policies that are relevant to the RTP. Policies may either support or conflict with proposed project improvements. The policies listed below were excerpted from the Land Use, Conservation and Open Space, Natural Resources, and Agricultural elements of the Stanislaus County General Plan and from the general plans of incorporated cities located in the county. There are no state or federal agricultural land regulations relevant to the RTP, beyond the farmland designations and Williamson Act contracts, discussed above.

Stanislaus County General Plan

- **Land Use Element Policy 2.** Land designated Agriculture shall be restricted to uses that are compatible with agricultural practices, including natural

resources management, open space, outdoor recreation and enjoyment of scenic beauty.

- **Land Use Element Policy 10.** New areas for urban development (as opposed to expansion of existing areas) shall be limited to less productive agricultural areas.
- **Land Use Element Policy 14.** Uses shall not be permitted to intrude into or be located adjacent to an agricultural area if they are detrimental to continued agricultural usage of the surrounding areas.
- **Land Use Element Policy 16.** Agriculture, as the primary industry of the County, shall be promoted and protected.
- **Conservation and Open Space Element Policy 11.** In areas designated “Agriculture” in the Land Use Element, discourage land uses that are incompatible with agriculture.
- **Agricultural Element Policy 1.8.** Concentrations of commercial and industrial uses, even if related to surrounding agricultural activities, are detrimental to the primary use of the land for agriculture and shall not be allowed.
- **Agricultural Element Policy 1.10.** The County shall continue to implement its Right-to-Farm ordinance.
- **Agricultural Element Policy 1.11.** The County shall protect agricultural operations from conflicts with non-agricultural uses by requiring buffers between proposed nonagricultural uses and adjacent agricultural operations.
- **Agricultural Element Policy 1.12.** Setbacks from agricultural areas shall be established to minimize adverse impacts of adjacent uses on agriculture.
- **Agricultural Element Policy 2.3.** To reduce development pressures on agricultural lands, higher-density development and in-filling shall be encouraged in urban and built-up areas the County.
- **Agricultural Element Policy 2. 4.** To the greatest extent possible, development shall be directed away from the County’ most productive agricultural areas.
- **Agricultural Element Policy 2.10.** The County shall continue to encourage the upgrading of existing unincorporated areas.
- **Agricultural Element Policy 2.11.** The County shall discourage the expansion of spheres of influence of cities or community services districts and sanitary districts serving unincorporated communities into its most productive agricultural areas.
- **Agricultural Element Policy 2.12.** When the County determines that the proposed conversion of agricultural land to nonagricultural uses could have a significant effect on the environment, the County shall fully evaluate on a project-specific basis the direct and indirect effects, as well as the cumulative effects of the conversion.
- **Agricultural Element Policy 2.13.** To the greatest extent feasible, the County shall require mitigation of the impacts of farmland conversion.

City of Modesto Urban Area General Plan

- **Agriculture Resource Policy 2a.** If a subsequent project is within the Baseline Developed Area or Redevelopment Area as identified on the General Plan Growth Strategy Diagram, the project shall be considered to have minimal effect on the conversion of agricultural lands, and no mitigation for that impact is required.
- **Agriculture Resource Policy 3b.** The City shall support the continuation of agricultural uses on lands designated for urban uses until urban development is imminent.
- **Agriculture Resource Policy 3c.** The City shall encourage the County to retain agricultural uses on lands surrounding the General Plan area and on lands within the General Plan are pending their annexation to the city or development by mutual agreement with the County.
- **Agriculture Resource Policy 3c.** Where necessary to promote planned City growth, the City shall encourage development of those agricultural lands that are already compromised by adjacent urban development or contain property required for the extension of infrastructure or other public facilities, before considering urban development on agricultural lands that are not subject to such urban pressures.

City of Turlock General Plan

- **Open Space and Conservation Element Policy 6.1-a.** Retain Turlock's agricultural setting by limiting urban expansion to designated areas, providing additional industrial land suitable for agricultural industry, and minimizing conflicts between agriculture and urban activities.
- **Open Space and Conservation Element Policy 6.1-c.** Maintain a compact urban form to minimize the urban/agricultural interface; manage the interface by requiring buffers to reduce conflicts between uses.
- **Open Space and Conservation Element Policy 6.1-e.** Support the implementation of Stanislaus County's Agricultural Element and Right-to-Farm ordinance, which establishes several mechanisms designed to protect normal agricultural operations from pressures that can be created by urban neighbors.
- **Open Space and Conservation Element Policy 6.1-f.** Work to protect and restore natural resources essential for agricultural production.

City of Hughson General Plan

- **Open Space Conservation Element Policy 1a.** Identify and protect valuable agricultural lands against urban encroachment, based on their economic and open space benefits to the community.

- **Open Space Conservation Element Policy 1c.** Relieve pressures to convert valuable agricultural lands to urban use by carefully directing urban expansion and by promoting in-filling.

City of Oakdale General Plan

- **Guiding Open Space Conservation Policy OS2.** Discourage premature and unnecessary conversion of open space land to urban uses.
- **Guiding Open Space Conservation Policy OS3.** Preserve open space lands, as necessary, to maintain a healthy local economy; assure the continued availability of land for the production of food and fiber, and the continued enjoyment of the areas rural character and scenic beauty.

City of Newman General Plan

- **Natural Resources Element Policy VI-2.** The City shall adopt a right-to-farm ordinance that protects owners of agricultural land at the urban fringe from unwarranted nuisance suits brought by surrounding landowners and provides for resolution of urban-agricultural disputes.

City of Riverbank General Plan

- **Open Space, Conservation, and Recreation Element Policy A-4.** The City shall oppose further breakdown of agricultural land within its general plan boundary.

City of Waterford General Plan

- **Open Space and Conservation Element Policy 7.1.1.** The City shall work with Stanislaus County to discourage premature development of agricultural land.

City of Patterson General Plan

- **Natural Resources Element Policy VI.B.1.** The City shall support the continuation of agriculture on lands designated for urban uses until urban development is imminent.
- **Natural Resources Element Policy VI.B.5.** The City shall allow cancellation of Williamson Act contracts only if the City Council finds that cancellation is consistent with state law.

- **Natural Resources Element Policy VI.B.6.** The city shall adopt a right to farm ordinance.
- **Natural Resources Element Policy VI.B.8.** Where necessary to promote planned city growth, the City shall encourage development of those agricultural lands that are already compromised by adjacent urban development or contain property required for the extension of infrastructure or other public facilities, before considering development on agricultural lands that are not subject to such urban pressures.

Impacts and Mitigation Measures

Methods and Assumptions for the Impact Analysis

The analysis of potential environmental impacts related to agricultural lands was based on the qualitative review and comparison of the type, distribution, and quality of agricultural lands in the county, relevant agricultural land use policies, and the description of the RTP component projects.

Criteria for Determining Significance

Appendix G of the State CEQA Guidelines and StanCOG's adopted Thresholds of Significance were used to determine whether the RTP would have a significant environmental effect.

State CEQA Guidelines

According to the State CEQA Guidelines, the RTP components may have a significant effect on agricultural lands if they would

- convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to nonagricultural use;
- conflict with existing zoning for agricultural use, or a Williamson Act contract;
- involve other changes in the existing environment, which, because of their location or nature, could result in conversion of farmland, to nonagricultural use.

StanCOG Adopted Thresholds of Significance

According to the thresholds of significance established by StanCOG, the RTP components may have a significant effect on agricultural lands if they would

- conflict with present and planned uses;
- conflict with existing land use policies;
- create incompatible land uses or nuisance impacts;
- affect state- or locally-designated Prime or Important Farmlands; or
- convert any prime agricultural land, impair its productivity, or conflict with an agricultural preserve or Williamson Act contract.

Impacts and Mitigation Measures of the Proposed RTP Components

Impacts Related to Highway Projects

There are several types of projects proposed for highway facilities in Stanislaus County. These include proposals to widen highways, construct or reconstruct interchanges, and create expressways on highway facilities. Below is an evaluation of impacts related to proposed projects located on highway facilities. In general, the impacts associated with interchange improvement projects likely would be less extensive than those for highway projects because they would affect less land area.

Impact AG-1: Direct Conversion of Important Farmland, as defined by the DOC's FMMP, to Nonagricultural Use

Most highways that would be affected by the proposed projects are located in portions of the county where most of the adjoining land is classified as Important Farmland (i.e., Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance). Consequently, implementation of the proposed highway projects could result in the direct conversion of Important Farmland to nonagricultural uses (i.e., to highways).

During subsequent environmental review, project proponents could evaluate and specifically quantify the impacts of the project on Important Farmlands by using the California Land Evaluation and Site Assessment (LESA) model developed by DOC's Division of Land Resource Protection. The LESA model was developed to provide lead agencies with a systematic, quantitative, and objective method for evaluating the environmental impacts of agricultural land conversions. The LESA model incorporates different measures of soil quality, project size, water resource availability, and other site-specific factors to arrive at a single numeric score that becomes the basis for determining the significance of a project's impact on Important Farmland. The process of environmental review at the project level is consistent with the State CEQA Guidelines and with Agricultural

Element Policy 2.12 from the Stanislaus County General Plan (County of Stanislaus 1994).

This impact is considered significant. Implementation of Mitigation Measure AG-1 would reduce this impact to a less-than-significant level.

Mitigation Measure AG-1: Quantify Potential for Direct Conversion of Important Farmland and Minimize or Compensate for Significant Impacts

StanCOG shall require project proponents to implement the following measures to reduce the impacts to a less-than-significant level:

- *Design the proposed highway projects to minimize the conversion of Important Farmland to nonagricultural uses.*
- *Compensate for Important Farmland conversion impacts by (i) enrolling off-site agricultural lands under a Williamson Act contracts, (ii) protecting productive off-site agricultural land subject to conversion through the purchase or transfer of its development rights, or (iii) making agricultural improvements on “potential prime agricultural lands” identified by Stanislaus County (County of Stanislaus 1990).*

Impact AG-2: Conversion of Important Farmland, as defined by DOC’s FMMP, to Nonagricultural Use through Unplanned, Urban Growth

Most of the highways that would be affected by the proposed projects are located in portions of the county where most of the adjoining land is classified as Important Farmland (i.e., Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance). The improved transportation system that would result from the implementation of proposed highway projects could contribute to urban growth in areas served by the affected highways, causing Important Farmland to be converted to nonagricultural uses in the process. However, it is unlikely that these improvements alone would be sufficient to induce any substantial unplanned urban growth on Important Farmland without the contribution of other growth-inducing factors. Therefore, this impact is considered less than significant. No mitigation is required.

Impact AG-3: Conflict with Existing Williamson Act Contracts

The Williamson Act allows county and city governments to define compatible land uses for contract lands within their jurisdictions, as long as those uses are consistent with the compatibility principles set forth in Government Code, Section 51238.1. At the time this program EIR was prepared, there was no readily available information that accurately depicted the distribution of the hundreds of thousands of acres of Williamson Act contract lands that exist in Stanislaus County. However, based on the fact that Williamson Act contract lands account for approximately 70% of the land area in the county, it is likely that at least some of the proposed highway projects would displace or impair existing or reasonably foreseeable agricultural operations on Williamson Act contract lands in the county, and thereby conflict with the compatibility

principles set forth in Government Code 51238.1. This impact is considered to be significant. Implementation of Mitigation Measure AG-2 would reduce this impact to a less-than-significant level.

Mitigation Measure AG-2: Evaluate the Potential to Displace or Impair Agricultural Operations on Williamson Act Contract Lands and Minimize or Compensate for Significant Impacts

StanCOG shall require project proponents to conduct an analysis of potential conflicts with Williamson Act contracts at the project-level, consistent with the State CEQA Guidelines and Chapter 21.20 of the Stanislaus County Code. If the impacts of the proposed highway projects on Williamson Act contract lands are determined to be significant at the project level, implement the following measures to reduce the impacts to a less-than-significant level:

- *Design the proposed highway projects to avoid or minimize the displacement of existing and reasonably foreseeable agricultural operations from affected Williamson Act contract lands.*
- *Compensate for the displacement of agricultural operations from affected Williamson Act contract lands by enrolling off-site agricultural lands under Williamson Act contracts.*

Impact AG-4: Conflict with Existing Zoning for Agricultural Use

Many of the proposed highway projects are located in portions of the county that are zoned for agricultural use (i.e., A-2 districts). Highway projects are not listed as a permitted or “pre-approved” use in A-2 districts, nor are they listed as a permitted use after first securing a use permit from the County (Chapter 21.20 of the Stanislaus County Code). Therefore, some highway projects would be inconsistent with local zoning codes. This impact is considered to be significant. Implementation of Mitigation Measure AG-3 would reduced this impact to a less-than-significant level.

Mitigation Measure AG-3: Obtain Appropriate Permits, and Minimize Impacts of Agricultural Zoning Conflicts

StanCOG shall require project proponents to evaluate the project’s potential to create any agricultural zoning conflicts in the proposed project area. If the proposed project significantly conflicts with current zoning, StanCOG shall require the project proponent to obtain necessary permits in order to minimize agricultural zoning impacts.

Impact AG-5: Conflict with Agricultural Land Use Policies

Policy 2 from the Land Use Element of the Stanislaus County General Plan requires that land designated as “Agriculture” be restricted to uses that are compatible with agriculture. Similarly, Policy 11 from the Conservation and Open Space Element of the Stanislaus County General Plan requires the County to discourage uses that are incompatible with agriculture on land designated as “Agriculture” in the Land Use Element of the Stanislaus County General Plan. The County does not have a list or definition of land uses that it considers to be compatible with agriculture. According to Chapter 21.20 of the Stanislaus

County Code, highway projects are not permitted uses on lands zoned for agriculture, suggesting that the County considers such projects to be incompatible with agriculture. Because many of the proposed highway projects would be located in portions of the county zoned for agricultural use, this is considered a significant impact. Implementation of Mitigation Measure AG-4 would reduce this impact to a less-than-significant level.

Mitigation Measure AG-4: Obtain Appropriate Permits, and Minimize Impacts of Land Use Conflicts

StanCOG shall require project proponents to evaluate the potential to create any agricultural land use conflicts in the proposed project area. If the proposed project significantly conflicts with current land uses, StanCOG shall require the project proponent to obtain any necessary permits in order to minimize agricultural land use impacts.

Impact AG-6: Impairment of Farmland Productivity

Some of the highway projects may cause substantial land use conflicts, such as parcelization, that could result in the indirect conversion of farmland to nonagricultural uses and/or reductions in agricultural productivity. This impact is considered significant. Implementation of Mitigation Measure AG-4 would reduce this impact to a less-than-significant level.

Mitigation Measure AG-4: Obtain Appropriate Permits, and Minimize Impacts of Land Use Conflicts

This mitigation measure is described above, under Impact AG-5.

Impacts Related to Local Road Projects

Local road projects are the largest category of proposed RTP improvements. These include road widenings, intersection improvements, expressways on local roads, new construction, and operational improvements. Below is a discussion of impacts related to proposed projects located on local roads.

The impacts related to local road projects would be the same as those described above for the highway projects. No additional impacts would occur beyond those described above.

Impacts Related to Bicycle Projects

Several bicycle facility projects are proposed in the RTP. These include proposals to widen existing bikeways, install signage and/or striping for bikeways, and implement railroad-crossing improvements for bikeways. Below is a discussion of impacts related to proposed projects located on bicycle facilities.

The impacts related to bicycle projects would be the same as those described above for the highway projects. No additional impacts would occur beyond

those described above for the highway projects. However, the impacts associated with bicycle projects likely would be less extensive than those for highway projects because they would affect less land area.

Impacts Related to Transit Projects

The RTP includes transit facility projects. These projects include passenger rail stations for high speed, intercity, and commuter rail services, as well as bus maintenance yards. Below is a discussion of impacts related to proposed transit facilities.

The impacts related to transit project would be the same as those described above for the highway projects. No additional impacts would occur beyond those described above for the highway projects. However, the impacts associated with transit projects likely would be less extensive than those for highway projects because they would affect less land area and would be located in urban portions of the county where there is little or no Important Farmland.

Impacts Related to Aviation Projects

Projects related to aviation systems are proposed in the RTP. These projects include improvements to airport facilities such as runways, taxiways, parking lots, and hangars. Below is a discussion of impacts related to projects proposed for aviation facilities.

The impacts related to aviation projects would be the same as those described above for the highway projects. No additional impacts would occur beyond those described above for highway projects. However, the impacts associated with most aviation projects likely would be less extensive than those for highway projects because they would affect less land area and are located in urban portions of the county where there is little or no Important Farmland. The Oakdale Airport, however, is not located in an urban area and is located in the vicinity of farmlands. The projects associated with this airport all occur on airport property; therefore, farmlands likely would not be affected.

Combined Impacts and Mitigation Measures of the Proposed RTP Alternatives

Alternative 1: “Unconstrained” Projects

This alternative contains the most project components, because this alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. Therefore, because of the greater number of projects, it is

likely that there could be more impacts on agricultural land under this alternative than under other alternatives and subalternatives. The combined impacts and necessary mitigation measures for this alternative are identified below.

Significant Impacts

Implementation of this alternative would result in the following agricultural impacts:

- Impact AG-1: Direct Conversion of Important Farmland, as defined by the DOC's FMMP, to Nonagricultural Use
- Impact AG-2: Conversion of Important Farmland, as defined by DOC's FMMP, to Nonagricultural Use through Unplanned, Urban Growth
- Impact AG-3: Conflict with Existing Williamson Act Contracts
- Impact AG-4: Conflict with Existing Zoning for Agricultural Use
- Impact AG-5: Conflict with Agricultural Land Use Policies
- Impact AG-6: Impairment of Farmland Productivity

Implementation of the following mitigation measures would reduce the impacts identified above to a less-than-significant level:

- Mitigation Measure AG-1: Quantify Potential for Direct Conversion of Important Farmland and Minimize or Compensate for Significant Impacts.
- Mitigation Measure AG-2: Evaluate the Potential to Displace or Impair Agricultural Operations on Williamson Act Contract Lands and Minimize or Compensate for Significant Impacts
- Mitigation Measure AG-3: Obtain Appropriate Permits, and Minimize Impacts of Agricultural Zoning Conflicts
- Mitigation Measure AG-4: Obtain Appropriate Permits, and Minimize Impacts of Land Use Conflicts

These impacts and mitigation measures are described in detail above, for the specific RTP components.

Significant Unavoidable Impacts

There would be no significant unavoidable impacts of this alternative on agricultural lands. No mitigation measures are proposed.

Subalternative 1a: Maintenance, Safety, and Community Enhancement Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on agricultural land probably would be less extensive than would occur under Alternative 1.

Subalternative 1b: Congestion Relief Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on agricultural land probably would be less extensive than would occur under Alternative 1.

Subalternative 1c: Economic Opportunities Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on agricultural land probably would be less extensive than would occur under Alternative 1.

Subalternative 1d: Combined Projects Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on agricultural land probably would be less extensive than would occur under Alternative 1.

Alternative 2: No Project, or “Current Plan”

There are fewer project components in the No-Project Alternative than in Alternative 1 because the currently adopted RTP, which would remain in place in lieu of the 2001 RTP, does not include the New Candidate projects that have been identified since the last RTP update. Therefore, it is likely that there would be fewer impacts on agricultural land under this alternative than under Alternative 1.

Chapter 5

Population and Housing

Introduction

This chapter discusses population and housing within Stanislaus County. The discussion also addresses population growth, race and ethnicity trends, employment, and existing and projected housing needs for the county. Impacts of the RTP alternatives are qualitatively compared to those of the RTP components in this chapter. The mitigation measures that would be used to reduce potentially significant impacts also are discussed.

Setting

Population

Stanislaus County encompasses an area of approximately 1,500 square miles in the San Joaquin Valley. Population centers in the county consist of 14 unincorporated communities and nine incorporated cities: Ceres, Modesto, Hughson, Patterson, Newman, Riverbank, Oakdale, Turlock, and Waterford.

Population Growth

In 2000, Stanislaus County contained 1.3% of the state's population. The State of California estimated the county's total population to be 466,997, which represents a 20% increase from 1990 (California Department of Finance 2001). This trend in rapid population growth in the county is expected to continue. Census projections indicate that Stanislaus County will experience a growth rate of nearly 60% between 2000 and 2020. StanCOG's projections are similar, estimating a 55% growth rate between 1999 and 2020 (table 5-1). StanCOG predicts that the county's total population will reach 826,123 by 2025.

Table 5-1. Stanislaus Council of Governments Population Projections by Jurisdiction

Location	1990 Population	Estimated 1999	Adopted 2020	Adopted 2025	Percent Annual Increase (%)
Ceres	26,413	32,400	60,053	64,600	3.82
Hughson	3,259	3,590	6,594	7,008	3.66
Modesto	164,746	184,600	418,562	439,750	5.32
Newman	4,158	6,025	10,676	11,283	3.36
Oakdale	11,978	14,700	26,466	27,864	3.44
Patterson	8,626	10,400	18,492	19,743	3.46
Riverbank	8,591	14,450	25,748	27,637	3.51
Turlock	42,224	51,900	90,911	97,447	3.38
Waterford	4,771	6,600	11,932	12,683	3.54
Unincorporated	95,756	108,300	115,574	118,108	.35
Total County	370,522	432,965	785,008	826,123	3.49

Source: Stanislaus Council of Governments 2000.

Approximately 75% of the county population lives in the nine cities of Stanislaus County. Modesto has the largest population in the county, with an estimated 184,600 residents (table 5-1). Hughson has the smallest incorporated population, of 3,590. Growth rates of the nine cities have increased 14–85% between 1990 and 1999. The two largest cities, Modesto and Turlock, grew substantially. Newman and Riverbank, which are smaller towns, increased their populations by 70% and 85%, respectively. Interregional commuters (e.g., from the Bay Area) seeking affordable housing and an increase in immigrants have contributed to the increase in population growth (Stanislaus Area Association of Governments 1993, County of Stanislaus 1994).

Most growth has occurred in incorporated cities, and unincorporated growth has occurred mostly at city fringes (County of Stanislaus 1994). Annexations of fringe areas into cities are partly responsible for increased growth in the cities. Annexations offer the benefit of urban services to residents and help protect agricultural resources in the county by reducing unplanned growth in agricultural areas. In addition, current county policies preclude major increases in population in the unincorporated areas (County of Stanislaus 1994). For example, county policies require large minimum parcel sizes, support Williamson Act contracts, and direct growth away from the most productive agricultural areas.

Race and Ethnicity Trends

The largest minority ethnic group in Stanislaus County is Hispanic, composing 31.7% of the 2000 population (table 5-2). Demographic information indicates that the proportion of Hispanics in the total population is growing, whereas the proportion of non-Hispanic whites is declining. The Hispanic population has grown from 14% in 1980 to 21% in 1990 and 31.7% in 2000 (Stanislaus County General Plan 1994, California Department of Finance 2001). In 1980, approximately 80% of the population was white. The percentage declined to about 71 % in 1990 and 57% in 2000 (Stanislaus County General Plan 1994 , California Department of Finance 2001). Other ethnic groups, such as Asian and Pacific Islander, have increased in population in recent years also.

Table 5-2. Population by Race/Ethnicity in Stanislaus County
(as determined from the 1980, 1990, and 2000 Census)

Race/Ethnicity	2000		1990*		1980*	
	Total Population	Percent of Population (%)	Total Population	Percent of Population (%)	Total Population	Percent of Population (%)
Non-Hispanic White	256,001	57.3	194,659	70.9	139,135	80.58
Hispanic	141,871	31.7	55,639	20.27	23,790	13.78
Black	10,621	2.4	5,327	1.94	2,410	1.40
Native American	3,483	0.8	2,461	0.9	4,926	2.85
Asian	18,234	4.1	16,006	5.83	Not provided	Not provided
Pacific Islander	1,354	0.3	Combined with Asian	Combined with Asian	Not provided	Not provided
Other	971	0.2	465	0.17	2,397	1.39
Two or more races	14,462	3.2	Not provided	Not provided	Not provided	Not provided

* Estimates are for incorporated areas only

Sources: California Department of Finance 2001, Stanislaus County General Plan 1994

Employment

According to the Stanislaus County Economic Development Corporation, the labor force in 2000 included 160,100 employed people in Stanislaus County. The service industry is the largest industry in the county, accounting for 22.5% of total employment (table 5-3). The service industry is also the fastest-growing industry sector, with a 7-year projected growth rate of 22.1% (California Employment Development Department 2001). Business services are expected to account for 35% of these jobs. During the 1997–2004 projection period, it is expected that 75% of the job growth in the county will occur in services, retail trade, and manufacturing.

The agriculture industry is the fifth largest employer in Stanislaus County, on an annual average basis. During the peak harvest season, this industry provides approximately 20,000 jobs. Not surprisingly, agriculture is the most significant economic activity in the unincorporated areas of the county. Agriculturally related industries, such as food processing, wholesale trade, and transportation, also play a central role in the county's economy. Agriculture and related services annually contribute \$4 billion to the local economy (Stanislaus County Economic Development Corporation 2000).

Table 5-3. Countywide Industry Distribution and Employment by Industry

Industry	Number of Firms	Percentage of Total (%)	Employment	Percentage of Total (%)
Agriculture	1,502	14.4	18,100	11.3
Mining, construction	836	8.0	8,500	5.3
Manufacturing	432	4.1	30,200	18.9
Transportation	362	3.5	5,500	3.4
Wholesale	513	4.9	6,600	4.1
Retail	1,846	17.7	28,000	17.5
Finance, real estate	858	8.2	4,500	2.8
Services	3,954	37.9	36,000	22.5
Government	138	1.3	22,700	14.2
Total	10,441	100	160,100	100

Source: Stanislaus County Economic Development Corporation 2000

Housing

The California Department of Finance (2001) estimates that the population in households (*households* are associated with year-round residency regardless of housing type) in Stanislaus County is approximately 435,065. The average county household size is estimated to be 3.014 persons per household (California Department of Finance 2001), down slightly from 3.08 in 1990 (Stanislaus Area Association of Governments 1993). In 2000, the average family size was 3.47 persons.

The California Department of Finance estimates housing stock in the county is approximately 152,023 units (table 5-4), whereas the U.S. Census Bureau estimates the number to be 150,807. Using Census estimates, 145,146 of the units are occupied, 5,661 are vacant, and 455 are used occasionally, seasonally, or for recreation. Owners occupy 62%, and renters occupy 38%, of the occupied units. Average county vacancy rates are 1.3% for owned homes and 3.2% for rental units (U.S. Census Bureau).

A majority of county residents live in single-family homes. In 1999, 2,310 housing authorizations were issued and, of those, 97% were for single-family units (California Department of Finance 2001).

Additional housing will be needed to accommodate future growth in the county. Based on population projections, StanCOG estimates that 281,363 additional housing units will be needed by 2020 and 296,311 by 2025 (table 5-5).

Table 5-4. Housing Stock in Stanislaus County for 1990 and 2000

Housing Stock Type	1990	2000
Total housing stock	132,027	152,023
Single family	97,804	115,126
Multiple family	24,204	27,197
Mobile homes, trailers, etc.	10,019	9,700
Percent vacancy rate (%)	5.0	5.0

Source: California Department of Finance 2001.

Table 5-5. Land Use Projections for Housing Stock in Stanislaus County through 2025

County Households	1990	Estimated 1999	Adopted 2020	Adopted 2025	Percent Annual Increase (%)
Single family	97,777	116,521	209,595	220,639	3.44
Multiple family	33,874	39,583	71,768	75,672	3.51

Source: Stanislaus Council of Governments 2000.

Relevant Plans, Policies, and Regulations

State and Federal

There are no state regulations relevant to the RTP. Appendix F presents federal regulations that would need to be considered if projects triggered federal involvement through funding or permitting processes.

Local

This section presents local policies related to population and housing that could affect or be affected by the RTP. Policies may either support or conflict with proposed project improvements. The policies listed below were excerpted from the Housing, Land Use, Open Space, Agriculture, Transportation and Circulation

Elements of the Stanislaus County General Plan, and from the general plans of incorporated cities in the county. In addition, excerpts from the long-range plans of transportation system modal components are included.

Stanislaus County General Plan

- **Housing Opportunities Goal 2.** Maximize housing choices and opportunities throughout Stanislaus County.
- **Housing Rehabilitation Goal 3.** Conserve and improve Stanislaus County's existing housing stock.
- **Housing Sufficient Sites Goal 4.** Designate sufficient sites for all types of residential development required to meet projected future housing needs.

City of Modesto Urban Area General Plan

- **Housing—Identification of Public Surplus Lands Policy 27.** Establish a program to identify and monitor surplus public lands suitable for development.
- **Agriculture Policy 3d.** Where necessary to promote planned city growth, the City shall encourage development of those agricultural lands that are already compromised by adjacent urban development or contain property required for the extension of infrastructure or other public facilities, before considering urban development on agricultural lands that are not subject to such urban pressures.

City of Modesto Pelandale-Snyder Specific Plan

- **Land Use Objective A.** Provide a mixture of flexible land uses that accommodate a full range of housing products and community facilities.

City of Turlock General Plan

- **Land Use Policy Residential Areas 2.3-a.** Provide for addition of all types of housing at a broad range of densities and prices.
- **Land Use Policy Growth Management Policy 2.7-f.** Ensures a balance of housing types affordable to very-low-, low-, and moderate-income households.
- **Housing Action Program Objective.** Make sufficient land available for residential development to meet the City's share of regional housing needs.
- **Housing Policy IB.** Increase the supply of land designated for single-family, attached, and multi-family housing.

- **Housing Objective.** Conserve and improve the existing affordable housing stock.

City of Hughson General Plan

- **Land Use Objective 1.** To locate all urban development within the City.
- **Housing Goal 1.** To provide the opportunity for the construction of new units to serve as replacements for existing and projected low and moderate income dilapidated houses.

City of Oakdale General Plan

The City of Oakdale has generated a 2015 Land Use Plan area based on future population projections. The City has dedicated enough space in its sphere of influence to accommodate more than the projected population in 2015. This surplus land supply will give the City lead time to properly plan for infrastructure planning and construction.

- **Land Use 11.** In general, higher density residential uses to promote infilling should be encouraged near commercial development and major collector and arterial streets to locate population concentrations within reasonable proximity to services and amenities.
- **Land Use Implementation Policy 7.** Eliminate existing unincorporated islands of development, and discourage the formation of any additional such islands.
- **Housing 1.** Promote a sufficient inventory of developable land to accommodate the need for new housing units as described in this element.
- **Housing 8.** Encourage the supply of safe, decent and sound affordable housing in the City of Oakdale through the conservation and rehabilitation of the City's existing housing stock.
- **Circulation Transportation 6.** Coordinate City plans and policies with County and Regional transportation and land use plans and policies.
- **Open Space 5.** Preserve the City of Oakdale as a separate and individual entity, retaining a broad band of greenbelt between the final City limits and development in neighboring cities.

City of Newman General Plan

- **Land Use Goal 1.C.** To designate adequate land in a range of residential densities to address the housing needs of all income groups expected to reside in Newman.

- **Housing Goal IIIA.** To promote development of a balanced range and mix of housing types for all economic segments of the community.

City of Riverbank General Plan

- **Housing Goal 1.0.** To provide for the City's regional share of new housing for all income groups.
- **Housing Goal 3.0.** Improve/conservate the existing supply of housing.

City of Waterford General Plan

- **Land Use Policy 4.1.1.** Provide areas for residential growth, protect new and existing residential areas from intrusion of non-compatible land uses and encourage all types of housing for a range of income and age groups.
- **Housing Goal 6.1.** To plan for a sufficient number of housing units to meet the needs of future residents of the community within the confines of environmental considerations.
- **Housing Goal 6.2.** To enhance the quality of Waterford's existing housing units and to conserve and rehabilitate existing housing units that are affordable to lower- and moderate-income persons.

City of Patterson General Plan

- **Policy I.A.4.** The City shall link the rate of growth in Patterson to the provision of adequate services and infrastructure, including schools. The City shall, through specific plans and/or planned units development plans for major projects, ensure that growth occurs in an orderly fashion and in pace with the expansion of public facilities and services.
- **Policy I.A.5.** The City shall monitor residential and non-residential development and encourage adjustments as necessary in land use designations and the rate of project approvals to promote a reasonable citywide balance between new employment-generating development and housing development to minimize traffic impacts.
- **Goal I.B., Goal IIA.** To designate adequate land in a range of residential densities to address the housing needs of all income groups expected to reside in Patterson.
- **Policy I.B.I, IIA.2.** The City shall maintain an adequate supply of residential land in appropriate land use designations and zoning categories to accommodate projected household growth, maintain normal vacancy rates, and minimize residential land costs.
- **Goal II.B.** To encourage maintenance, improvement, and rehabilitation of the City's existing housing stock and residential neighborhoods.

- **Goal II.D.** To ensure the provision of adequate services to support existing and future residential development.
- **Policy II.D.2.** The City shall support the use of Community Development Block Grant [CDBG] funds for upgrading streets, sidewalks, and other public improvements.
- **Policy II.D.3.** The City shall ensure that new residential development pays its share in financing public facilities and services.
- **Goal VI.B.** To promote the productivity of agricultural land surrounding Patterson and to prevent the premature conversion of agricultural land to urban uses.
- **Policy VI.B.8.** Where necessary to promote planned city growth, the City shall encourage development of those agricultural lands that are already compromised by adjacent urban development or contain property required for the extension of infrastructure or other public facilities, before considering urban development on agricultural lands that are not subject to such urban pressures.

Impacts and Mitigation Measures

Methods and Assumptions for the Impact Analysis

The following assessment is based on housing, employment, and population data gathered from the following sources: 2000 U.S. Census, California Department of Finance, the U.S. Census Bureau, Stanislaus County Economic Development Corporation, California Employment Development Department, StanCOG projections and land use assumptions, and local general plans. The locations of potential transportation improvements were reviewed to determine the potential for the RTP alternatives to result in increased growth. Areas of potential residential displacement resulting from the proposed improvements were conceptually identified based on general land use designations and a windshield survey of the area.

Criteria for Determining Significance

Appendix G of the State CEQA Guidelines and StanCOG's adopted thresholds of significance were used to determine whether the RTP would have significant environmental impacts related to population and housing. The specific thresholds are identified below.

State CEQA Guidelines

According to the State CEQA Guidelines, the RTP would have a significant impact on population and housing if it would

- induce substantial population growth in an area, either directly or indirectly;
- displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

StanCOG Adopted Thresholds of Significance

Based on the thresholds adopted by StanCOG, the RTP would have a significant impact on population and housing if it would

- cause growth or accelerate development in an undeveloped area or exceed growth projections or
- introduce or create a need for infrastructure that was neither anticipated nor evaluated in a general plan.

Impacts and Mitigation Measures of the Proposed RTP Components

Impacts Related to Highway Projects

There are several types of projects proposed for highway facilities in Stanislaus County. These include proposals to widen highways, construct or reconstruct interchanges, and create expressways on highway facilities. Below is an evaluation of impacts related to proposed projects located on highway facilities.

Impact PH-1: Potential for Growth Inducement or Acceleration of Development, Due to Highway Projects

Highway widenings, interchange improvements, and creation of expressways in the StanCOG RTP area will increase the capacity of the existing circulation system. This increased capacity could facilitate accelerated growth and development in currently undeveloped areas and/or induce population growth, either directly or indirectly. Undeveloped areas include county agricultural lands, urban transition zones, or infill areas in cities. Future studies of specific highway widening projects need to be conducted to determine the timing for adding capacity and improving level of service (LOS). The projected increase in capacity and LOS will provide an indicator of how much additional growth can be attributed to transportation improvements only. As described above, under

“Relevant Plans, Policies, and Regulations,” numerous policies in the general plans for the county and cities in the county address the timing and amount of population growth in each jurisdiction. However, these policies cannot completely address the timing and amount of population growth related to the projects proposed in the RTP. The potential for projects to cause growth or acceleration of development in an undeveloped area or exceed growth projections is considered a significant impact. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level for all projects. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure PH-1: Determine Projected Population’s Local Capacity Needs and Develop Improvements to Serve those Needs

StanCOG shall require project proponents to consult with FHWA, Caltrans, and local agencies to determine the maximum capacity necessary to serve the 20-year projected population of the region/county at the local jurisdiction’s acceptable LOS or other acceptable indicators of travel demand and projected need. Upon construction of a project, capacity shall be limited to that necessary to serve projected population at the established LOS over the project lifetime.

Impact PH-2: Potential for Displacement of Substantial Numbers of Existing Housing or People, Due to Highway Projects

The proposed widenings and interchange and expressway improvements likely will require right-of-way acquisitions and could displace both existing housing and people located adjacent to roadways and interchanges in the rural and urban areas of the county where these improvements would take place. Improvements located in more densely populated urban and suburban areas could displace numerous households, residences, and business. Displacement could lead to an increase in demand for housing in nearby areas and economic losses to business owners. Displaced households and businesses may require relocation assistance as required by state and federal law. Displacing substantial numbers of housing or people, necessitating the construction of replacement housing elsewhere, is considered a significant impact. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level for all projects. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure PH-2: Develop and Implement a Relocation Plan

StanCOG shall require project proponents to develop and implement a relocation plan consistent with federal and state requirements to ensure that eligible residential, commercial, and industrial uses are compensated for moving costs and for residential/business replacement costs. Eligibility of specific residences or businesses for compensation will be determined after evaluation of the specific improvement project.

Federal and state laws require, where applicable, project proponents to implement federal and state guidelines for relocating and compensating displaced people and land uses. StanCOG shall require project

proponents to use applicable relocation assistance programs (including those administered by local, state and federal governments) to compensate owners and tenants for the relocation costs of residential, commercial, and industrial uses displaced by RTP projects.

As specific project plans are developed, further analysis should be conducted as part of subsequent environmental review to identify the likely locations and numbers of displaced people and structures.

Impact PH-3: Introduction or Creation of Infrastructure Not Included in a General Plan, Due to Highway Projects

The proposed improvements would introduce roadway infrastructure to the county. Infrastructure that has not been assessed in local planning documents could contribute to unplanned growth and development. Project-level environmental documents prepared for these improvements would need to review the applicable circulation elements of local general plans to determine whether the proposed improvements were evaluated in general plans. If the project was assessed as a part of applicable general plans and adequately addressed in the related environmental documents, there would be no additional impact; however, if the project was not assessed, the project could result in significant impacts related to unplanned growth and development. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure PH-3: Consult with Local Planning Staff to Reduce or Avoid Potential Introduction or Creation of Infrastructure Not Evaluated in a General Plan

StanCOG shall consult with city and county planning staffs to ensure that upcoming transportation needs are planned for, consistent with population projections and other needs (see Mitigation Measure PH-1). As general plans are updated, it is anticipated that projected transportation needs will be added to updated plans. StanCOG shall collaborate with local planning staffs to reduce or avoid significant impacts regarding projects that are not anticipated or evaluated in a general plan.

Impacts Related to Local Road Projects

This section discusses impacts related to projects proposed for local roads. Local road projects are the largest category of proposed RTP improvements. These projects include proposals for widening roads, improving intersections, constructing new roads, and implementing operational improvements. The following impacts would result from implementation of local road projects.

Impact PH-4: Potential for Growth Inducement or Acceleration of Development, Due to Local Road Projects

This impact would be the same as that described above for highway projects. Implementation of the following mitigation measure would reduce this impact,

but not to a less-than-significant level for all projects. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure PH-1: Determine Projected Population's Local Capacity Needs and Time Improvements to Satisfy Only Those Needs

This mitigation measure is described above, under Impact PH-1.

Impact PH-5: Potential for Displacement of Substantial Numbers of Existing Housing or People, Due to Local Road Projects

Because local roadway improvements would tend to be located in more urbanized areas, displacement of people, housing, or businesses generally is more likely to occur with implementation of this project component than with highway projects. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level for all projects. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure PH-2: Develop and Implement a Relocation Plan

This mitigation measure is described above, under Impact PH-2.

Impacts Related to Bicycle Projects

This section discusses impacts related to proposed bicycle facility projects. Several bicycle facility projects are proposed in the RTP. These include proposals to widen existing bikeways, install signage and/or stripe bikeways, and implement railroad crossing improvements for bikeways.

The impacts of bicycle facilities on growth and displacement would differ from those of highway projects, as described below.

Impact PH-6: Potential for Growth Inducement or Acceleration of Development, Due to Bicycle Projects

Bikeways are used for personal transportation and would not create the potential for increased growth. Therefore, bicycle facility projects would cause no impacts regarding growth inducement. No mitigation is required.

Impact PH-7: Introduction or Creation of Infrastructure Not Included in a General Plan, Due to Bicycle Projects

The proposed improvements would introduce bikeway infrastructure to the project area. A Regional Bicycle Action Plan has been developed with input from cities and the County to determine and provide guidance for upcoming bikeway needs. This countywide collaboration would substantially reduce the likelihood that bikeway infrastructure would be constructed without first being assessed in a plan document.

If the project was assessed as a part of the applicable general plans and adequately addressed in the related environmental documents, there would be no additional impact; however, if the project was not assessed, the project could result in significant impacts related to unplanned growth and development. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure PH-3: Consult with Local Planning Staff to Reduce or Avoid Potential Introduction or Creation of Infrastructure Not Evaluated in a General Plan

This mitigation measure is described above, under Impact PH-3.

Impact PH-8: Potential for Displacement of Substantial Numbers of Existing Housing or People, Due to Bicycle Projects

Although some displacement of housing or people could occur from proposed bicycle facility projects, it is not anticipated because of the narrow width necessary to make the proposed improvements and the anticipated locations of the improvements. The potential numbers of people and/or housing displaced by such improvements would not be substantial. Therefore, impacts related to the displacement of substantial numbers of people or housing are considered less than significant for bicycle facility projects. No mitigation is required.

Impacts Related to Transit Projects

The RTP includes transit facility projects, such as passenger rail stations for high-speed, intercity, and commuter rail services, as well as bus maintenance yards. Below is a discussion of impacts that would occur as a result of transit projects.

Impact PH-9: Potential for Growth Inducement or Acceleration of Development, Due to Transit Projects

Five of the six bus maintenance yards are proposed to be constructed in existing corporation yards. The sixth is proposed for Modesto's downtown area. Because of the nature of the improvements and proposed locations, bus maintenance yard improvements would not induce or accelerate population growth, and there would be no growth-related impacts. No mitigation is required.

Impact PH-10: Introduction or Creation of Infrastructure Not Included in a General Plan, Due to Transit Projects

Bus maintenance yards would not create unanticipated need for infrastructure that was not evaluated in a general plan, and there would be no related impact. Water and wastewater infrastructure that would be required by the bus maintenance yards already exists in the areas proposed for these projects. No mitigation is required.

Impact PH-11: Potential for Displacement of Substantial Numbers of Existing Housing or People, Due to Transit Projects

Because of the nature of the improvements and proposed locations, displacement of substantial numbers of people and housing is anticipated to be less than significant. No mitigation is required.

Impacts Related to Aviation Projects

Projects related to aviation systems are proposed in the RTP. These projects include improvements to airport facilities such as runways, taxiways, parking lots, and hangars. Below is a discussion of impacts related to projects proposed for aviation facilities.

Impact PH-12: Potential for Growth Inducement or Acceleration of Development, Due to Aviation Projects

Unlike roadway projects, aviation improvements generally do not directly encourage growth in the an immediate area; however, improvements to area airport facilities could allow for increased commuter air traffic beyond that anticipated in the region, and therefore remove an obstacle to growth and encourage growth in the region beyond what is currently anticipated. This impact is considered significant. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure PH-1: Determine Projected Population's Local Capacity Needs and Time Improvements to Satisfy Only Those Needs

This mitigation measure is described above, under Impact PH-1.

Impact PH-13: Introduction or Creation of Infrastructure Not Included in a General Plan, Due to Aviation Projects

The proposed improvements would introduce airport infrastructure to the project area. A Stanislaus County Regional Aviation System Plan has been developed with input from city and county staff and airport advisory committee members to determine and provide guidance for upcoming aviation needs. This inter-jurisdictional collaboration would ensure that the proposed aviation projects would be consistent with area planning efforts. Therefore, this impact is considered less than significant. No mitigation is required.

Impact PH-14: Potential for Displacement of Substantial Numbers of Existing Housing or People, Due to Aviation Projects

Aviation improvements for Modesto and Oakdale would occur on land designated for the airport. Aviation improvements for the Turlock Airport would require land acquisition; most likely, adjacent agricultural land leased by the airport would be acquired. The displacement of housing or people would be highly unlikely. Impacts associated with the substantial displacement of housing or people are considered less than significant. No mitigation is required.

Combined Impacts and Mitigation Measures of the Proposed RTP Alternatives

Alternative 1: “Unconstrained” Projects

This alternative contains the most project components, because this alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. Therefore, because of the greater number of projects, it is likely that there could be more impacts on population and housing under this alternative than under other alternatives and subalternatives. The combined impacts and necessary mitigation measures for this alternative are identified below.

Significant Impacts

Implementation of this alternative would result in the following significant population and housing impacts:

- Impact PH-3: Introduction or Creation of Infrastructure not Included in a General Plan, Due to Highway Projects
- Impact PH-7: Introduction or Creation of Infrastructure not Included in a General Plan, Due to Bicycle Projects
- Impact PH-12: Potential for Growth Inducement or Acceleration of Development, Due to Aviation Projects

Implementation of the following mitigation measure would reduce the impact identified above, but not to a less-than-significant level:

- Mitigation Measure PH-1: Determine Projected Population’s Local Capacity Needs and Time Improvements to Satisfy Only Those Needs
- Mitigation Measure PH-3: Consult with Local Planning Staff to Reduce or Avoid Potential Introduction or Creation of Infrastructure Not Evaluated in a General Plan

Significant Unavoidable Impacts

Implementation certain component projects of this alternative of this alternative would result in the following significant and unavoidable population and housing impacts:

- Impact PH-1: Potential for Growth Inducement or Acceleration of Development, Due to Highway Projects

- Impact PH-2: Potential for Displacement of Substantial Numbers of Existing Housing or People, Due to Highway Projects
- Impact PH-4: Potential for Growth Inducement or Acceleration of Development, Due to Local Road Projects
- Impact PH-5: Potential for Displacement of Substantial Numbers of Existing Housing or People, Due to Local Road Projects

Implementation of the following mitigation measures would reduce the impacts identified above, but not to a less-than-significant level:

- Mitigation Measure PH-1: Determine Projected Population's Local Capacity Needs and Time Improvements to Satisfy Only Those Needs
- Mitigation Measure PH-2: Develop and Implement a Relocation Plan

These impacts and mitigation measures are described in detail above, for the specific RTP components.

Subalternative 1a: Maintenance, Safety, and Community Enhancement Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on population and housing probably would be less extensive than would occur under Alternative 1.

Subalternative 1b: Congestion Relief Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on population and housing probably would be less extensive than would occur under Alternative 1.

Subalternative 1c: Economic Opportunities Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on population and housing probably would be less extensive than would occur under Alternative 1.

Subalternative 1d: Combined Projects Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on population and housing probably would be less extensive than would occur under Alternative 1.

Alternative 2: No Project, or “Current Plan”

There are fewer project components in the No-Project Alternative than in Alternative 1 because the currently adopted RTP, which would remain in place in lieu of the 2001 RTP, does not include the New Candidate projects that have been identified since the last RTP update. Therefore, it is likely that there would be fewer impacts on population and housing under this alternative than under Alternative 1.

Introduction

This chapter presents an overview of the biological resources that are known to occur or could occur in Stanislaus County and provides a program-level evaluation of the potential impacts of the RTP on these resources. The potential impacts of the RTP alternatives are qualitatively compared to those of the RTP components in this chapter. A discussion of the measures that would be used to mitigate significant impacts is also presented.

Setting

Jones & Stokes reviewed the following sources of information to prepare the biological resources setting section of this chapter:

- California Department of Fish and Game's (DFG's) Natural Diversity Database (CNDDDB) record search for all U.S. Geological Survey (USGS) quadrangles that cover Stanislaus County (2001),
- California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Vascular Plants of California—6th Edition (July 6, 2000),
- species lists provided by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) (Appendix E),
- previously prepared environmental documents,
- city and county general plans,
- published and unpublished literature, and
- Jones & Stokes file information.

Information presented about the existing biological setting of the county is general and is not based on any site-specific field surveys. Field surveys would be conducted as needed and site-specific biological resource information would be conducted during subsequent environmental review.

This setting section contains information on the following biological resources:

- plant communities and associated biological habitat uses,
- noxious weeds,
- waters of the United States (including wetlands), and
- special-status species.

Biological Resources in the Project Area

Plant Communities and Associated Biological Habitat Uses and Values

The county contains a variety of geologic formations, climatic conditions, and associated common and sensitive plant communities. Most of the county foothills and valley areas are dominated by common herbaceous upland and artificially created plant communities. The most common upland and artificially created plant communities are juniper woodland, foothill woodland, chaparral, annual grassland, ruderal habitats, agricultural lands, and landscaped areas.

Sensitive plant communities occur throughout developed and undeveloped areas in Stanislaus County. For the purpose of this EIR, sensitive plant communities are communities that are especially diverse, regionally uncommon, considered sensitive natural communities (as defined by Holland 1986), or regulated by state or federal agencies and policies (e.g., Section 404 of the Clean Water Act). Most sensitive plant communities are given special consideration because they perform important ecological functions, such as maintaining water quality and providing essential habitat for plants and wildlife. Some plant communities support a unique or diverse assemblage of plant species and therefore are considered sensitive from a botanical standpoint. Sensitive plant communities that occur in the county are

- various types of riparian communities, including significant stands of great valley cottonwood riparian forest, valley oak bottomland savanna, and sycamore woodland;
- seasonal and perennial wetland communities, including the vernal pool complex near Turlock Lake; and
- oak woodland and savanna communities of the foothill and valley regions of the county.

The Stanislaus County General Plan Support Documentation (1994) and the Draft Stanislaus County 1993 Regional Transportation Plan EIR (1993) identify five general habitat regions in the county. Plant communities and associated wildlife habitats are collectively discussed in these two documents under the following general habitat regions:

- foothills,
- agricultural lands,
- riparian areas,
- large water bodies, and
- urban areas.

A description of these general habitat types is provided below and was derived largely from the 1993 RTP EIR and the 1994 county general plan. Figure 6-1 shows the general distribution of the major habitat types in the county.

Foothills

The foothill region of Stanislaus County includes the innermost mountains of the Diablo Range and the foothills of the Sierra Nevada. The dominant plant communities in these foothill areas are annual grassland, chaparral, juniper woodland, and foothill woodland. Vernal pools occur in the annual grasslands, which are present in lower elevations and transition into chaparral and woodlands at higher elevations. Each of the plant communities and associated wildlife species that occur in the foothill region of the county are described below.

Annual Grassland

Annual grassland is one of the most common plant communities in the county and is dominated by nonnative annual grasses and herbaceous species. Grasslands are found on ridges, hill slopes, and valley floors. Typical plants include a mix of dominant nonnative grasses, such as soft chess, red brome, ripgut brome, foxtail barley, wild oat, and annual fescues, intermixed with forb species, such as clovers, lupines, owl's clover, popcorn flower, poppies, and various species of filaree. Some annual grasslands in the county have been subject to frequent disturbance, such as grazing and maintenance activities along roadsides. The annual grassland vegetation in these areas may be dominated by ruderal introduced weedy species, such as yellow star-thistle.

Grasslands are important because they support insects, amphibians, reptiles, and small birds and mammals that are prey for other wildlife, such as red-tailed hawks, northern harriers, American kestrels, burrowing owls, coyotes, and gray foxes. Grasslands near open water and woodland habitats are used by the greatest number of wildlife species because they provide places for resting, breeding, and escape.

Annual grassland is a common plant community regionally and statewide. It stabilizes soils, protects watersheds from erosion, and provides forage for wildlife and livestock.

Vernal Pools

Vernal pools are shallow depressions that occur in annual grasslands and support a variety of native plant, vertebrate, and invertebrate species. These unique

seasonal wetlands typically are inundated only during the rainy season; the vegetation is composed of wetland-adapted annual grasses and forbs.

Vernal pools provide habitat for a variety of wildlife species. During the wet season when vernal pools are ponding, waterbirds, including killdeer, black-necked stilts, American avocets, great egrets, and greater yellowlegs, commonly forage on the many invertebrate and amphibian larvae commonly found in this habitat. Vernal pools are also an important breeding habitat for several amphibian and reptile species that depend on these temporary water bodies for successful reproduction.

Vernal pools are sensitive natural communities that are being lost increasingly as a result of conversion of land to other uses. Northeastern Stanislaus County supports California's largest remaining northern hardpan vernal pool complexes (County of Stanislaus 1994). The vernal pools (also referred to as "vernal playաս") vary from 50 to 300 acres.

Chaparral

Chaparral typically occurs on the dryer slopes of the foothill region and is a shrub community characterized by drought-resistant shrubs. This community is relatively uncommon in the Sierra Nevada foothill region of the county.

Dominant species in chaparral communities in the county include manzanita species, buckbrush, black sage, and chamise. The herbaceous understory varies depending on the density of shrub cover, and typically includes native grasses and wildflowers.

Chaparral plants provide browse, berries, and seeds for a variety of birds, such as California quail, northern mockingbird, American robin, hermit thrush, rufous-sided towhee, California towhee, dark-eyed junco, and golden-crowned sparrow. Insectivorous birds, such as orange-crowned warbler, bushtit, and Bewick's wren, feed on insects in chaparral foliage. Many bird species also find nesting and roosting sites and protection from predators in chaparral habitats. Numerous rodents inhabit chaparral habitats, and deer, rabbits, and hares make extensive use of chaparral sources of food and cover. In addition, chaparral provides foraging and refuge habitat for other mammals and reptiles, including gray fox, coyote, deer mouse, western fence lizard, western rattlesnake, and gopher snake.

Juniper Woodland

Juniper woodlands grow along the dry slopes of the inner canyon foothill region of the county. This habitat is dominated by California juniper with an understory of annual grassland vegetation (described above).

Juniper woodlands provide wintering habitat for a variety of wildlife species. Juniper berries are an important food source for numerous bird species, including Townsend's solitaire. Juniper foliage can be consumed by several wildlife species and may provide an important food source during harsh winters (Maser and Gashwiler 1978). The annual grassland understory of juniper woodlands provides foraging and refuge habitat for several reptile and small mammal species, including California coachwhip, yellow-bellied racer, western fence lizard, pocket mouse, deer mouse, striped skunk, and Audubon's cottontail.

Foothill Woodland

In the county, foothill woodland occurs in the mid- to upper elevations and is a community dominated by grey pine, interior live oak, valley oak, and blue oak. The woodland understory is a mix of annual grassland species and shrubs from adjacent chaparral communities. Foothill woodland transitions to annual grassland at lower elevations. Chaparral occurs as inclusions and forms the shrubby understory component in some woodland areas.

Foothill woodlands provide important breeding, foraging, and cover habitat for most of the wildlife species common to the region. The upper canopy provides nesting, foraging, and cache sites for many birds, such as Lewis' woodpecker, acorn woodpecker, northern flicker, plain titmouse, western bluebird, mourning dove, and red-tailed hawk; and the understory shrub layer provides habitat for many common bird species, such as golden and white-crowned sparrow, and small mammals, such as dusky-footed woodrat.

Agricultural Lands

Agricultural lands occur primarily in the valley portion of the county and include irrigated pastures, vineyards, row crops, and orchards. Depending on the crop pattern and the land's proximity to native habitats, agricultural lands can provide relatively high-value habitat for wildlife, particularly as foraging habitat. Raptor species use row- and grain-crop agricultural lands for foraging because several species of common rodents are found in agricultural fields. Agricultural habitats also provide foraging and resting habitat for migrating and wintering waterfowl and shorebirds.

Riparian Areas

A variety of riparian habitats occur along creeks and rivers in the county. Riparian woodland communities grow along the San Joaquin, Stanislaus, and Tuolumne Rivers; Del Puerto, Salado, and Orestimba Creeks, as well as other small creeks in the county (figure 6-2). The riparian vegetation composition varies along the different county waterways, but generally consists of willows, Fremont's cottonwood, valley oak, California sycamore, box elder, and Oregon ash. A unique stand of California sycamores grows along Orestimba Creek, near I-5. According to information in the County General Plan, this is the only area on the valley side of the Coast Range where California sycamore grows on the valley floor (County of Stanislaus 1994).

Despite widespread disturbances resulting from urbanization, agricultural conversion, and grazing, riparian forests remain important wildlife resources because of their scarcity regionally and statewide and because the riparian community is used by a large variety of wildlife species. This habitat supports abundant aquatic and terrestrial invertebrates that are prey for amphibians and reptiles, such as common garter snakes, western skinks, and ringneck snakes, as well as insectivorous birds, such as warblers, northern flickers, downy

woodpeckers, and flycatchers. Small mammals found in riparian habitats include shrews, voles, bats, and mice. Raptors that nest in large riparian trees include great-horned owls, red-tailed hawks, and American kestrels. Cavity-dependant species, such as woodpeckers, bats, squirrels, and raccoons, require mature stands of trees. Striped skunks, red foxes, gray foxes, and badgers forage in riparian habitats and use them for cover and travel.

The San Joaquin River National Wildlife Refuge, located west of Modesto, incorporates the historic floodplain of the confluences of the San Joaquin, Stanislaus, and Tuolumne Rivers. This refuge was established in 1987 under authority of the Endangered Species Act (ESA), Land and Water Conservation Fund Act, and Migratory Bird Conservation Act. The refuge has a current land base of 12,877 acres and is operated by the staff of the San Luis National Wildlife Refuge Complex.

Riparian woodlands, wetlands, and agricultural lands in the refuge provide the primary wintering grounds for the Aleutian Canada geese that winter in the valley. On March 20, 2001, USFWS determined that the Aleutian Canada goose is no longer an endangered or threatened species pursuant to ESA. Section 4(g) of ESA requires implementation of a monitoring plan for at least 5 years after the delisting of a species. The primary wintering grounds in the refuge have been identified in the Aleutian Canada Goose Recovery Plan as a key component needed to meet wintering-ground habitat objectives for delisting. The refuge is also a major wintering and migration area for lesser and greater sandhill cranes, cackling Canada geese, and white-fronted geese. A large heron and egret rookery has been identified in the riparian woodland habitat along the San Joaquin River; the rookery occasionally supports double-crested cormorants. Although the great blue heron and the great egret do not have any special designation under the California Endangered Species Act (CESA) or ESA, their breeding colonies are of special concern to the DFG.

The Stanislaus, Tuolumne, and San Joaquin Rivers are the three main rivers in the county. These rivers and many of their tributaries sustain populations of various fish species, including striped bass, largemouth and smallmouth bass, catfish, American chad, black croppie, bluegill, green and white sturgeon, and rainbow and brown trout. Numerous smaller tributaries, as well as agricultural drainages, flow through the county and also provide habitat for common fish species.

Historically, the seasonal flooding that covered the flood basins provided spawning and rearing habitat for many fish species, including Sacramento splittail and juvenile chinook salmon and steelhead. After construction of levees and dams, fish passage in the upper San Joaquin River became limited (U.S. Fish and Wildlife Service 1994). The extensive network of canals, bypasses, dams and diversions has caused stretches of the San Joaquin River, particularly upstream of the county, to dry up during part of the year. The network also has led fish into systems with no spawning habitat. Spring-run chinook salmon has been eliminated from the San Joaquin River, and the habitat available for fall-run chinook salmon and steelhead has been reduced drastically.

Historically, steelhead sustained annual runs up the San Joaquin, Stanislaus, Tuolumne, and Merced Rivers. The construction and operation of water development facilities and other causes of habitat loss and degradation, substantially reduced steelhead to remnant levels. Currently, no significant, viable, naturally produced steelhead populations exist in the San Joaquin River system. Sporadic runs occur up the Stanislaus and Merced Rivers (Reynolds et al. 1993).

Many riparian forests (especially those found in Stanislaus County) represent uncommon plant communities regionally and statewide because of historic and continuing habitat loss. These communities provide essential habitat functions and values for many species. For this reason, riparian habitat has been designated by DFG as a critical primary habitat. An estimated 4,000–5,000 acres of riparian habitat remain in the county. This number is substantially lower than the estimated 7,000–8,000 acres recorded prior to 1987 (County of Stanislaus 1994). Land conversion practices and flood control projects have been identified as the primary causes of riparian habitat loss.

Large Water Bodies

The county contains several lakes, reservoirs, and flood control basins, including Woodward Reservoir, Modesto Reservoir, and Farmington Flood Control Basin (figure 6-2). Many of these large water bodies support perennial and seasonal wetland and riparian communities along their edges. These reservoirs provide habitat for a variety of waterfowl, including geese species, mallard, cinnamon teal, green-winged teal, American wigeon, northern pintail, northern shoveler, gadwall, ruddy duck, and merganser, and can provide important resting and foraging habitat for many waterfowl species during migration. Vegetation growing along the edges of water bodies also provides nesting habitat for several bird species and foraging and refuge habitat for numerous amphibian, reptile, and mammal species occupying the open water and adjacent grassland habitats.

Urban Areas

Urban areas in the county contain inclusions of annual grassland, riparian habitat along streams and rivers, and landscaped areas. These habitat types in the urban areas provide nesting and foraging habitat for common bird species, including house sparrow, northern flicker, scrub jay, northern mockingbird, Brewer's blackbird, and European starlings. California ground squirrels, western gray squirrels, house mice, and striped skunks can also be found using habitats in urban landscapes, such as parks, schools, and vacant lots.

Noxious Weeds

For the purpose of this analysis and future project-specific assessments, a *noxious weed* is a plant that could displace native plants and natural habitats, affect the

quality of forage on rangelands, or affect cropland productivity. The California Department of Food and Agriculture (CDFA) lists weeds and assigns ratings to each of the species on its list. These ratings reflect CDFA's view of the statewide importance of the pest, the likelihood that eradication or control efforts would be successful, and the present distribution of the pest in the state. These ratings are guidelines that indicate the most appropriate action to take against a pest under general circumstances. The rating system is explained as follows:

- A—an organism of known economic importance subject to state- (or commissioner, when acting as a state agent)-enforced action involving: eradication, quarantine, containment, rejection, or other holding action.
- B—an organism of known economic importance subject to eradication, containment, control or other holding action at the discretion of the individual county agricultural commissioner or an organism of known economic importance subject to state-endorsed holding action and eradication only when found in a nursery.
- C—an organism subject to no state-enforced action outside of nurseries except to retard spread at the discretion of the commissioner or an organism subject to no state-enforced action except to provide for pest cleanliness in nurseries.

In subsequent environmental review of RTP projects, a qualified botanist would develop a target list of noxious weeds that present a risk to the specific project area. The target list would include all California Department of Food and Agriculture A-rated weed species. Some B- and C-rated species would be included on project-specific target lists if they are identified by the county agricultural commission as target noxious weeds. Weeds would also be included in target lists if they are considered to have great potential for displacing native plants and damaging natural habitats and are not considered too widespread to be effectively controlled. Noxious weeds in Stanislaus County were not inventoried for this program-level analysis because target weeds would differ widely from project to project, depending on the sensitivity of the site to infestation, the nature of the proposed project, and the type of weeds in the immediate area.

A federal Executive Order (EO) on invasive species (February 3, 1999) directs weed control (see discussion of the EO below, under "Relevant Plans and Policies"). As part of project-level environmental analyses, the Stanislaus County Agricultural Commissioner would be contacted to discuss noxious weed infestation and dispersal on private and public right-of-ways.

Waters of the United States (Including Wetlands)

For the purposes of this document, the term *waters of the United States* is an encompassing term used by the U.S. Army Corps of Engineers (Corps) for areas that would qualify for federal regulation under Section 404 of the Clean Water Act. Waters of the United States are categorized as either *wetlands* or *other waters of the United States*. Each of these categories is described below.

Wetlands

The Corps defines *wetlands* as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 Code of Federal Regulations [CFR] 328.3[b], 40 CFR 230.3). For a wetland to qualify as a jurisdictional aquatic site and therefore subject to regulation under Section 404 of the Clean Water Act, the site must support a prevalence of hydrophytic vegetation, hydric soils, and wetland hydrology. On January 9, 2001, a federal court ruling in *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers* [121 S.Ct. 675,2001]) resulted in the determination that isolated wetlands (such as vernal pools) are no longer regulated by the Corps under Section 404 of the Clean Water Act. Guidance on “Non-navigable, isolated [and] intrastate waters” was published on January 19, 2001, by Counsel for the Environmental Protection Agency (EPA) and the Corps in response to the ruling. The guidance essentially resulted in the determination that nonnavigable, isolated waters are not regulated by the Corps. This determination would be considered as part of the subsequent environmental analysis and permitting process for specific transportation projects proposed in the RTP.

DFG’s and USFWS’s definition of *wetland* differs from the Corps’. These agencies use a one-parameter definition of wetlands. They define wetlands as having wetland hydrology and hydric soils or hydrophytic plants, or both. This definition differs from the Corps definition, which requires the presence of all three criteria for an area to be designated as a wetland for regulatory purposes. Subsequent, project-level environmental analysis for projects proposed in the RTP would identify and discuss Corps jurisdictional wetlands and nonjurisdictional DFG and USFWS wetlands (e.g., vernal pools and other types of isolated wetlands that are no longer considered jurisdictional by the Corps).

In Stanislaus County, Corps jurisdictional wetlands include marshes and seasonal wetland communities that are hydrologically connected to drainages and other bodies of water (e.g., ponds and reservoirs on drainage systems. Hydrologically isolated wetlands, such as vernal pools and ponds or reservoirs without drainage systems, are not subject to regulation under Section 404 of the Clean Water Act but are considered wetlands by DFG and USFWS. In the county, many of these isolated wetlands provide habitat for a variety of special-status species.

Other Waters of the United States

Other waters of the United States are sites that typically lack one or more of the three wetland indicators identified above. Other waters of the United States that occur in the county include drainages (all streams, creeks, rivers, and other surface features with defined beds and banks), reservoirs, and ponds.

Special-Status Species

For the purpose of this analysis, special-status species are:

- species listed or proposed for listing as threatened or endangered under ESA (50 CFR 17.11 [listed animals] and 50 CFR 17.12 [listed plants] and various notices in the Federal Register [FR] for proposed species);
- candidates for possible future listing as threatened or endangered under ESA (58 FR 188: 51144-51190, September 30, 1993);
- federal species of concern (former C2 candidates);
- species listed by the state of California as threatened or endangered under CESA (14 CCR 670.5);
- animal species of special concern to DFG (Remsen 1978 [birds], Jennings and Hayes 1994 [reptiles and amphibians], Williams 1986 [mammals]);
- animal species fully protected in California (California Fish and Game Code, Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians].
- plants listed as rare under the California Native Plant Protection Act of 1977 (California Fish and Game Code, Section 1900 et seq.); and
- plants considered by CNPS to be “rare, threatened, or endangered in California” (Lists 1B and 2, and selected Lists 3 and 4 species identified in Skinner and Pavlik 1994).

Other laws that protect wildlife species include:

- Sections 3503 and 3503.5 of the California Fish and Game Code, which protect nesting raptors, their nests, and eggs;
- the Federal Migratory Bird Treaty Act, which protects nesting migratory birds; and
- the Bald and Golden Eagle Protection Act, which protects bald eagles and golden eagles, except under certain specified conditions, from the taking, possession, transportation, export or import, barter, or offers to sell, a bald or golden eagle, alive or dead, or any part, nest, or eagle egg.

As described under “Impacts and Mitigation Measures,” additional field surveys may be conducted as part of the subsequent, project-level environmental analysis for projects proposed in the RTP, to determine the exact location and distribution of special-status species in the project area.

Special-Status Plants

A total of 32 special-status plant species were identified as having the potential to grow in Stanislaus County (table 6-1). Most of the special-status plants known to

grow in the county are associated with annual grassland and wetland habitats (primarily vernal pools).

Special-Status Wildlife

Based on a review of existing information, including habitat distribution data, a total of 16 state- or federally listed and 31 unlisted special-status wildlife species could occur in Stanislaus County (table 6-2). One unlisted species, California tiger salamander, is a federal candidate species and could be listed as threatened or endangered in the near future. Each species' listing status, preferred habitat, and potential for occurrence in the project region are listed in table 6-2. Many of the species identified in the table are associated with habitats in or near seasonal or perennial water sources.

Special-Status Fish

Five special-status fish species could occupy drainages in the county. Central Valley steelhead is listed as threatened under ESA (63 FR 13347, March 19, 1998), and the lower San Joaquin River and its tributaries (including the Stanislaus and Tuolumne Rivers) are included in the designated critical habitat range for this fish. The San Joaquin River upstream of its confluence with the Merced River was not included as critical habitat for Central Valley steelhead (65 FR 7764, February 16, 2000). Sacramento splittail are federally listed as threatened (64 FR 5963, February 8, 1999) and are a state species of special concern. Hardhead and San Joaquin roach are a state species of special concern and federal species of concern. Fall-run chinook salmon was proposed for listing as threatened under ESA, but NMFS determined that the fish did not warrant the listing and identified it as a candidate species instead (64 FR 50393, September 16, 1999). These salmon are a commercially valuable species, and the fish and their habitat are protected under the essential fish habitat protection plan established by NMFS. Below is a brief discussion of each of the above-mentioned species.

Chinook Salmon

Chinook salmon are anadromous, migrating to the sea as juveniles and returning to fresh water to spawn as adults. Fall-run chinook salmon currently spawn in the Merced, Tuolumne, and Stanislaus Rivers. Adults migrate upstream from August to late December, and spawn from October through January. Chinook salmon females deposit their eggs in nests, or *redds*, which they excavate in the gravel river bottom. The eggs are fertilized by one or more males. Chinook salmon eggs generally hatch in 6–9 weeks and yolk-sac larvae remain in the gravel several more weeks. Adult salmon die after spawning. Immediately or soon after emergence (January–March), some chinook salmon less than 50 millimeters long, called *fry*, begin to move downstream, and rear in the lower reaches of the natal rivers and in the San Joaquin River. The fish that remain (juveniles) continue to rear and emigrate as smolts from January through June. Smolts are juvenile salmonids that undergo physiological transformations that

allow them to enter the saltwater; they also lose their markings and appear silvery.

Steelhead

Steelhead are the anadromous form of rainbow trout. Central Valley steelhead currently spawn and rear in the Merced, Tuolumne, and Stanislaus Rivers. Adult steelhead migrate upstream from September through January; migration may peak as early as December. Like chinook salmon, female adult steelhead deposit their eggs in excavated redds. Adults spawn, and eggs incubate primarily from January through May. Unlike salmon, some of the adults survive spawning and return to the ocean. Fry usually emerge from February to May, but emergence can extend into June. Juvenile may rear in freshwater for up to 1 year before emigrating as smolts to the ocean.

Sacramento Splittail

Sacramento splittail are large minnows that are found primarily in the Delta, Suisun Bay, and the lower portions of the Sacramento and San Joaquin Rivers. Adult foraging and spawning migrations occur in the San Joaquin River system during high freshwater outflow years. Historically, they ranged much farther upstream in the Sacramento and San Joaquin Rivers and their tributaries. The farthest upstream reach that splittail are currently found are from Salt Slough in the San Luis National Wildlife Refuge; they have also been collected about 8 kilometers from Mud Slough, located upstream of the Merced River (Baxter 1999). Splittail are able to locate flooded habitat upstream in the San Joaquin River and spawn when conditions are suitable.

Both male and female splittail become sexually mature by their second winter. Splittail deposit adhesive eggs over flooded streambanks or aquatic vegetation (Moyle 1976, Wang 1986). Splittail typically spawn between early March and May in the lower reaches of the Sacramento and San Joaquin Rivers (Moyle et al. 1995). Splittail are iteroparous, meaning they spawn multiple times and years before dying.

Larval splittail are commonly found in shallow, vegetated areas where spawning occurs. Splittail frequent flooded habitats, such as the Sutter and Yolo bypasses in the Sacramento River system, and flooded habitats in areas with setback levees in the San Joaquin River system. Larvae eventually move into deeper, open water habitats as they grow and become juveniles. During late winter and spring, young-of-the-year juvenile splittail (i.e., less than 1 year old) are found in sloughs, rivers, and Delta channels near spawning habitat.

Hardhead

Hardhead are minnows that typically occupy low- to midelevational rivers. Smaller hardhead often swim about pools or slow runs during day in small groups, rising to take insects from the surface, holding in areas of swifter current to eat insects and algae in the water column, or dropping to the bottom to browse. Larger hardhead, however, aggregate during day in the deepest parts of pools or swim about slowly well below the surface. They are most active in early morning and evening when feeding.

Hardhead mature in their third year and spawn mainly in April and May, but may continue into August in some foothill streams. Fish from larger rivers or reservoirs may migrate 30–75 kilometers or more upstream in April and May, usually into tributary streams.

San Joaquin Roach

San Joaquin roach is found in tributaries to San Joaquin River, from Consumnes River south. They are most abundant in midelevation streams in the Sierra Nevada foothills. They also thrive in the main channels of rivers such as the Stanislaus and Tuolumne Rivers. They are omnivores, feeding on filamentous algae, but also on aquatic insects and small crustaceans. Crustaceans and small chironomid midge larvae are especially important to small roach. In adult roach, the aquatic insects consumed reflect availability in benthos and drift.

Roach usually become mature after 2 or sometimes 3 years. Spawning takes place from March through early July, depending on water temperature. Spawning usually takes place when temperatures exceed 16°C. The fish move up from pools into shallow, flowing areas where the bottom is covered with small rocks 3–5 centimeters in diameter. The fish spawn in shoals, each female depositing eggs a few at a time in crevices between rocks. The eggs are immediately fertilized by one or more males following close behind. Fertilized eggs are adhesive and stick to rocks as they are deposited. They hatch in 2 to 3 days, and newly hatched fish remain in crevices until large enough to swim actively around.

Relevant Plans, Policies, and Regulations

This section describes the local, state, and federal plans, policies, and laws that are relevant to biological resources and that may apply to the RTP.

Federal

The following discussion focuses on the federal requirements associated with subsequent CEQA compliance for project-specific components of the RTP. Additional federal requirements would apply to subsequent project-specific components of the RTP that receive federal funding or otherwise affect federal lands and federal decisionmaking; these additional requirements do not apply to StanCOG's RTP or this program EIR, but would need to be addressed if federal funding or another federal action (e.g., if federal lands were crossed or a federal permit were required) were triggered at the time of consideration and approval of the specific project. Appendix F provides an overview of the likely federal requirements (including requirements for biological resources) of obtaining federal action approvals for the subsequent projects.

Federal Endangered Species Act

USFWS (with jurisdiction over plants, wildlife, and resident fish) and NMFS (with jurisdiction over anadromous fish and marine fish and mammals) oversee ESA. Section 7 of the act mandates that all federal agencies consult with USFWS and NMFS to ensure that the federal agencies' actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. The federal agency is required to consult with USFWS and NMFS if it determines that a project "may affect" protected resources.

ESA prohibits the *taking* of any fish or wildlife species listed as endangered, including the destruction of habitat that prevents recovery of the species. *Take* is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct. Fish and wildlife species that are federally listed as threatened also generally are protected from take; however, the overall level of protection for these species may be modified at the time of their listing.

Under Section 9 of ESA, the take prohibition applies to only wildlife and fish species. However, Section 9 does prohibit the unlawful removal and reduction to possession, or malicious damage or destruction of, any endangered plant from federal land. Section 9 prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant species in nonfederal areas in knowing violation of any state law or in the course of criminal trespass. Candidate species and species that are proposed or under petition for listing receive no protection under Section 9 of ESA.

Section 10 of ESA requires the issuance of an incidental take permit before any nonfederal public or private action occurs that would potentially harm, harass, injure, kill, capture, collect, or otherwise hurt (i.e., take) any individual of an endangered or threatened species. The permit requires preparation and implementation of an HCP that would offset the possible take of individuals incidental to implementation of the project. An objective of the habitat conservation plan is to offset take by providing for the overall preservation of the affected species through specific mitigation measures.

U.S. Army Corps of Engineers and U.S. Environmental Protection Agency Regulation of Waters of the United States, Including Wetlands

The Corps and EPA regulate the discharge of dredged or fill material into waters of the United States, including wetlands, under Section 404 of the Clean Water Act. Projects that would result in the placement of dredged or fill material into waters of the United States require a Section 404 permit from the Corps. Some classes of fill activities may be authorized under general permits if specific conditions are met.

Many of the bridge and road widening projects proposed in the RTP may be covered under a nationwide permit (at the discretion of the Corps). Nationwide permits do not authorize activities that are likely to jeopardize the existence of a threatened or endangered species (listed or proposed for listing under ESA) or that may affect properties listed or eligible for listing in the National Register of Historic Places (NRHP) (56 FR 59134–59138, November 22, 1991). In addition to conditions outlined under each nationwide permit, project-specific conditions may be imposed by the Corps as part of the Section 404 permitting process.

The federal government also supports a policy of minimizing “the destruction, loss, or degradation of wetlands.” EO 11990 (May 24, 1977) requires that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

If waters of the United States are present and could be affected by an RTP project, a wetland delineation would be conducted and submitted to the Corps for verification. Additionally, a wetland assessment may be conducted as part of a Caltrans NES if substantial wetland impacts could result from the project.

State

California Endangered Species Act

California implemented CESA in 1984. The act prohibits the take of endangered and threatened species; however, habitat destruction is not included in the state’s definition of *take*. Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. DFG administers the act and authorizes take through Section 2081 agreements (except for species designated as *fully protected*).

Regarding rare plant species, CESA defers to the California Native Plant Protection Act of 1977, which prohibits importing rare and endangered plants into California, taking rare and endangered plants, and selling rare and endangered plants. State-listed plants are protected mainly in cases where state agencies are involved in projects under CEQA. In these cases, plants listed as rare under the California Native Plant Protection Act are not protected under CESA but can be protected under CEQA.

California Fish and Game Code

Section 3503.5 of the California Fish and Game Code prohibits the removal of raptor nests. Section 1601 of the California Fish and Game Code requires issuance of a Streambed Alteration Agreement for all projects that may disturb streams. DFG is responsible for issuing such agreements.

State Policies and Regulations on Streams and Wetlands

DFG regulates activities that would interfere with the natural flow of, or substantially alter the channel, bed, or bank of, a lake, river, or stream. These activities are regulated under the California Fish and Game Code (Section 1601 for public agencies and Section 1603 for private individuals). Requirements to protect the integrity of biological resources and water quality are often conditions of Streambed Alteration Agreements. Requirements may include avoidance or minimization of the use of heavy equipment, limitations on work periods to avoid impacts on wildlife and fisheries resources, and measures to restore degraded sites or compensate for permanent habitat losses.

Local

Table 6-3 summarizes local policies and ordinances that pertain to biological resources that could affect or be affected by the RTP. Policies may either support or conflict with proposed project improvements. The policies were excerpted from the Stanislaus County General Plan and from the General Plans of incorporated cities located in the county.

Native and Heritage Tree Ordinances

Some of the cities in the county have, or will have in the future, native or heritage tree ordinances to protect large or native trees (table 6-3). Most ordinances or policies require the project applicant to obtain a tree removal permit and compensate for the removal of protected trees. The compensatory mitigation for native or heritage trees would be determined as part of the environmental analysis and permit process for individual transportation projects proposed in the RTP.

Habitat Conservation Plans

At this time, neither the County nor the cities within it have HCPs under Section 10 of ESA. HCPs provide a mechanism for conserving habitat for federally listed threatened, endangered, and proposed species while allowing specified levels of take as defined under a Section 10(a) incidental take permit. A similar process under CESA, the NCCP, also may be applicable in some areas. Because the County or cities could adopt HCPs or NCCPs in the future, the existence and applicability of HCPs and NCCPs for future projects in the county must be determined during environmental analysis for individual RTP projects. This information would be obtained through contacts with local city offices, county offices, and state and federal resource agencies. Specifications or guidelines described in any relevant HCP or NCCP would be applied to the appropriate projects.

Impacts and Mitigation Measures

Methods and Assumptions for the Impact Analysis

The biological resources impact analysis is qualitative and is not based on any site-specific information. The mitigation measures described for potential impacts on sensitive biological resources have not been developed through formal consultation or coordination with resource agencies (e.g., DFG, USFWS, NMFS, Corps). As part of subsequent, project-level environmental analysis, agencies must be contacted as part of the environmental compliance process to determine specific compensatory mitigation for impacts on wetlands, state- and federally listed species, and riparian habitats. Additional mitigation measures may also be identified as conditions of project permits (e.g., a Section 404 permit or Section 1601 Streambed Alteration Agreement).

This impact analysis assumes that biological resources could be indirectly or directly affected by construction and maintenance activities associated with projects proposed in the RTP. Biological resources could be directly or indirectly disturbed by the following activities:

- stream dewatering or installation of temporary water-diversion structures;
- loss of habitat associated with widening roadways and bikeways, constructing new transportation facilities, or implementing interchange, rail, bikeway, and aviation improvements;
- temporary stockpiling of soil or construction materials and sidecasting of soil and other construction wastes;
- removal of riparian vegetation along waterways during construction of bridges;
- removal of vegetation during construction of temporary staging areas and access roads;
- soil compaction and generation of dust by construction equipment,
- water runoff from the construction area;
- herbicide application and removal of vegetation as part of road maintenance; and
- degradation of water quality in wetlands and waterways, resulting from road runoff containing petroleum products.

Criteria for Determining Significance

Appendix G of the State CEQA Guidelines, StanCOG's adopted thresholds of significance, and professional practice were used to determine whether the proposed general plan would have a significant environmental effect.

State CEQA Guidelines

According to the State CEQA Guidelines, the RTP would have a significant impact on biological resources if it would

- have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations or by DFG or USFWS;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

StanCOG Adopted Thresholds of Significance

According to the thresholds established by StanCOG, the RTP would have a significant impact on biological resources if it would

- affect wetlands, vernal pools, riparian areas, native grassland, woodlands, or significant individual native trees; or
- not comply with, or require some type of modification, exception, or variance from, any relevant state and federal regulations.

Standard Professional Practice

Standard professional practice was also used in determining whether an impact on biological resources would be significant. The RTP likely would cause a significant impact if it would result in

- documented resource scarcity and sensitivity both locally and regionally;
- local and regional distribution and extent of biological resources;
- long-term degradation of a sensitive plant community because of substantial alteration of land form or site conditions (e.g., alteration of wetland hydrology);

- substantial loss of a plant community and associated wildlife habitat;
- fragmentation or isolation of wildlife habitats, especially riparian and wetland communities;
- substantial disturbance of wildlife resulting from human activities;
- avoidance by fish of biologically important habitat for substantial periods, which may increase mortality or reduce reproductive success;
- disruption of natural wildlife movement corridors;
- substantial reduction in local population size attributable to direct mortality or habitat loss, lowered reproductive success, or habitat fragmentation of
 - species qualifying as rare and endangered under CEQA,
 - species that are state-listed or federally listed as threatened or endangered, or
 - portions of local populations that are candidates for state or federal listing and federal and state species of concern; or
- substantial reduction or elimination of species diversity or abundance.

Impacts and Mitigation Measures of the Proposed RTP Components

Impacts Related to Highway Projects

There are several types of projects proposed for highway facilities in Stanislaus County. These include proposals to widen highways, construct or reconstruct interchanges, and create expressways on highway facilities. Below is an evaluation of impacts related to proposed projects located on highway facilities.

Impact BIO-1: Potential Disturbance or Loss of Special-Status Plant Populations as a Result of Highway Projects

Construction and maintenance activities associated with highway projects could result in the direct loss or indirect disturbance of special-status plants that are known to grow or that could grow in the county (see table 6-1 for a list of these species). Impacts on special-status plants could result in a substantial reduction in local population size, lowered reproductive success, or habitat fragmentation. This impact is considered significant because the County can not guarantee that special-status plants can be avoided as part of future projects. Depending on the plant (listed versus unlisted) and the extent of impact, implementation of the following mitigation measures would reduce this impact, but not to a less-than-significant level for all projects. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure BIO-1: Document Special-Status Plant Populations

As part of the environmental review process for individual projects, the project proponent shall retain a qualified botanist to document the presence or absence of special-status plants before project implementation. The following steps shall be implemented to document special-status plants for each project:

- a. **Review Existing Information.** The botanist shall review existing information to develop a list of special-status plants that could grow in the project area. Sources of information consulted shall include DFG's CNDDDB, previously prepared environmental documents, city and county general plans, HCPs and NCCPs (if there are any), and the CNPS electronic inventory.*
- b. **Coordinate with Agencies.** The botanist shall coordinate with the appropriate agencies (DFG, USFWS, Caltrans) to discuss botanical resource issues and determine the appropriate level of surveys necessary to document special-status plants.*
- c. **Conduct Field Studies.** The botanist shall evaluate existing habitat conditions for each project and determine what level of botanical surveys may be required. The type of botanical survey shall depend on species richness, habitat type and quality, and the probability of special-status species occurring in a particular habitat type. Depending on these factors and the proposed construction activity, one or a combination of the following levels of survey may be required:*
 - ❑ **Habitat Assessment.** A habitat assessment determines whether suitable habitat is present. This type of assessment can be conducted at any time of year and is used to assess and characterize habitat conditions and determine whether return surveys are necessary. If no suitable habitat is present, no additional surveys shall be required.*
 - ❑ **Species-Focused Surveys.** Species-focused surveys (or target species surveys) shall be conducted if suitable habitat is present for special-status plants. The surveys shall focus on special-status plants that could grow in the region, and would be conducted during a period when the target species are evident and identifiable.*
 - ❑ **Floristic Protocol-Level Surveys.** Floristic surveys that follow the CNPS Botanical Survey Guidelines (revised Nelson 1987 surveys; approved by the CNPS Board on June 2, 2001) shall be conducted in areas that are relatively undisturbed and/or have a moderate to high potential to support special-status plants. The CNPS Botanical Survey Guidelines require that all species be identified to the level necessary to determine whether they qualify as special-status plants, or are plant species with unusual or significant range extensions. The guidelines also require that*

field surveys be conducted when special-status plants that could occur in the area are evident and identifiable. To account for different special-status plant identification periods, one or more series of field surveys may be required in spring and summer months.

Special-status plant populations identified during the field surveys shall be mapped and documented as part of CEQA, NEPA, and Caltrans NES reports (if required). The project proponent shall implement Mitigation Measure BIO-2 in conjunction with this mitigation measure to avoid or minimize significant impacts on special-status plants.

Mitigation Measure BIO-2: Avoid or Minimize Impacts on Special-Status Plant Populations by Redesigning the Project, Protecting Special-Status Plant Populations, and Developing a Transplantation Plan (If Necessary)

The project proponent shall implement the following measures to avoid and minimize impacts on special-status plants:

- a. Redesign or modify the project to avoid direct and indirect impacts on special-status plants, if feasible.*
- b. Protect special-status plants near the project site by installing environmentally sensitive area fencing (orange construction barrier fencing) around special-status plant populations. The environmentally sensitive area fencing shall be installed at least 20 feet from the edge of the population. The location of the fencing shall be marked in the field with stakes and flagging and shown on the construction drawings. The construction specifications shall contain clear language that prohibits construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced environmentally sensitive area.*
- c. Coordinate with the appropriate resource agencies and local experts to determine whether transplantation is feasible. If the agencies concur that transplantation is a feasible mitigation measure, the botanist shall develop and implement a transplantation plan through coordination with the appropriate agencies. The special-status plant transplantation plan shall involve identifying a suitable transplant site; moving the plant material and seed bank to the transplant site; collecting seed material and propagating it in a nursery; and monitoring the transplant sites to document recruitment and survival rates.*

Impact BIO-2: Potential Introduction or Spread of Noxious Weeds

Construction activities associated with highway projects could introduce or spread noxious weeds into currently uninfested areas, possibly resulting in the displacement of special-status plant species and degradation of habitat for special-status wildlife. Plants or seeds may be dispersed on construction equipment if the appropriate measures are not implemented. This impact is

considered significant because the introduction or spread of noxious weeds could result in a substantial reduction or elimination of species diversity or abundance. Implementation of Mitigation Measures BIO-3 and BIO-4 would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-3: Conduct a Noxious Weed Survey and Document Noxious Weed Infestation

As part of project-level environmental review, the project proponent shall retain a qualified botanist to address noxious weed impacts. The botanist shall determine whether noxious weeds are an issue for the project and whether they could displace native plants and natural habitats, affect the quality of forage on rangelands, or affect cropland productivity. If the botanist determines that noxious weeds are an issue, the project proponent shall review the County Agricultural Commission's noxious weed list, California Department of Food and Agriculture's A, B, and C lists of noxious weeds, and California Exotic Pest Plant Council's list of pest plants of ecological concern. These lists shall be used to identify weeds that shall be targeted during field surveys by the botanist. Surveys shall focus on target weed species that are considered locally important for documentation and control purposes.

If noxious weed infestations are located during the field surveys, they shall be mapped and documented as part of CEQA, NEPA, and Caltrans NES reports (if required). The project proponent shall implement Mitigation Measure BIO-4 to avoid the dispersal of noxious weeds into uninfested areas.

Mitigation Measure BIO-4: Avoid the Dispersal of Noxious Weeds into Uninfested Areas

To avoid the introduction or spread of noxious weeds into uninfested areas, the project proponent shall incorporate the following measures into highway project plans and specifications:

- a. Use certified, weed-free, imported erosion-control materials (or rice straw in upland areas).*
- b. Coordinate with the County Agricultural Commissioner and land management agencies to ensure that the appropriate best management practices (BMPs) are implemented.*
- c. Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of noxious weeds.*
- d. Clean equipment at designated wash stations after leaving noxious weed infestation areas.*

Impact BIO-3: Loss or Disturbance of Riparian Habitats

Construction activities associated with highway projects could result in the disturbance or removal of riparian habitat. This impact is considered significant because it could result in long-term degradation of a sensitive plant community,

fragmentation or isolation of an important wildlife habitat, and disruption of natural wildlife movement corridors. Depending on the type of riparian habitat and extent of impact, implementation of Mitigation Measures BIO-5, BIO-6, and BIO-7 would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-5: Identify and Document Riparian Habitat

The project proponent shall retain a qualified botanist to document the location, type, extent, and habitat functions and values for riparian habitat that occurs in the highway study area. This information shall be mapped and documented as part of CEQA, NEPA and Caltrans NES reports (if required). Mitigation Measure BIO-6 shall be implemented concurrently to avoid, minimize, and compensate for impacts on riparian habitats.

Mitigation Measure BIO-6: Avoid and Minimize Disturbance of Riparian Habitats

To the extent possible, the project proponent shall avoid impacts on riparian habitats by implementing the following measures:

- a. *Redesign or modify the project to avoid direct and indirect impacts on riparian habitats, if feasible.*
- b. *Protect riparian habitats that occur near the project site by installing environmentally sensitive area fencing at least 20 feet from the edge of the riparian vegetation. Depending on site-specific conditions, this buffer may be narrower or wider than 20 feet. The location of the fencing shall be marked in the field with stakes and flagging and shown on the construction drawings. The construction specifications shall contain clear language that prohibits construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced environmentally sensitive area.*
- c. *Minimize the potential for long-term loss of riparian vegetation by trimming vegetation rather than removing the entire shrub. Shrub vegetation shall be cut at least 1 foot above ground level to leave the root systems intact and allow for more rapid regeneration of the species. Cutting shall be limited to a minimum area necessary within the construction zone. This type of removal shall be allowed only for shrub species (all trees shall be avoided) in areas that do not provide habitat for sensitive species (e.g., willow flycatcher). To protect migratory birds, no woody riparian vegetation shall be allowed beginning March 15 and ending September 15, as required under the Migratory Bird Treaty Act.*

Mitigation Measure BIO-7: Compensate for the Loss of Riparian Habitat

If riparian habitat is removed as part of the highway project, the project proponent shall compensate for the loss of riparian vegetation to ensure no net loss of habitat functions and values. Compensation ratios shall be

based on site-specific information and determined through coordination with state and federal agencies (including DFG, USFWS, the Corps, and NMFS). Compensation shall be provided at a minimum 1:1 ratio (1 acre restored or created for every 1 acre removed) and may be a combination of onsite restoration/creation, off-site restoration, or mitigation credits. The project proponent shall develop a restoration and monitoring plan that describes how riparian habitat shall be enhanced or recreated and monitored over a minimum period of time, as determined by the appropriate state and federal agencies. The project proponent shall implement the restoration and monitoring plan.

Impact BIO-4: Disturbance or Loss of Waters of the United States (Including Wetlands)

Construction activities associated with highway projects could result in the disturbance or loss of waters of the United States, including creeks, rivers, streams, vernal pools, marshes, and other types of seasonal and perennial wetland communities. Wetlands and other waters of the United States could be affected through direct removal, filling, hydrological interruption (including dewatering), alteration of bed and bank, and other construction-related activities. This impact is considered significant because it could result in long-term degradation of a sensitive plant community, fragmentation or isolation of an important wildlife habitat, and disruption of natural wildlife movement corridors. The extent of project-level impacts and types of affected communities have not yet been determined; therefore, implementation of Mitigation Measures BIO-8, BIO-9, and BIO-10 would reduce this impact, but not necessarily to a less-than-significant level for all RTP projects. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure BIO-8: Identify and Delineate Waters of the United States (Including Wetlands)

As part of project-level environmental review, the project proponent shall retain a botanist to identify areas that could qualify as waters of the United States, including wetlands. Wetlands shall be identified using both the Corps' and USFWS/DFG definitions of wetlands. Corps jurisdictional wetlands shall be delineated using the methods outlined in the Corps' 1987 manual (Environmental Laboratory 1987). The jurisdictional boundary for other waters of the United States shall be identified based on the

shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area (33 CFR 328.3[e]).

This information shall be mapped and documented as part of CEQA, NEPA, Caltrans NES (if required), and wetland delineation reports. Mitigation Measure BIO-9 shall be implemented concurrently to avoid, minimize, and compensate for impacts on waters of the United States, including wetland habitats.

Mitigation Measure BIO-9: Avoid and Minimize Disturbance of Waters of the United States, Including Wetland Communities

To the extent possible, the project proponent shall avoid and minimize impacts on wetlands and other waters of the United States (creeks, streams, and rivers) by implementing the following measures:

- a. Redesign or modify the project to avoid direct and indirect impacts on wetland habitats, if feasible.*
- b. Protect wetland habitats that occur near the project site by installing environmentally sensitive area fencing at least 20 feet from the edge of the wetland. Depending on site-specific conditions and permit requirements, this buffer may be wider than 20 feet (e.g., 250 feet for seasonal wetlands that are considered special-status shrimp habitat). The location of the fencing shall be marked in the field with stakes and flagging and shown on the construction drawings. The construction specifications shall contain clear language that prohibits construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced environmentally sensitive area.*
- c. Avoid installation activities in saturated or ponded wetlands during the wet season (spring and winter) to the maximum extent possible. Where such activities are unavoidable, protective practices, such as use of padding or vehicles with balloon tires, shall be used.*
- d. Where determined necessary by resource specialists, use geotextile cushions and other materials (e.g., timber pads, prefabricated equipment pads, or geotextile fabric) in saturated conditions to minimize damage to the substrate and vegetation.*
- e. Stabilize exposed slopes and streambanks immediately on completion of installation activities. Other waters of the United States shall be restored in a manner that encourages vegetation to reestablish to its preproject condition and reduces the effects of erosion on the drainage system.*
- f. In highly erodible stream systems, stabilize banks using a nonvegetative material that will bind the soil initially and break down within a few years. If the project engineers determine that more aggressive erosion control treatments are needed, use geotextile mats, excelsior blankets, or other soil stabilization products.*
- g. During construction, remove trees, shrubs, debris, or soils that are inadvertently deposited below the ordinary high-water mark of drainages in a manner that minimizes disturbance of the drainage bed and bank.*

These measures shall be incorporated into contract specifications and implemented by the construction contractor. In addition, the project

proponent shall ensure that the contractor incorporates all permit conditions into construction specifications.

Mitigation Measure BIO-10: Compensate for the Loss of Wetland Habitat

If wetlands are filled or disturbed as part of the project, the project proponent shall compensate for the loss of wetland habitat to ensure no net loss of habitat functions and values. Compensation ratios shall be based on site-specific information and determined through coordination with state and federal agencies (including DFG, USFWS, and the Corps). The compensation shall be at a minimum 1:1 ratio (1 acre restored or created for every 1 acre filled) and may be a combination of onsite restoration/creation, off-site restoration, or mitigation credits. A restoration and monitoring plan shall be developed and implemented. The plan shall describe how wetlands shall be created and monitored over a minimum period of time.

Impact BIO-5: Potential Disturbance or Loss of Special-Status Wildlife Species and Their Habitat

Construction and maintenance activities associated with highway projects could result in the direct loss or indirect disturbance of special-status wildlife or their habitats, which are known to occur or could occur in the county (see table 6-2 for a list of these species). Impacts on special-status wildlife or their habitat could result in a substantial reduction in local population size, lowered reproductive success, or habitat fragmentation. Significant impacts on special-status wildlife associated with highway projects include, but are not limited to:

- direct mortality from the collapse of underground burrows, resulting from soil compaction;
- direct mortality resulting from the movement of equipment and vehicles through the project area;
- increased mortality caused by higher numbers of automobiles on new or widened roads in migration corridors;
- loss of breeding and foraging habitat resulting from the filling of seasonal or perennial wetlands;
- loss of breeding, foraging, and refuge habitat resulting from the permanent removal of riparian vegetation;
- abandoned eggs or young and subsequent nest failure for special-status nesting birds, including raptors, as a result of construction-related noises;
- loss of suitable foraging habitat for special-status raptor species; and
- loss of migration corridors resulting from the construction of permanent building structures or features.

This impact is considered significant because the County cannot guarantee that special-status wildlife can be avoided during projects proposed in the RTP. Depending on what special-status wildlife species (listed versus unlisted) are

affected and on the extent of impact, implementation of the following mitigation measures would reduce this impact, but not to a less-than-significant level for all projects. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure BIO-11: Document Special-Status Wildlife Species and Their Habitats

As part of project-level environmental review, the project proponent shall retain a qualified wildlife biologist to document the presence or absence of suitable habitat for special-status wildlife in the project area. The following steps shall be implemented to document special-status wildlife and their habitats for each highway project:

- a. **Review Existing Information.** The wildlife biologist shall review existing information to develop a list of special-status wildlife species that could occur in the project area. The following information shall be reviewed as part of this process: the USFWS special-status species list for the project region, DFG's CNDDDB, previously prepared environmental documents, city and county general plans, HCPs and NCCPs (if there are any), and USFWS issued biological opinions for previous projects.*
- b. **Coordinate with State and Federal Agencies.** The wildlife biologist shall coordinate with the appropriate agencies (DFG, USFWS, and Caltrans) to discuss wildlife resource issues in the project region and determine the appropriate level of surveys necessary to document special-status wildlife and their habitats.*
- c. **Conduct Field Studies.** The wildlife biologist shall evaluate existing habitat conditions and determine what level of biological surveys may be required. The type of survey required shall depend on species richness, habitat type and quality, and the probability of special-status species occurring in a particular habitat type. Depending on the existing conditions in the project area and the proposed construction activity, one or a combination of the following levels of survey may be required:*
 - ❑ **Habitat Assessment.** A habitat assessment determines whether suitable habitat is present. This type of assessment can be conducted at any time of year and is used to assess and characterize habitat conditions and to determine whether return surveys are necessary. If no suitable habitat is present, no additional surveys shall be required.*
 - ❑ **Species-Focused Surveys.** Species-focused surveys (or target species surveys) shall be conducted if suitable habitat is present for special-status wildlife and if it is necessary to determine the presence or absence of the species in the project area. The surveys shall focus on special-status wildlife species that have the potential to occur in the region. The surveys shall be*

conducted during a period when the target species are present and/or active.

- **Protocol-Level Wildlife Surveys.** *The project proponent shall comply with protocols and guidelines issued by responsible agencies for certain special-status species. USFWS and DFG have issued survey protocols and guidelines for several special-status wildlife species that could occur in the project region, including the valley elderberry longhorn beetle, vernal pool branchiopods, California red-legged frog, California tiger salamander, blunt-nosed leopard lizard, western burrowing owl, and San Joaquin kit fox. The protocols and guidelines may require that surveys be conducted during a particular time of year and/or time of day when the species is present and active. Many survey protocols require that only a USFWS- or DFG-approved biologist perform the surveys. The project proponent shall coordinate with the appropriate state or federal agency biologist before the initiation of protocol-level surveys to ensure that the survey results shall be valid. Because some species can be difficult to detect or observe, multiple field techniques may be used during a survey period and additional surveys may be required in subsequent seasons or years as outlined in the protocol or guidelines for each species.*

Special-status wildlife or suitable habitat identified during the field surveys shall be mapped and documented as part of CEQA, NEPA, and Caltrans NES reports (if required). The project proponent shall implement a combination of the following mitigation measures to avoid and minimize significant impacts on special-status wildlife.

Mitigation Measure BIO-12: Avoid and Minimize Impacts on Special-Status Wildlife Species by Redesigning the Project, Protecting Special-Status Wildlife Habitat, and Developing a Mitigation Monitoring Plan (If Necessary)

This mitigation measure focuses on avoiding and minimizing all direct and indirect effects on special-status wildlife. The project proponent shall implement the following measures to avoid and minimize impacts on special-status wildlife and their habitats:

- a. *Redesign or modify the project to avoid direct and indirect impacts on special-status wildlife or their habitats, if feasible.*
- b. *Protect special-status wildlife and their habitat near the project site by installing environmentally sensitive area fencing around habitat features, such as seasonal wetlands, burrows, and nest trees. The environmentally sensitive area fencing or staking shall be installed at a minimum distance from the edge of the resource as determined through coordination with state and federal agency biologists (USFWS and DFG). The location of the fencing shall be marked in the field with stakes and flagging and shown on the construction drawings. The construction specifications shall contain clear*

language that prohibits construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced environmentally sensitive area.

- c. Restrict construction-related activities to the nonbreeding season for special-status wildlife species that could occur in the project area. Timing restrictions may vary depending on the species and could occur during any time of the year.*
- d. Coordinate with the appropriate resource agencies to determine whether a monitoring plan for special-status wildlife is necessary as part of all highway projects. If a monitoring plan is required, it shall be developed and implemented in coordination with appropriate agencies and shall include*
 - a description of each of the wildlife species and of suitable habitat for species that could occur at the project site;*
 - the locations of known occurrences of special-status wildlife species within 1.0 mile of the project site;*
 - the location and size of no-disturbance zones in and adjacent to environmentally sensitive areas for wildlife;*
 - directions on the handling and relocating of special-status wildlife species found on the project site that are in immediate danger of being destroyed; and*
 - notification and reporting requirements for special-status species that are identified on the project site.*

Mitigation Measure BIO-13: Coordinate with Resource Agencies and Develop Appropriate Compensation Plans for State- and Federally-Listed Wildlife Species

In the event that Mitigation Measure BIO-12 is not feasible and construction activities would result in significant impacts on state- or federally listed wildlife species, a compensation plan shall be developed in coordination with the appropriate resource agency, or agency-approved compensation guidelines shall be followed to reduce the impact to a less-than-significant level. Compensation guidelines have been identified for several special-status wildlife species, including valley elderberry longhorn beetle, vernal pool branchiopods, giant garter snake, Swainson's hawk, and burrowing owl. The amount of compensation shall vary depending on the amount of habitat loss or degree of habitat disturbance anticipated. The compensation plan shall be developed and implemented in coordination with the appropriate state or federal agency and would involve identifying an agency-approved mitigation bank or mitigation site (onsite or off-site); transplanting (elderberry shrubs), re-creating (burrows and vernal pools), and/or preserving additional habitat for special-status wildlife species; monitoring the mitigation site; and funding the management of the mitigation site.

Mitigation Measure BIO-6: Avoid and Minimize Disturbance of Riparian Habitats

This mitigation measure is described above, under Impact BIO-3.

Mitigation Measure BIO-9: Avoid and Minimize Disturbance of Waters of the United States, Including Wetlands

This mitigation measure is described above, under Impact BIO-4.

Impact BIO-6: Potential Disturbance and Loss of Common Wildlife Species

Construction activities related to highway projects could temporarily disturb habitat for many common wildlife species in the project region. Also, a small amount of habitat for common wildlife species would be removed as a result of Highway projects. Common wildlife species occur anywhere that is unpaved. By increasing the amount of paved surface, a small amount of habitat inevitably would be removed. The amount of habitat that would be removed is small relative to the amount of habitat available to these common species in the project region. In addition to losing habitat, many species would move out of project sites and into nearby habitat areas and, inevitably, some individuals would be lost as a result construction activities. However, this loss of individual animals would not result in a significant impact on common wildlife species because it would not lead to a substantial reduction or elimination of species diversity or abundance in the project region. This impacts is therefore considered less than significant. No mitigation is required.

Impact BIO-7: Potential Direct and Indirect Impacts on Special-Status Fish Species

Highway projects could have impacts on special-status fish species. Impacts on aquatic systems could result from an increase in sediment input, contaminant input, and removal of riparian vegetation. Construction activities adjacent to waterways could disturb soils and cause sediment to be transported into and through the channel; this would result in temporary increases in turbidity and sedimentation downstream of construction sites. Periods of localized, high suspended sediment concentrations and turbidity owing to channel disturbance can result in a reduction of feeding opportunities for sight-feeding fish and clogging and abrasion of gill filaments. Also, increased sediment loading can degrade food-producing habitat downstream of project areas. Finally, sediment can interfere with photosynthesis of aquatic flora and result in the displacement of aquatic fauna.

Fuel and concrete could spill into the waterway during construction. Various contaminants, such as fuel oils, grease, and other petroleum products used in construction activities, could be introduced into the system either directly or through surface runoff. Contaminants may be lethal or sublethally toxic to fish and other aquatic organisms, or may change the rate at which oxygen is diffused; as a result, they may reduce the survival and growth rates of aquatic species.

Removal of riparian vegetation could weaken the streambank by loosening the soil, thus increasing the bank's susceptibility to erosion. Alteration of fish habitat would occur if the channel bed and banks were disturbed (e.g., if riprap

were placed there), or if sites that have been disturbed mechanically were further disturbed by high-flow events before they are stabilized. Riparian vegetation provides cover for juvenile rearing, shade to reduce temperatures, and food input (i.e., terrestrial invertebrates) and is considered a very valuable component of fish habitat. The removal of woody riparian vegetation may affect fish directly by removing habitat. Fish use complex woody debris structure to avoid predators and conceal themselves from prey. Woody debris in the waterway reduces water velocity, providing resting habitat as well.

This impact is considered significant because project activities could result in avoidance by fish of biologically important habitat for substantial periods. Avoidance of important habitat may increase mortality, reduce reproductive success, or substantially reduce local population size. Implementation of the following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-14: Assess and Document Habitat for Special-Status Fish Species

As part of project-level environmental review, the project proponent shall retain a qualified fisheries biologist to locate and identify streams that could support special-status fish habitat. Habitat shall be mapped and documented as part of the CEQA, NEPA, Caltrans NES, and biological assessment reports (if required) that are prepared for the project. The project proponent shall implement Mitigation Measure BIO-15 concurrently to avoid, minimize, and compensate for potential impacts on special-status fish.

Mitigation Measure BIO-15: Avoid and Minimize Impacts on Special-Status Fish and Their Habitat

The project proponent shall implement the following measures to avoid and minimize impacts on special-status fish and their habitats:

- a. For each project, develop and implement a stormwater pollution prevention plan (SWPPP) that describes BMPs to minimize the potential for impacts on fish and their habitat. The SWPPP shall include measures to control the transport of sediment to streams, promote the restoration of construction areas to preconstruction conditions, and avoid the potential for spills of hazardous substances. The SWPPP shall include pollution prevention measures (erosion and sediment control measures and measures to control non-stormwater discharges and hazardous spills), demonstration of compliance with all applicable local and regional erosion and sediment control standards, identification of responsible parties, a detailed construction timeline, and a BMP monitoring and maintenance schedule. A staging and storage area shall be provided away from the waterway for equipment, construction materials, fuels, lubricants, solvents, and other possible contaminants. The contractor shall conduct periodic maintenance of erosion and sediment control measures. Soil exposure shall be minimized through the use of BMPs, ground cover, and stabilization practices.*

Exposed dust-producing surfaces shall be sprinkled daily until wet while avoiding the production of runoff. Paved streets shall be swept daily after construction activities.

- b. *Construct the project during time periods that avoid the sensitive life stages of special-status fish species. Construction activities shall be scheduled so they do not interfere with the reproductive cycles of fish species. Work in most of the systems shall take place between June 1 and October 15. Construction in this time frame would avoid causing impacts on the majority of the adult and juvenile migration stages of anadromous species.*

Mitigation Measure BIO-16: Consult with NMFS or USFWS when Listed Fish Species May Be Affected, and Initiate Essential Fish Habitat Consultation with NMFS when Chinook Salmon May Be Affected

Any project affecting the San Joaquin, Stanislaus, or Tuolumne Rivers in Stanislaus County could affect steelhead, chinook salmon, splittail, or their essential fish habitats. These fish, and their essential fish habitats, are protected under ESA. Therefore, the project proponent shall initiate consultation with NMFS and/or USFWS to get a determination from the agency and approval to proceed with the project and associated mitigation measures.

Mitigation Measure BIO-7: Compensate for the Loss of Riparian Habitat

This mitigation measure is described above, under Impact BIO-3.

Mitigation Measure BIO-9: Avoid and Minimize Disturbance of Waters of the United States, Including Wetland Communities

This mitigation is described above, under Impact BIO-4.

Impact BIO-8: Conflict with Local Policies or Ordinances Protecting Biological Resources

Construction activities associated with highway projects could result in conflicts with local policies or ordinances that protect locally significant biological resources, including heritage or native trees. This impact is considered significant. Implementation of Mitigation Measure BIO-17 would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-17: Review Local City and County Policies, Ordinances, and Conservation Plans and Comply with Requirements

As part of project-level environmental review, the project proponent shall ensure that projects comply with general plans, policies, ordinances, and conservation plans (including any HCPs, NCCPs, and other local, regional, and state plans) (table 6-3). Review of these documents and compliance with their requirements shall be demonstrated in project-level environmental documentation. Project proponents shall ensure that projects comply with all policies,

ordinances, and plans that exist at the time of project-level review, regardless of whether they existed during the program-level analysis.

Impacts Related to Local Road Projects

The biological resource impacts and mitigation measures associated with local road projects would be the same as described above for highway projects.

The magnitude and degree of impacts and mitigation would vary based on the amount and type of habitat loss and area of direct and indirect disturbance. Intersection improvements and operational improvements of local roads may have fewer biological resource impacts if there is no loss of habitat. However, disturbance of nearby habitat associated with construction staging areas and with equipment and vehicle operations could result in temporary removal of habitat adjacent to the local road project.

Impacts Related to Bicycle Projects

Biological resource impacts and mitigation measures associated with widening existing bikeways and constructing new bikeways would be the same as described above for highway and local road projects.

The magnitude and degree of impacts and mitigation would vary based on the amount and type of habitat loss and area of direct and indirect disturbance. The paving of new and existing bikeways likely would not remove as much habitat as highway or roadway projects because bikeways are narrower. Signage and/or striping of bikeways generally would have little or no impact on biological resources. However, if equipment and vehicle access to the bikeway is required as part of signage and striping activities, and using local roads to access the construction site is not feasible, there likely would be impacts associated with the disturbance of habitat adjacent to the existing bikeway.

Impacts Related to Transit Projects

Biological resource impacts and mitigation measures associated with the construction of inter-city and commuter rail services and bus maintenance yards would be the same as described above for highway projects.

The magnitude and degree of impacts and mitigation would vary based on the amount and type of habitat loss and area of direct and indirect disturbance. If transit projects occur within urban areas, there likely would be little or no impact on biological resources. However, new transit projects that link nearby communities that are separated by open space and natural areas will result in disturbance or loss of habitat.

Impacts Related to Aviation Projects

Biological resource impacts and mitigation measures associated with the expansion of and improvements to airport facilities, such as runways, taxiways, parking lots, and hangars, would be the same as described above for highway projects.

The magnitude and degree of impacts and mitigation would vary based on the amount and type of habitat loss and area of direct and indirect disturbance. Aviation facilities are generally located away from developed areas and occur in more natural habitat areas that experience little or no disturbance. For this reason, the loss and disturbance of these habitats associated with airport improvements are more likely to result in a greater degree of impacts on biological resources than from highway and roadway improvements.

Combined Impacts and Mitigation Measures of the Proposed RTP Alternatives

Alternative 1: “Unconstrained” Projects

This alternative contains the most project components, because this alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. Therefore, because of the greater number of projects, it is likely that there could be more impacts on biological resources under this alternative than under other alternatives and subalternatives. The combined impacts and necessary mitigation measures for this alternative are identified below.

Significant Impacts

Implementation of this alternative would result in the following significant biological resources impacts:

- Impact BIO-2: Potential Introduction or Spread of Noxious Weeds
- Impact BIO-3: Loss or Disturbance of Riparian Habitats
- Impact BIO-7: Potential Direct and Indirect Impacts on Special-Status Fish Species
- Impact BIO-8: Conflict with Local Policies or Ordinances Protecting Biological Resources

Implementation of the following mitigation measures would reduce the impacts identified above to a less-than-significant level:

- Mitigation Measure BIO-3: Conduct a Noxious Weed Survey and Document Noxious Weed Infestation
- Mitigation Measure BIO-4: Avoid the Dispersal of Noxious Weeds into Uninfested Areas
- Mitigation Measure BIO-5: Identify and Document Riparian Habitat
- Mitigation Measure BIO-6: Avoid and Minimize Disturbance of Riparian Habitats
- Mitigation Measure BIO-7: Compensate for the Loss of Riparian Habitat
- Mitigation Measure BIO-14: Assess and Document Habitat for Special-Status Fish Species
- Mitigation Measure BIO-15: Avoid and Minimize Impacts on Special-Status Fish and Their Habitat
- Mitigation Measure BIO-16: Consult with NMFS or USFWS when Listed Fish Species May Be Affected, and Initiate Essential Fish Habitat Consultation with NMFS when Chinook Salmon May Be Affected
- Mitigation Measure BIO-17: Review Local City and County Policies, Ordinances, and Conservation Plans and Comply with Requirements

Significant Unavoidable Impacts

Implementation of this alternative would result in the following significant and unavoidable biological resources impacts:

- Impact BIO-1: Potential Disturbance or Loss of Special-Status Plant Populations as a Result of Highway Projects
- Impact BIO-4: Disturbance or Loss of Waters of the United States (Including Wetlands)
- Impact BIO-5: Potential Disturbance or Loss of Special-Status Wildlife Species and Their Habitat

Implementation of the following mitigation measures would reduce the impacts identified above, but not to a less-than-significant level for all projects:

- Mitigation Measure BIO-1: Document Special-Status Plant Populations
- Mitigation Measure BIO-2: Avoid or Minimize Impacts on Special-Status Plant Populations by Redesigning the Project, Protecting Special-Status Plant Populations, and Developing a Transportation Plan (if necessary)
- Mitigation Measure BIO-8: Identify and Delineate Waters of the United States (Including Wetlands)
- Mitigation Measure BIO-9: Avoid and Minimize Disturbance of Waters of the United States, Including Wetland Communities
- Mitigation Measure BIO-10: Compensate for the Loss of Wetland Habitat

- Mitigation Measure BIO-11: Document Special-Status Wildlife Species and Their Habitats
- Mitigation Measure BIO-12: Avoid and Minimize Impacts on Special-Status Wildlife Species by Redesigning the Project, Protecting Special-Status Wildlife Habitat, and Developing a Mitigation Monitoring Plan (If Necessary)
- Mitigation Measure BIO-13: Coordinate with Resource Agencies and Develop Appropriate Compensation Plans for State- and Federally-Listed Wildlife Species

These impacts and mitigation measures are described in detail above, for the specific RTP components.

Subalternative 1a: Maintenance, Safety, and Community Enhancement Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on biological resources probably would be less extensive than would occur under Alternative 1.

Subalternative 1b: Congestion Relief Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on biological resources probably would be less extensive than would occur under Alternative 1.

Subalternative 1c: Economic Opportunities Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on biological resources probably would be less extensive than would occur under Alternative 1.

Subalternative 1d: Combined Projects Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on

biological resources probably would be less extensive than would occur under Alternative 1.

Alternative 2: No Project, or “Current Plan”

There are fewer project components in the No-Project Alternative than in Alternative 1 because the currently adopted RTP, which would remain in place in lieu of the 2001 RTP, does not include the New Candidate projects that have been identified since the last RTP update. Therefore, it is likely that there would be fewer impacts on biological resources under this alternative than under Alternative 1.

Chapter 7

Cultural Resources

Introduction

This section provides an overview of the historical themes and types of cultural resources likely to be encountered in Stanislaus County, and provides a program-level evaluation of the potential impacts of the RTP on cultural resources in the county. The potential impacts of the RTP alternatives are qualitatively compared to those of the RTP components in this chapter. A discussion of the measures that would be used to mitigate significant impacts is also presented.

Setting

Overview of Historical Themes and Resources

Stanislaus County is located in the San Joaquin Valley, at the heart of California's fertile Central Valley, which stretches 300 miles through the center of the state. The county straddles two mountain ranges, the Sierra Nevada foothills in the eastern portion and the Diablo Range in the west. Several rivers traverse the county, including the San Joaquin, Tuolumne, and Stanislaus Rivers; there are two major man-made waterways: the California and Hetch Hetchy Aqueducts, although the Hetch Hetchy is underground for most of its length.

Dairy products, almonds, apricots, melons, tomatoes, wine grapes, peaches, walnuts, and poultry products are some of the area's top commodities. With a population exceeding 180,000, Modesto is the largest city in the county and has been the county seat since 1871.

Native American Occupation

Prehistoric Background

South of the Stockton area, the San Joaquin Valley is one of the least archaeologically researched regions in California. The San Joaquin Valley covers a large area, and significant variation over time and from place to place is apparent, further complicating research. Drawing extensively from excavations in Merced County, a general synthesis of the prehistory of this portion of the San Joaquin Valley is summarized by Moratto (1984).

Early occupation of the San Joaquin Valley is associated with Paleoindian artifacts, typified by the Clovis fluted spearpoint and the bones of extinct megafauna, including mammoth and giant ground sloth. Tulare Lake is well known for these artifacts, although data from controlled archaeological studies are few. Well-dated sites of this antiquity are extremely rare, but analogous sites elsewhere in California have dated to 10,000–8500 B.C.

A few sites between Sacramento and the Stanislaus River are cited as evidence of the poorly dated Farmington Complex, which consists of flaked-stone artifacts, usually made out of the tough “Farmington chert,” and core tools, reworked flakes, scrapers, and hammerstones. Dates attributed to the complex depend on how the artifacts are associated with dates from geomorphological studies; estimates place it at about 10,000–5000 B.C. One site in Stanislaus County, CA-Sta-44, was believed to be part of the Farmington Complex. However, charcoal in the gravels at the site were dated to the last 2,000 years, although it has been argued that the charcoal resulted from fires long after deposition of the artifacts occurred.

Later archaeological occupation of the San Joaquin Valley is better documented. Olsen and Payen devised a chronology for the San Joaquin Valley based on western valley sites in 1969, and proposed four temporally distinct complexes: Positas, Pacheco, Gonzaga, and Panoche. The earliest complex, the Positas Complex, dating between 3300 and 2600 B.C., is characterized by small, shaped mortars; short, cylindrical pestles; milling stones; perforated, flat cobbles; and spire-topped *Olivella* beads.

The Pacheco Complex, beginning in approximately 2600 B.C. and ending in roughly A.D. 300, has been divided into two phases. The earlier, Pacheco Phase B (2600–1600 B.C.), is characterized by foliated bifaces, rectangular *Haliotis* (abalone) ornaments, and thick, rectangular *Olivella* beads. The later Pacheco Phase A (1600 B.C.–A.D. 300) is represented by more varied types of shell beads; *Olivella* beads of spire-ground, modified saddle, saucer, and split-drilled types, as well as *Haliotis* disc beads and ornaments.

The Gonzaga Complex (A.D. 300–1000) is characterized by extended and flexed burials; bowl mortars and shaped pestles; squared- and tapered-stem projectile points; few bone awls and grass saws; and a shell industry composed of

distinctive *Haliotis* ornaments and rectangular, split-punched, and oval *Olivella* beads.

The Panoche Complex (A.D. 1500 to European Contact) is characterized by the presence of few millingstones, and varied mortars and pestles; small, side-notched arrow points; clamshell disc beads; *Haliotis* epidermis disc beads; *Olivella* lipped, side-ground, and rough disc beads; and bone awls, whistles, saws, and tubes. Flexed burials and primary and secondary cremations are found.

The artifacts that characterize these complexes indicate that the San Joaquin Valley was occupied by people who depended on gathering acorns and hunting. Materials found in strata representing the last 5,000 years indicate that the prehistoric inhabitants of the central San Joaquin Valley had wide-ranging trade relationships with the peoples of the Sacramento–San Joaquin River Delta (Delta), the Pacific coast, the Sierra Nevada foothills, and the southern inland areas. However, little specific information is known about the indigenous peoples who once occupied Stanislaus County, such as how they may have moved seasonally, their residences, their diets, their relationships with neighboring groups, and what caused the changes in their cultures over time.

Associated Resource Types

There is a high potential for significant prehistoric sites to be found in Stanislaus County. Prehistoric archaeological sites in the San Joaquin Valley often have subtle manifestations on the ground surface. Pit houses, assembly areas, and “dance floors” may be apparent as only slight depressions; scatters of stone waste flakes from the manufacture of stone tools may be the only surface indication of occupation layers with more extensive artifact assemblages. Village sites generally include a wide range of artifacts and food remains, structural remains or features, midden (soil chemically changed by longer occupation), and sometimes human remains. Village sites tend to be near permanent sources of fresh water, particularly confluences of rivers, and on rising ground, which is particularly important on the flood-prone valley floor. Temporary campsites tend to be smaller and have smaller and less diverse assemblages of artifacts and features. Temporary camps are usually located near seasonally available fresh water, such as drainages or vernal pools; small benches near creeks or ridges overlooking springs are common sites. Locations where only one or two resources were acquired are often even more restricted in scope; such sites may include rock outcrops containing bedrock mortars, fine stone that was quarried for tools, or areas where plants were processed, with only a few artifact types present. These sites, focusing on a single resource, would occur in or very near the resource that was used, such as oak woodlands, canyons where rock was exposed, or meadows where certain plants once flourished. Successful gathering or hunting trips may be indicated by scatters of freshwater shell or burnt mammal bone.

The Central Valley has high rates of sediment accumulation, and prehistoric sites in the Central Valley were often occupied repeatedly. Consequently, archaeological sites in the valley can extend many feet below the surface, and

although damage to the surface of a site may be extensive, sometimes deeper layers are undisturbed. Mounded occupation or cemetery sites are well-known occurrences, and despite substantial damage, many of these sites have retained significant archaeological deposits.

Finally, rock art in the Central Valley is relatively rare; obviously, it is restricted to locations where bedrock outcrops or boulders are found. Both petroglyphs (where the design is carved or pecked) and pictographs (where the design is painted) are found in the San Joaquin Valley. There is potential for such sites to be located in proposed project locations. These sites are significant because they reflect ceremonial, artistic, or functional activities that are not usually represented by other kinds of archaeological sites. Their rarity and informational value alone make them significant, but such sites also have importance to modern Native American groups.

Ethnography

At the time of the first Euroamerican occupation of California, most of Stanislaus County was inhabited by the Northern Valley Yokuts. The western edge of the county, in the Diablo Range, was the territory of the Ohlone/Costanoan people, and the eastern edge of the county, east of Knight's Ferry, was occupied by the Central Sierra Miwok (Kroeber 1925; Levy 1978a, 1978b; Milliken 1994; Wallace 1978).

Northern Valley Yokuts

The Northern Valley Yokuts are one of the three groups of Yokuts, a culturally and linguistically similar group of people who inhabited the San Joaquin Valley and its surrounding foothills at the time of Spanish contact. Because they were affected earlier and more intensely by European settlement than the other Yokuts groups, far less is known about the Northern Valley Yokuts than their Foothill and Southern Valley counterparts. It appears that the Northern Valley Yokuts' territory was the valley floor from the bend in the San Joaquin River at Mendota to the Bear Creek area north of Stockton, although the northern boundary is disputed and the western boundary not well documented.

The Yokuts spoke numerous dialects, which are divided by anthropologists into Foothill and Valley groups. Socially, the Yokuts were divided into tribelets with names derived from place-names. Larger village groups were led by a chief or headman who inherited the advisory position from his father. It is possible that Northern Valley Yokuts society was divided into two clans, or *moieties*, as the Southern and Foothill groups were, although the most basic level of social organization was the family.

Yokuts were generally mobile gatherers and hunters with semipermanent villages, which were usually located on low rises near sources of water. These villages were occupied repeatedly for generations. Seasonal movements of small family groups to temporary camps provided the opportunity to make use of different food resources in other environmental zones. In addition to earth-covered sweat lodges, the Northern Valley Yokuts constructed single-family, oval-shaped dwellings made of tule mats attached to a framework of poles.

Large communal or ceremonial assembly areas probably mark larger village locations.

The Northern Valley Yokuts relied heavily on the abundant supply of acorns and salmon in their area. Their diet also included many other kinds of fish; grass seeds and meal made from tule roots; and almost certainly waterfowl, tule elk, and pronghorn once found in large quantities in the area. Trade added to the diet, and brought in exotic materials. Mussels, abalone, and shell beads were obtained through trade with the Ohlone/Costanoan and Salinan to the west. Paiute and Shoshone groups on the eastern side of the Sierra Nevada supplied obsidian. Trading relations with Miwok groups yielded baskets and bows and arrows. A network of trails facilitated overland transport, and tule rafts were used for water transport.

The technology employed by the Northern Valley Yokuts is not well known, but they certainly employed a variety of flaked and ground stone and bone tools, as well as textiles made from the many plants and pelts available. The Northern Valley Yokuts were probably similar to their neighbors in being highly skilled basketmakers. Other Yokuts groups used finely fashioned stone bowls for cooking; it is probable that pottery was rarely used.

Ohlone/Costanoan

The Ohlone/Costanoans are a linguistically defined group composed of approximately 50 autonomous tribelets, speaking 8 distinct, but related, languages. The name *Costanoan* is a Spanish word referring to the group's coastal location; the term *Ohlone* is a tribal name used concurrently during the last century. The territory of the Ohlone/Costanoan people extended along the Pacific coast from San Francisco south to just beyond Carmel, and as far as 60 miles inland, encompassing a lengthy coastline as well as several inland valleys (Breschini et al. 1983). The western portion of Stanislaus County coincides with the territory of speakers of the Tamyen and Mutsun languages. The primary source for ethnographic information about the Ohlone/Costanoan is the Culture Element Distribution list compiled by Harrington (1942). Other sources include the notes of explorers, missionaries, and seafarers who came into contact with the Ohlone/Costanoans. Much of this information has been summarized by Levy (1978a).

The Costanoan were politically organized by tribelet, each tribelet having a designated territory. Marriages were polygamous, households were generally composed of patrilineally extended families, and clans and moieties were the basis for group identification.

The Costanoans were hunter-gatherers, relying heavily on acorns and marine foods. A wide range of other foods, however, was also exploited. These foods included various seeds (growth was promoted by controlled burning), buckeye, berries, roots, land and sea mammals, waterfowl, reptiles, and insects. Technologies employed included tule balsas used for watercraft, bows and arrows, cordage, sea otter blankets, twined basketry (Levy 1978a), and the usual range of lithic and bone tools.

Central Sierra Miwok

Unfortunately, there is little ethnographic information available about the Miwok from the Contact era to the early 20th century; most ethnographic work with them has been conducted since the 1940s. A descriptive summary of the Sierra Miwok has been compiled by R. Levy (1978b), and more specific information was gathered from Gardner and Madsen (1976).

The Miwok are composed of three distinct cultural groups spread across Northern California from the San Francisco Bay to the Sierra Nevada. The Miwok speak dialects in five language groups within the Utian language family. The Central Sierra Miwok are a subgroup of the Sierra Miwok, and traditionally occupied the area from the Calaveras watershed to the northern side of the Tuolumne River. Their western boundary stretched into the lower foothills to Knight's Ferry, and the eastern boundary was effectively the crest of the Sierra Nevada (Gardner and Madsen 1976, Levy 1978b).

Distinctions between linguistic and regional subgroups are interesting primarily to anthropologists and archaeologists and mean little to the Miwok (Shipley 1978). The primary Miwok political unit was the tribelet, which was composed of several more-or-less-permanent settlements and numerous seasonally occupied camps and which represented an independent, sovereign nation that defined and defended territory. Also of political significance were lineages that consisted of localized groups, associated with a particular area of country and named for the ancestral spot from which the lineage arose. The Central Sierra Miwok also were split into intermarrying moieties, with moiety affiliation decided by the parents at the birth of each child.

The basic subsistence strategy of the Sierra Miwok was seasonally mobile hunting and gathering that made use of the diversity provided by Sierra Nevada ecozones. The only cultivated crop was tobacco, and the only domesticated animals were dogs. Intentional burning conducted in August assured an ample supply of seed-bearing annual plants and forage for game. Acorns, the primary staple, were gathered in fall and stored through winter. The Miwok ate more meat in winter, when only stored plant resources were available.

Miwok technology included bone, stone, antler, wood, and textile tools. Basketry items included seed beaters; cradles; sifters; rackets used in ball games; and baskets specifically designed for storage, winnowing, parching, and carrying burdens. Other textiles included mats and cordage. Tule balsas were constructed for navigation on rivers and in the Delta.

The Sierra Miwok constructed four types of structures. Conical structures of bark were used in the mountains, whereas those made of tule matting were used more in the lower elevations of the central Sierra Nevada. Semisubterranean earth-covered dwellings served as winter homes. Also within Miwok settlements were acorn granaries, menstrual huts, sweathouses, conical grinding huts over bedrock mortars, and two types of assembly houses. Large semisubterranean structures were the focal point of ritual and social gatherings.

Euroamerican Contact

The Ohlone/Costanoan peoples first encountered Europeans when Spanish explorers arrived in 1602. Seafaring Spaniards may have visited occasionally after that, but the first sustained occupation of the region began with the colonizing of Monterey in 1769. By 1797, seven missions had been founded in Ohlone/Costanoan lands, disrupting all the native populations in the region and beginning the erosion of their cultures. The Northern Valley Yokuts groups were certainly affected by early missionization, but the impacts increased in the early 1800s, when the Spanish began exploring the Delta.

Epidemics of diseases introduced by Europeans played a large role in decimating the native population. With the secularization of the missions and the release of neophytes, tribal and territorial adjustments were set in motion: people returned to other groups and territories, and a number of polyglot “tribes” were formed.

The Sierra Miwok, protected by their rugged territory, were less influenced by Spanish and Mexican settlement, but were profoundly affected by the consequences of the Gold Rush. The Gold Rush served as the final blow to aboriginal populations in Northern California. In the rush to the mines and the subsequent settlement of the area by miners and opportunists, native populations were pushed out of their traditional territories. Ex-miners settling in the fertile valleys applied further pressure to the native groups, in addition to altering landforms and waterways.

Although the present-day Yokuts and some bands of Miwok are federally recognized and have small pockets of land reserved for them, the Ohlone/Costanoans were decertified from federal recognition in the early 20th century. Some bands of Ohlone/Costanoans are actively petitioning for reinstatement, and litigation is ongoing.

Associated Resource Types

There have been a number of ethnographically documented village locations reported in Stanislaus County; however, their preservation may be poor. Ethnographic or Contact-era camps and resource-procurement sites may also exist in the area. Data retrieved from these sites likely would be significant because so little is known about Contact-era native groups. Ethnographic or Contact-era sites also may be important to modern groups. Finally, such sites may overlie extensive prehistoric archaeological components, which may be significant as well. Ethnographic village locations are usually found along rivers, particularly confluences, and on bluffs or hills near sloughs. Contact-era sites are frequently located in the vicinity of early Euroamerican settlements, or in hard-to-reach locations near seasonal sources of water.

Types of cultural resources associated with present-day Northern Valley Yokuts, Ohlone/Costanoans, and Central Sierra Miwok include sacred areas, locations for gathering basketry materials and other plant resources, and traditional locations for social or ceremonial assemblies. Such places are likely to be important to modern groups, and loss or damage of these locations may adversely affect their cultures. Sacred sites are often found on summits or prominent outcrops, in

caves, or around unusual features of the landscape. Modern resource-gathering areas are dependent on the resources being sought, and the attitude of local landowners, but generally they are adjacent to vehicle access roads, including highways. Caltrans is actively cooperating with the California Indian Basketweavers' Association to lower pesticide use and promote native plants along state rights-of-way, assisting in the continuation of this culturally important activity.

Early Euroamerican Settlement

Historical Background

In general terms, Spanish settlement of Alta California was limited to a thin coastal strip and represented by the chain of missions constructed in the late 1700s. Exploration of the Central Valley at that time was limited to the pursuit of escaped neophytes, the punishment of raiders, and the location of lost or stolen cattle. By the early 1800s, Spanish explorers such as Lieutenant Gabriel Moraga were leading more frequent expeditions into the Central Valley. After Mexico achieved independence from Spain in 1821, colonization of California progressed with more numerous rancho lands granted by the Mexican governors. Most ranchos were located in the areas of the missions, but there were some ranchos in the San Joaquin and Sacramento Valleys. With only five ranchos, which were clustered along the rivers, the area that would become Stanislaus County remained primarily unsettled by Euroamericans before the California Gold Rush (Rawls and Bean 1993).

Associated Resource Types

In Stanislaus County, there are no known standing structures dating to the pre-Gold Rush era, but there is the potential for archaeological sites from this era to exist. Because documentary evidence about the construction of the ranchos and the daily lives of their varied inhabitants is scant, archaeological evidence about such complexes would be significant. Central compounds and scattered outbuildings may still be represented by foundations, floors, remnants of walls, refuse deposits, and privies. There also may be human remains associated with these locations.

Mining

Historical Background

After the gold discovery of 1848, immigrants flocked to California. Early settlement patterns in Stanislaus County indicate that Gold Rush participants forsook valley lands and towns for the foothills of the Sierra Nevada. Communities of that early period, such as La Grange and Knight's Ferry, were

primarily mining camps that sprang up along the Tuolumne and Stanislaus Rivers. By the early 1850s, some 2,000 miners worked the area around La Grange alone (Tatam 1994). This early mining of the river bars was accomplished using picks, shovels, pans, rockers, long toms, and sluices. Most of the mining during this initial period of the Gold Rush was confined to rivers and their tributaries because water was lacking elsewhere in the region. The initially rich placer deposits of the river bars were depleted by the 1860s, and many miners moved on to new areas or settled in farms and towns in the Central Valley.

Small-scale mining operations in the region continued throughout the late 1800s, but by the early 1900s, new dredging technology effectively put an end to the drift and placer mining that had been prevalent in the area (Askin and Litzinger 1980). Dredging reinvigorated gold mining operations along the Tuolumne River. In 1907, Colonel Jefferson Doolittle and two partners constructed a dredge near La Grange that dug \$8.25 million in gold over the next two decades. Dredging operations continued in the area until late 1942, when the federal government imposed a moratorium on the mining of nonessential metals for the duration of World War II. Following the war, dredging resumed and continued until 1959 (Tatam 1994).

Associated Resource Types

There are few standing structures associated with the early mining era, and they are concentrated in La Grange and Knight's Ferry. Because of their rarity, buildings and structures associated with the early mining period are likely to be historically significant.

There is also a high potential for other historic resources associated with mining to be located in the county. Archaeological remnants of early mining activities in the region may include mines, prospect pits, and tailings piles, as well as campsites and refuse associated with early miners. Because of the disturbance caused by later mechanical dredging, most early mining sites along rivers probably have been destroyed. Those that remain are more likely to be in smaller drainages or valleys and, because of their scarcity, are more likely to be historically and archaeologically significant.

Later dredging activities are likely to have left behind a variety of associated historical remains. Mechanical mining activities may have had profound effects on the landscape: dredge tailings may extend for miles away from a river course, and the waterways may have been created or extensively modified by dredging. Such areas are often assessed as part of larger districts; the districts themselves are likely to be historically significant, and individual features within the districts may be considered important both in their own right and as contributing elements of the district.

Although few structures may remain at mining company offices and surrounding residences, the refuse deposits, privies, and other kinds of archaeological deposits

around the structures may be able to yield important information about the lives of the people who lived and worked in the area. It is also worth noting that early mining camps were sometimes located on or immediately next to Native American villages or camps.

Agricultural Development

Railroads and Early Agriculture

By the 1860s, larger and more permanent settlements sprouted along the Stanislaus River, including the towns of Oakdale, New Hope, Adamsville, and Paradise. Many early residents of these towns were disenchanted gold seekers who realized the agricultural potential of the valley lands (Maino 1970). Initially, wheat was the primary crop because it provided farmers with a source of income relatively quickly. Other cereal grains, such as barley and oats, were also common. Steamboats and small barges plying the San Joaquin River provided early transportation for freight and passengers alike. Hill's Ferry and Grayson became important shipping points for wheat during the 1860s (Kyle 1990). Numerous settlements were established on the San Joaquin, Stanislaus, and Tuolumne Rivers, particularly at ferry crossing points, but the river towns were generally abandoned in favor of railroad towns during the 1870s.

Agricultural development was spurred when the Central Pacific Railroad (later Southern Pacific Railroad) came to Stanislaus County. By 1870, Collis Huntington, Leland Stanford, Mark Hopkins, and Charles Crocker announced plans to connect the northern and southern California via railroad. Rather than connecting San Francisco directly with Los Angeles, the "Big Four" built the railroad through the San Joaquin Valley, because valley lands were generally flat and largely government owned. Government land was considered ideal because land grants secured by the railroad could be located directly along the route's right-of-way. Sales of this granted land by the railroad helped finance overall construction costs. Furthermore, the rich agricultural land of the area provided a natural market for the railroad, which eventually carried manufactured goods into the valley and hauled out produce and other commodities to market (Rawls and Bean 1993).

By the 1870s, the wheat boom of California, which began in the early 1860s and lasted until the early 1890s, was in full swing. With rich lands and reliable rail transport, Stanislaus County farmers produced millions of bushels of wheat annually during the 1870s and 1880s. However, dependence on a single cash crop left farmers vulnerable to droughts and low commodity prices. When the two combined in the early 1890s, farmers aggressively diversified their operations. Some turned to dairying and began growing alfalfa to feed their livestock, while others transitioned to growing fruits and vegetables.

Irrigation and Diversified Agriculture

As the wheat bonanza came to a close in Stanislaus County during the 1890s, farmers realized that a dependable system of irrigation was necessary to ensure a more stable agricultural economy. Although irrigation was in use on a limited basis during the last half of the 19th century, it was not until the early 20th century that the needed irrigation system, as imagined by county residents, was completed. As a result of the 1887 Wright Act, both Modesto and Turlock formed irrigation districts. The La Grange Dam was constructed by 1893, but only in 1903, after years of court battles, did irrigation water finally began flowing (Barnes 1987).

Implementation of the new irrigation system expanded opportunities for diversification. For example, alfalfa quickly became an important crop, providing feed for the growing herds of dairy cattle; the cultivation of orchard crops such as peaches, apricots, almonds, and oranges also became possible. Irrigation led to a new agricultural boom in Stanislaus County during the early 20th century. Although the agricultural economy fluctuated during the 20th century, it remains the mainstay in the county to this day.

Water remains a vital part of the politics and economy of the county. The county's geographical position (spanning the Central Valley) has necessitated irrigation, drainage, storage, and flood control systems to regulate surface and subsurface water levels.

Associated Resource Types

Although inventories of historic resources have focused on cities in Stanislaus County, there are undoubtedly numerous farms and ranches that potentially have historical significance. Associated features may include farm/ranch houses, barns and other outbuildings, water tanks, fields, irrigation canals and ditches, and access roads. In addition, grange halls, rural churches, and other meeting places were important components of rural communities. Typical archaeological features found on farms and ranches include the remains of former buildings, refuse deposits, privies, and line camps, all of which can illuminate the daily lives of the people who created them.

Railroad lines and associated structures may have historical significance because of their role in the development of the area. In addition, because the Southern Pacific Railroad played a critical role in the state's history, branch lines and other features associated with that railroad may contribute to a larger historic district or linear feature. Archaeological features found on or near railroads include the grades of abandoned lines and spurs, construction and maintenance yards, and temporary camps for the construction gangs.

Finally, a combination of any of these resources may constitute a rural historic landscape, which may be significant as a historic district. A rural historic landscape constitutes elements of the built and natural environments that

illustrate historic land-use patterns, often agricultural. Components of a rural historic landscape may include buildings and structures; vegetation related to land use; circulation networks; boundary demarcations, such as fences and walls; and associated archaeological sites.

There are numerous structures in Stanislaus County related to the collection and transportation of water. These structures, most prominently the La Grange Dam, the Hetch Hetchy Aqueduct, and the California Aqueduct, almost certainly meet criteria for state or federal historical significance. In addition, smaller features, such as irrigation canals and drainage systems, may meet criteria for historical significance, particularly as contributing elements of a historic district. In Stanislaus County, these are common features that often parallel transportation features; therefore, it is highly probable that transportation corridors will cross them. As with railway corridors, the archaeological sites directly associated with these structures may include construction camps, staging areas, and refuse deposits.

Urban Development

Historical Background

Railroads played a key role in the formation of Stanislaus County's two largest cities, Modesto and Turlock, as well as the smaller towns. As the Central Pacific Railroad tracks were laid through the county, a subsidiary, the Contract and Finance Company, purchased property and established Modesto in 1870 (Maino 1970). The town developed as an agricultural processing center because of its rail connection. During its formative years, Modesto attracted residents of nearby communities, including Empire City, Paradise, and Tuolumne City, all of which lacked a rail connection. The City of Modesto was officially incorporated in 1884 (Gooch 1988). Like Modesto, Turlock was established in 1871 along the railroad line. During the late 19th and early 20th centuries, Turlock developed as a shipping point and retail center for surrounding farms. Southern Pacific Railroad branch lines constructed through the county in the 1880s stimulated small commercial centers, including Oakdale, Waterford, and Newman.

While cultivation of new commodities increased after the turn of the 20th century, the processing segment of the agricultural industry, including canning, construction, and financing, also grew, proving to be a boon for Modesto. In 1910, the city's population was approximately 4,500. Ten years later, the population had increased to more than 9,200. Growth during the 20th century was steady for both Modesto and Turlock and, as of 1990, their respective populations were 164,730 and 42,198. Both cities host a number of manufacturing companies and housing developments, and businesses are no longer clustered downtown as development of former agricultural land continues (Barnes 1987, Gooch 1988, Stanislaus County General Plan 1994).

The town of Patterson illustrates another historical trend: agricultural colonies of the early 20th century. Thomas W. Patterson, one of the heirs of Rancho del Puerto, founded the town in 1909 as a planned community. Patterson sold the former rancho lands to settlers in various-sized ranch properties and city lots. An irrigation project helped ensure the viability of agricultural operations, which included fruit-tree groves and fruit and vegetable row crops (Kyle 1990).

Associated Resource Types

Numerous buildings and structures have been inventoried in the incorporated cities of Stanislaus County. Many of those resources potentially have historical significance. Associated property types include residences (individual and historic neighborhood districts), commercial buildings (individual and historic “Main Street” districts), institutional buildings (government buildings, private social clubs, churches, etc.), parks and other designed landscapes, agricultural processing facilities, and railroad depots and freight warehouses. Groups of related resources may be significant as historic districts.

Archaeological features associated with urban development may range from buried remnants of whole neighborhoods, such as traditional Chinatowns or workers’ housing blocks, to the remains of individual residences or businesses, particularly the backyard privy pits of residences, which often contain stratified deposits of domestic refuse. Industrial complexes occasionally are addressed archaeologically, particularly for under-documented industries or industries that employed women, ethnic minorities, or migrants.

Relevant Plans, Policies, and Regulations

Federal, state, regional, and local policies regulate the assessment of impacts on archaeological and historic resources. Federal and state policies establish criteria for evaluation of these resources and require consideration of cultural resources in federal and state project planning. County policies regulate activities in unincorporated areas, and city policies regulate activities within municipal areas.

Federal

Additional federal requirements would apply to subsequent project-specific components of the RTP that receive federal funding or otherwise affect federal lands and federal decisionmaking; these additional requirements do not apply to StanCOG’s RTP or this program EIR, but would need to be addressed if federal funding or another federal action (e.g., if federal lands were crossed or a federal permit were required) were triggered at the time of consideration and approval of the specific project. Appendix F provides an overview of the likely federal requirements (including cultural resources) of obtaining federal action approvals for the subsequent projects.

State

CEQA is the primary mandate governing projects under state jurisdiction that may affect cultural resources. However, there are a few other laws governing cultural resources that also may pertain. These include California Public Resources Code 5097.9 et seq. (Native American Heritage) and Health and Human Safety Code 7050.5 et seq. (Human Remains)

As noted earlier, Caltrans performs nearly all types of projects to federal standards for cultural resources. If Caltrans funds, permits, or other permissions are involved, a project may be obliged to comply with federal laws and regulations, primarily the Section 106 process.

Records about Native American graves, cemeteries, and sacred places, as well as information about the location of archaeological sites are exempt from being disclosed to the public under California's equivalent of the Freedom of Information Act (also known as "Sunshine Laws") (California Government Code 6254.10). Such information is considered sensitive and confidential and should not be contained in a public document.

The California Environmental Quality Act

CEQA requires that public or private projects financed or approved by public agencies must assess the impacts of the project on historical resources. *Historical resources* are buildings, sites, structures, objects, or districts, each of which may have historical, architectural, archaeological, cultural, or scientific significance.

CEQA requires that, if a project may cause a substantial adverse change in the significance of a historical resource, alternative plans or mitigation measures must be considered; however, only significant historical resources need to be addressed. Therefore, before impacts are assessed or mitigation measures developed, the significance of cultural resources must be determined. The steps normally taken in a cultural resources investigation for CEQA compliance are to

- identify potential historical resources;
- evaluate the eligibility of historical resources; and
- evaluate the impacts of a project on all eligible historical resources.

According to CEQA, a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant impact on the environment (CEQA rev. 1998, Section 15064.5[b]). CEQA further states that a substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired. Actions that would materially impair the

significance of a historical resource are any actions that would demolish or adversely alter the physical characteristics of a historical resource that convey its historical significance and qualify it for inclusion in the California Register of Historical Resources (CRHR) or in a local register or survey that meet the requirements of Sections 5020.1(k) and 5024.1(g) of the Public Resources Code.

Policies Concerning Native American Heritage

California Public Resources Code 5097.9 states that no public agency or a private party on public property shall “interfere with the free expression or exercise of Native American religion” The code further states that

no such agency or party [shall] cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine ... except on a clear and convincing showing that the public interest and necessity so require.

County and city lands are exempt from this provision, except for parklands larger than 100 acres.

Policies Concerning Human Remains

Disturbance of human remains without the authority of law is a felony (California Health and Safety Code, Section 7052). If the remains are Native American in origin, they are within the jurisdiction of the Native American Heritage Commission (NAHC) (California Health and Safety Code, Section 7050.5c; Public Resources Code, Section 5097.98).

According to state law (California Health and Safety Code, Section 7050.5, California Public Resources Code, Section 5097.98), if human remains are discovered or recognized in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until

- the County Coroner has been informed and has determined that no investigation of the cause of death is required; and
- the Coroner makes a determination that the remains are Native American or has reason to believe they are Native American, in which case the Coroner must contact NAHC, and
- NAHC determines the most likely descendant; and
 - the most likely descendents of the deceased Native American(s) have made a recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code, Section 5097.98, or

- ❑ NAHC was unable to identify a most likely descendant, or
- ❑ the most likely descendent failed to make a recommendation within 24 hours after being notified by NAHC.

Local

This section presents cultural resources–related policies that could affect or be affected by the RTP. Policies may either support or conflict with proposed project improvements. The policies listed below were excerpted from the Land Use, Open Space, Agriculture, Conservation, Natural Resources, Transportation and Circulation Elements of the Stanislaus County General Plan, and from the general plans of incorporated cities in the county. In addition, excerpts from the long-range plans of transportation system modal components are included.

Stanislaus County

The Conservation/Open Space Element of the Stanislaus County General Plan has established goals to “preserve areas of national, state, regional, and local historical importance,” and to preserve “‘Qualified Historical Buildings’ as defined by the Building Code” (Conservation/Open Space Element, Goal 8, Policies 5 and 6). Except for compliance with CEQA, the only implementation measure for the policy goals that may be relevant to the RTP is the requirement to seek input from the Knight’s Ferry Municipal Advisory Council concerning any development proposals in the historical site zone encompassing Knight’s Ferry.

Modesto

Modesto has a landmark preservation ordinance. This ordinance establishes the recognition, preservation, enhancement, perpetuation, and use of structures, natural features, sites, and areas within the City of Modesto as having historic, architectural, archaeological, structural engineering, or aesthetic significance. The eligibility of a site is determined through a recommendation by the Modesto Landmark Preservation Commission, followed by a public hearing and final determination by the City Council (Modesto Landmark Preservation Commission).

When a project proposes to alter a building older than 45 years, or when construction would occur within 100 feet of such a building, data sufficient to indicate the historical significance of the building must be submitted to the City. If a resource is found to be historically significant locally, the City requires the implementation of measures to preserve that resource. If archaeological resources are discovered during construction, all activity must cease in the area until a qualified archaeologist has evaluated the find according to CEQA guidelines.

Turlock

In the City Design Element of the Turlock General Plan, the Historic Preservation section states the following guiding policy: “Integrate historic preservation into planning for Downtown and other areas with historic significance.” Implementing policies recommend adopting a historic preservation district for Downtown and forming a historic preservation committee.

Hughson

The Open Space and Conservation Element of the Hughson General Plan includes a cultural resource conservation policy: “Incorporate programs for the identification and restoration of historic or architecturally significant resources....”

Oakdale

Section 4.4 of the Open Space and Conservation Element of the Oakdale General Plan relates to historical preservation. Generally, this section outlines goals to preserve the older portions of the city as a basis of its heritage. Policies include instructions to conduct cultural resources surveys before approving development-plans and to consider establishing “flexible zoning regulations to encourage preservation of structures and architectural styles.”

Oakdale does not have a specific historic preservation ordinance. However, there is a historic-cultural overlay district that encompasses the central business district and surrounding residential areas. Any action requiring a city permit for work within the district requires design review by the appointed committee.

Newman

The Newman General Plan lists specific implementation policies to achieve the goal of preserving historic resources. Those policies include instructions to complete an inventory of historic buildings and sites; adopt the state Historical Building Code; revise the zoning ordinance, as appropriate, to create historic districts with standards for preservation and development; and adopt a historic preservation ordinance.

The City has a historic preservation overlay district for which all new building permits must undergo design review by an architectural review committee. This process applies to commercial and industrial developments as well as new residential subdivisions.

Waterford

In the Open Space and Conservation Element of the Waterford General Plan, Goal 7.5 encourages restoration and maintenance of historic buildings or sites. However, no implementing policies are listed for this goal.

Patterson

The Patterson General Plan Goal V. D. is “to preserve and enhance Patterson’s historical heritage.” Policies to achieve this goal include instructions to establish historic districts; nominate properties for listing in the NRHP or CRHR; support preservation and renovation; and favor relocation over demolition.

Implementation of Goal V. D. occurs through a design review process, which is triggered by permit applications for work within an overlay district. Projects deemed likely have an impact on historical resources must be reviewed. The district primarily covers the downtown commercial area. In addition, the Patterson Historical Society maintains a list of buildings of special historical interest.

The General Plan Goal V. F. is “to protect Patterson’s Native American Heritage.” Policies include instructions to coordinate with the Central California Information Center regarding development proposals and evaluate archaeological site potentials using guidance set forth in Appendix K of the State CEQA Guidelines.

Impacts and Mitigation Measures

Introduction

Although the RTP does not provide specific plans for transportation-related undertakings, implementation of general policies for transportation improvements and enhancements may have an impact on historic and archaeological resources in the plan area. This section will address the anticipated program-level impacts of the RTP and will identify basic mitigation measures for reducing potential impacts. Further guidance is provided below for identifying and mitigating impacts at the project level.

Some areas covered by the plan are densely populated with older commercial and residential buildings, whereas others contain agricultural properties or rural landscapes. Before initiating activities in areas that support structures over 50 years old, reconnaissance surveys of project areas should be conducted and evaluations prepared to determine which resources would be considered historically significant.

Identification and evaluation of archaeological resources or the possibility for them to exist within project areas is also necessary. These studies should comply with all applicable federal, state, and local laws and regulations. It is important that such studies be completed as early in the planning process as possible to allow for consideration of a full range of mitigation alternatives, if mitigation is necessary. Before conducting any cultural resources investigations, project planners should consult with the lead agency to establish appropriate methods, define the study area (*area of potential effects*), and agree upon procedures for consultation with interested parties.

Minimally, archaeological identification and sensitivity assessment studies require that a qualified archaeologist conduct

- a records search at the official state archive for Stanislaus County, which is the Central California Information Center of the California Historic Resources Inventory System;
- research using other appropriate reference materials;
- a pedestrian survey or examination of exposed ground surface; and
- written documentation of the results of the study, an assessment of the sensitivity of the project area for archaeological resources, and recommendations for further work.

The archaeological sensitivity assessment may be based on the presence of artifacts or features on the ground surface, similarities of topography or geography to other archaeologically sensitive areas, reports of previous discoveries in the area, or evidence revealed during archival or other documentary research. Consultation with various state and federal agencies, Native American groups, local historical societies, and other interested or knowledgeable parties may also be appropriate or required.

If archaeological resources are discovered, or if the potential for them to exist in the area is considered significant, additional work to discover their nature, extent, and significance may be necessary. Such work is conducted to establish whether the archaeological resources appear to meet the criteria for inclusion in the NRHP or the CRHR. This work should be conducted according to the applicable federal or state guidelines and regulations, in consultation with the lead agency and other appropriate agencies and individuals, and by a qualified archaeologist. Evaluations of the significance of archaeological sites usually include (but are not limited to)

- additional archival research;
- writing of a research design and treatment plan for any discovered resources;
- excavation or other types of fieldwork;
- analysis of the artifacts and other data;
- special studies, such as geomorphological or palynological studies;

- preparation of a technical report; and
- appropriate archival curation of the artifacts and accompanying data.

The technical report should document the findings of the archival and field research, evaluate the ability of the site to meet the criteria for inclusion in the NRHP or CRHR, and make recommendations, if necessary, for mitigation of project impacts on any significant sites.

Archaeological sites are most often determined to be eligible or ineligible for inclusion on the NRHP or the CRHR based on data recovered during excavation, not on the basis of surface finds or archival research alone.

Methods and Assumptions for the Impact Analysis

This analysis is a preliminary cultural resources sensitivity study based on secondary source materials related to the prehistory, history, and ethnography of Stanislaus County. The assessment of property types is based on knowledge of the county, as well as general patterns among historic buildings and structures, archaeological sites, and modern cultural locations. This analysis assumes that any development on or near a cultural resource may have a significant impact on that resource. Archaeological resources are sensitive to direct impacts from development. Architectural and modern cultural resources maybe affected by direct impacts or changes to their historic setting. All types of cultural resources may be directly affected by indirect impacts of proposed projects.

The following impacts and mitigation measures will address activity types that could adversely affect cultural and historic resources. Any project that involves these activity types would be required to implement the associated mitigation measures in an attempt to reduce the impacts to a less-than-significant level.

Mitigation follows identification of cultural resources, evaluation of their significance, and an assessment of the nature of project impacts. Because the particular mitigation measures appropriate to a specific project will depend on the nature of the impacts and the affected historic resource, mitigation programs must be developed on a project-by-project basis and in consultation with the appropriate agencies or interested parties. Demolition of historic buildings or structures cannot be mitigated to a less-than-significant level.

Criteria for Determining Significance

Appendix G of the State CEQA Guidelines and StanCOG's adopted thresholds of significance were used to determine whether the RTP components would have significant environmental impacts.

State CEQA Guidelines

According to the State CEQA Guidelines, the RTP would have a significant impact on cultural resources if it would

- cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5;
- cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5;
- directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;
- disturb any human remains, including those interred outside of formal cemeteries.

StanCOG Adopted Thresholds of Significance

According to the thresholds established by StanCOG, the RTP would have a significant impact if it would

- damage, disturb, or degrade an archaeological resource that
 - is associated with a state-recognized person or event,
 - provides information of demonstrable public interest and of interest to researchers,
 - is of special or particular quality, or
 - is listed in the NRHP or CRHR; or
- result in substantial adverse changes to historic resources are those that result in
 - demolition of a significant resource;
 - relocation of a significant resource without maintaining integrity;
 - conversion, rehabilitation, or alteration of a significant resource that does not conform to the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings; or
 - construction that reduces the integrity or significance of significant resources in the project area or vicinity.

Impacts and Mitigation Measures of the Proposed RTP Components

The RTP includes numerous projects throughout the county. The projects fall into general categories of activities that may result in various types of impacts on cultural resources.

Impacts Related to Highway Projects

There are several types of projects proposed for highway facilities in Stanislaus County. These include widening highways, constructing or reconstructing interchanges, and creating expressways on highway facilities. The following evaluation identifies impacts related to these projects.

Impact CUL-1: Demolition of Historic Resources

Projects proposed under the RTP may require the demolition or removal of buildings, structures, or cultural landscapes, which may affect historic resources in or around project areas. Demolition of resources considered historically significant under CEQA would result in a significant impact on the environment. Implementation of Mitigation Measure CUL-1 (avoidance) would reduce this impact to a less-than-significant level.

Alteration or relocation, themselves considered impacts, can reduce impacts on some properties to a less-than-significant level, if appropriate mitigation measures are taken (see discussion and mitigation measures for Impacts CUL-2 and CUL-3). However, these remedies are not appropriate for all resources.

Where avoidance proves infeasible, and alteration or relocation is not appropriate, this impact is considered significant and unavoidable. Mitigation Measures CUL-2 through CUL-4 are recommended to soften the impact, although these measures would not reduce it to a less-than-significant level.

Because StanCOG, for this program-level analysis, cannot be certain that no cultural resources will be affected by RTP projects, or that avoidance will be found feasible for all potentially affected resources, this impact is considered significant and unavoidable at the programmatic level.

Mitigation Measure CUL-1: Avoid Cultural Resources and Human Remains

The project proponent shall identify significant cultural resources, including the locations of human remains, and design projects so that the resources (and their settings, if applicable) are avoided and unaffected.

Avoidance is the preferred mitigation measure for all cultural resources; however, avoidance is often not a feasible alternative. When a project has sufficient flexibility, avoidance shall be considered.

Mitigation Measure CUL-2: Conduct Further Study of the Resource to Document and Convey Its Significance

The project proponent shall retain a qualified cultural resource specialist to gather additional information about the historic resource before project implementation. Study of the resource is particularly helpful if the resource is a property type that is not well understood or has not been intensively researched previously. Implementation of this measure may require that cultural resource professionals conduct additional archival research and fieldwork focusing on the resource in question and others of the same property type. This mitigation measure shall be implemented in conjunction with Mitigation Measures CUL-3 and CUL-4.

Mitigation Measure CUL-3: Obtain Standard Photographic and Written Documentation

The project proponent shall retain a qualified cultural resource specialist to document the affected resource to Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) standards. HABS and HAER are programs to document historic resources formally through the use of large-format photography, measured drawings, written architectural descriptions, and historical narratives. Such documentation packages are entered into the Library of Congress and a second copy is generally archived in the regional information centers of the California Historic Resources Information System. This mitigation measure is not appropriate for archaeological resources.

Mitigation Measure CUL-4: Educate the Public Regarding the Historical Significance of a Resource and Its Importance to the Community

The project proponent shall inform the public directly regarding the historical significance of a resource and its importance to the community. Implementation of this measure can be achieved through many means, including plaques, web sites, brochures, museum exhibits, and public art.

Impact CUL-2: Alteration or Restoration of Historic Resources

Projects proposed under the RTP may require the alteration, renovation, or restoration of existing historic buildings, structures, or cultural landscapes considered significant under CEQA. Changing such features may affect their ability to meet the criteria of the NRHP or CRHR, and are therefore considered a significant impact.

Implementation of Mitigation Measures CUL-1 (avoidance), or Mitigation Measure CUL-5 (standard alterations) and Mitigation Measure CUL-6 (design review) would reduce this impact to a less-than-significant level. Relocation, itself an impact, may also be appropriate mitigation for some historic resources, but only if other appropriate mitigation measures are taken (see Impact CUL-3 below).

Mitigation Measure CUL-1: Avoid Cultural Resources and Human Remains

This mitigation measure is described above, under Impact CUL-1.

Mitigation Measure CUL-5: Ensure that Alterations Conform to the Secretary of the Interior's Standards

The project proponent shall ensure that any alterations to historic buildings or structures, including relocation, conform to the Secretary of Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings. This mitigation measure is not appropriate for archaeological resources.

Mitigation Measure CUL-6: Conduct Design Review

The project proponent shall submit project designs for design review by the appropriate parties. Reviewers may include agency officials or a local landmarks commission, depending on the project and the resource affected. Local cultural groups shall be consulted when sacred or traditional cultural properties, or sites containing human remains, would be affected.

If impacts would result from project design, the project shall be redesigned or modified to soften impacts, particularly when the impacts are related to aesthetics or noise. Implementation of this mitigation measure may include, among other solutions, maximizing the distance between new construction and historic resources; using soundwalls with vegetative screening; or limiting the height of a new building or structure.

Impact CUL-3: Relocation of Historic Resources

Projects proposed under the RTP may involve acquiring right-of-way or purchasing parcels, which may lead to the relocation of structures or other resources. Relocation of historically significant buildings and structures could result in a substantial adverse change to historical resources if efforts are not made to maintain their historical integrity. The new setting of a relocated historical resource must be comparable to the original to avoid an adverse impact. Where the setting is not integral to the significance of the resource, implementation of Mitigation Measure CUL-1, or Mitigation Measures CUL-5 and CUL-6, would reduce the impact of relocation to a less-than-significant level.

However, if the specific location of the resource is integral to its significance, and avoidance is not feasible, then relocation is considered a significant and unavoidable impact. Such relocation can make a resource ineligible for the NRHP and the CRHP. Mitigation Measures CUL-2 through CUL-4 are recommended to soften the impacts, although they would not reduce the impact to a less-than-significant level. Relocation of archaeological sites is not appropriate.

Because StanCOG, for this program-level analysis, cannot be certain that no resources will be affected by RTP projects, or that avoidance or appropriate relocation will be found feasible for all potentially affected resources, this impact is considered significant and unavoidable at the programmatic level.

For a discussion of the relocation of individual human remains or a cemetery, please see Impact CUL-5 and Mitigation Measure CUL-7.

Mitigation Measure CUL-1: Avoid Cultural Resources and Human Remains

This mitigation measure is described above, under Impact CUL-1.

Mitigation Measure CUL-4: Educate the Public Regarding the Historical Significance of a Resource and Its Importance to the Community

This mitigation measure is described above, under Impact CUL-1.

Mitigation Measure CUL-5: Ensure that Alterations Conform to the Secretary of the Interior's Standards

This mitigation measure is described above, under Impact CUL-2.

Mitigation Measure CUL-6: Conduct Design Review

This mitigation measure is described above, under Impact CUL-2.

Impact CUL-4: Significant Aesthetic or Noise-Related Changes to the Setting of a Cultural Resource

Transportation-related projects, especially those involving construction of new facilities, may result in changes to the visual environment and the level of noise in an area. These changes may adversely affect historic resources and traditional cultural properties, particularly where the surroundings of the resource are integral to its significance. For example, viewsheds may contribute to the character of a historic landscape or traditional cultural property, and when loud noise (intermittent or constant) is out of character with a historic resource, it may be an impact on the integrity of the resource. Increases in noise levels, however, may not be an impact for historic properties for which noise was a normal aspect, such as manufacturing plants or railroad resources.

Implementation of Mitigation Measures CUL-1 (avoidance) or CUL-5 (standard alterations) and CUL-6 (design review) would reduce this impact to a less-than-significant level.

Mitigation Measure CUL-1: Avoid Cultural Resources and Human Remains

This mitigation measure is described above, under Impact CUL-1.

Mitigation Measure CUL-5: Ensure that Alterations Conform to the Secretary of the Interior's Standards

This mitigation measure is described above, under Impact CUL-2.

Mitigation Measure CUL-6: Conduct Design Review

This mitigation measure is described above, under Impact CUL-2.

Impact CUL-5: Disturbance of Archaeological Resources or Human Remains

Ground disturbance during implementation of highway widening projects may have a significant impact on archaeological resources that may be located in the project area. Much archaeological data is dependent upon the association of artifacts and features with each other; damaging the physical context of archaeological data can reduce the information that can be retrieved. However, previous ground disturbance does not indicate that the site lacks integrity and therefore historic significance. Sites can retain considerable significance and data potential despite disturbances.

Buried archaeological sites or deposits that were not identified during previous research and field studies could be inadvertently unearthed during ground-disturbing activities, possibly resulting in damage to significant archaeological resources. Buried human remains that were not identified during previous research and field studies also could be inadvertently unearthed during ground-disturbing activities, possibly resulting in damage to the human remains. Possible disturbance of archaeological resources or human remains is considered a significant impact. Implementation of Mitigation Measures CUL-1, CUL-4, and CUL-7 through CUL-11, as appropriate, would reduce this impact to a less-than-significant level.

Mitigation Measure CUL-1: Avoid Cultural Resources and Human Remains

This mitigation measure is described above, under Impact CUL-1.

Mitigation Measure CUL-4: Educate the Public Regarding the Historical Significance of a Resource and Its Importance to the Community

This mitigation measure is described above, under Impact CUL-1.

Mitigation Measure CUL-7: Comply with State Laws Pertaining to the Discovery of Human Remains

If human remains are discovered or anticipated, the project proponent and construction contractors shall comply with state laws relating to the discovery and identification of human remains. Compliance may require archaeological fieldwork before construction to determine whether remains are present, cessation of construction in the area of discovery, notification of the County Coroner, consultation with descendants or Native American groups, and relocation of remains by qualified personnel in a culturally and scientifically appropriate manner.

Mitigation Measure CUL-8: Conduct Archaeological Data Recovery

If, following identification and evaluation efforts by a qualified archaeologist, an archaeological site is determined to meet the criteria

for inclusion in the NRHP or the CRHR and avoidance or redesign of the project is not feasible, research and fieldwork to recover and analyze the data contained in that site shall be conducted. This work may involve additional archival and historical research; excavation; analysis of the artifacts, features, and other data discovered; presentation of the results in a technical report; and curation of the recovered artifacts and accompanying data. Consultation with the Advisory Council on Historic Preservation (ACHP), the State Historic Preservation Officer (SHPO), and other interested or knowledgeable parties may also be required or appropriate.

Mitigation Measure CUL-9: Conduct Archaeological Monitoring

If construction or earthmoving activities are proposed for an area that has been determined to be sensitive for archaeological resources or human remains, a qualified archaeologist shall monitor earthmoving activities. Monitoring is not a substitute for the identification, evaluation, or archaeological data-recovery processes. Monitoring shall be conducted where the inadvertent discovery of archaeological resources or human remains is considered possible. Monitoring by an archaeologist and a Native American representative shall be considered for areas where Native American human remains could be discovered.

If the archaeological monitor identifies archaeological resources or human remains, additional recommendations for their further evaluation or treatment shall be made by a qualified archaeologist.

Recommendations may include cessation of earthmoving activities in the vicinity of the discovery; additional fieldwork, including controlled archaeological excavation; and/or consultation with interested or knowledgeable parties, including the SHPO.

Mitigation Measure CUL-10: Halt Work if Cultural Resources are Suspected to Exist in the Project Area

If archaeological or human remains are discovered or suspected, the construction contractor shall cease earthmoving activity in that area and within 100 feet of the discovery. The contractor shall notify the project proponent. The project proponent shall notify the lead agency, and retain a qualified archaeologist to assess the nature, extent, and significance of the find. If necessary, appropriate treatment measures shall be developed by a qualified archaeologist in consultation with the SHPO, lead agency, and other interested or knowledgeable parties. The project proponent shall ensure that these treatment measures are implemented.

Mitigation Measure CUL-11: Cover or “Cap” Archaeological Resources

Properly done, covering or “capping” an archaeological resource can preserve it from further damage and retain its integrity for the future. Capping involves placing appropriate materials on the surface of the site

so that the surface retains its integrity. Materials and methods shall be determined through consultation with parties knowledgeable in archaeological conservation techniques. Capping shall be preceded by substantial recording of the location and extent of the site by a qualified archaeologist and assurances by appropriate jurisdictions that future work in the vicinity will not damage the site or its capping layers. The project proponent and Stanislaus County shall ensure that, despite capping of the site, the underlying resources will be available to future qualified researchers. Because availability to future researchers is a condition of capping, this mitigation measure may not be appropriate for highways, railways, or other vital features of the County's infrastructure that should not be disturbed after construction.

Impact CUL-6: Restriction of Access to Native American Traditional or Religious Sites

Transportation improvements, including highway widenings, could restrict access to previously accessible locations that are important to Native Americans. Improvements such as widened roads or right-of-way fencing could block turnouts or side roads. This is considered a significant impact. Implementation of Mitigation Measure CUL-1 (avoidance) or Mitigation Measure CUL-6 (design review) would reduce this impact to a less-than-significant level.

Mitigation Measure CUL-1: Avoid Cultural Resources and Human Remains

This mitigation measure is described above, under Impact CUL-1.

Mitigation Measure CUL-6: Conduct Design Review

This mitigation measure is described above, under Impact CUL-2.

Impacts Related to Local Road Projects

Local road projects are the largest category of proposed RTP improvements. These include widenings local roads, implementing intersection improvements, constructing new roads, replacing or altering bridges, and implementing operational improvements. Impacts and mitigation measures identified for highway projects, above, also apply to local road projects.

Impacts Related to Bicycle Projects

Several bicycle facility projects are proposed in the RTP. These include widening existing bikeways, installing signage and/or striping bikeways, and implementing railroad crossing improvements. Widening bikeways may result in ground disturbance, but are not expected to result in other impacts on cultural resources.

Impacts Related to Transit Projects

The RTP includes transit facility projects. These projects include building passenger rail stations for high speed, intercity, and commuter rail services, as well as constructing bus maintenance yards.

Construction of passenger rail stations and tracks, as well as construction of bus maintenance facilities, may result in ground disturbance, demolition or relocation of buildings and structures, visual changes, increases in noise levels, and restriction of access to Native American traditional or religious sites. Therefore, impacts and mitigation measures identified for highway projects, above, also apply to transit projects.

Impacts Related to Aviation Projects

Projects related to aviation systems are proposed in the RTP. These projects include constructing airport facilities improvements, such as runways, taxiways, parking lots and hangars. Such projects may result in ground disturbance, demolition or relocation of buildings and structures, visual changes, increases in noise levels, and restriction of access to Native American traditional or religious sites. Therefore, impacts and mitigation measures identified for highway projects, above, also apply to aviation projects.

Combined Impacts and Mitigation Measures of the Proposed RTP Alternatives

Alternative 1: “Unconstrained” Projects

This alternative contains the most project components, because this alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. Therefore, because of the greater number of projects, it is likely that there could be more impacts on cultural resources under this alternative than under other alternatives and subalternatives. The combined impacts and necessary mitigation measures for this alternative are identified below.

Significant Impacts

Implementation of this alternative would result in the following significant cultural resources–related impacts:

- Impact CUL-2: Alteration or Restoration of Historic Resources

- Impact CUL-4: Significant Aesthetic or Noise-Related Changes to the Setting of a Cultural Resource
- Impact CUL-5: Disturbance of Archaeological Resources or Human Remains
- Impact CUL-6: Restriction of Access to Native American Traditional or Religious Sites

Implementation of the following mitigation measures would reduce the impacts identified above to a less-than-significant level:

- Mitigation Measure CUL-5: Ensure that Alterations conform to the Secretary of the Interior's Standards
- Mitigation Measure CUL-6: Conduct Design Review
- Mitigation Measure CUL-7: Comply with State Laws Pertaining to the Discovery of Human Remains
- Mitigation Measure CUL-8: Conduct Archaeological Data Recovery
- Mitigation Measure CUL-9: Conduct Archaeological Monitoring
- Mitigation Measure CUL-10: Halt Work if Cultural Resources are Suspected to Exist in the Project Area
- Mitigation Measure CUL-11: Cover or "Cap" Archaeological Resources

These impacts and mitigation measures are described in detail above, for the specific RTP components.

Significant Unavoidable Impacts

Implementation of this alternative would result in the following significant and unavoidable cultural resources-related impacts:

- Impact CUL-1: Demolition of Historic Resources
- Impact CUL-3: Relocation of Historic Resources

Implementation of the following mitigation measures would reduce the impacts identified above, but not to a less-than-significant level:

- Mitigation Measure CUL-1: Avoid Cultural Resources and Human Remains
- Mitigation Measure CUL-2: Conduct Further Study of the Resources to Document and Convey Its Significance
- Mitigation Measure CUL-3: Obtain Standard Photographic and Written Documentation
- Mitigation Measure CUL-4: Educate the Public Regarding the Historical Significance of a Resource and Its Importance to the Community

These impacts and mitigation measures are described in detail above, for the specific RTP components.

Subalternative 1a: Maintenance, Safety, and Community Enhancement Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on cultural resources probably would be less extensive than would occur under Alternative 1.

Subalternative 1b: Congestion Relief Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on cultural resources probably would be less extensive than would occur under Alternative 1.

Subalternative 1c: Economic Opportunities Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on cultural resources probably would be less extensive than would occur under Alternative 1.

Subalternative 1d: Combined Projects Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on cultural resources probably would be less extensive than would occur under Alternative 1.

Alternative 2: No Project, or “Current Plan”

There are fewer project components in the No-Project Alternative than in Alternative 1 because the currently adopted RTP, which would remain in place in lieu of the 2001 RTP, does not include the New Candidate projects that have

been identified since the last RTP update. Therefore, it is likely that there would be fewer impacts on cultural resources under this alternative than under Alternative 1.

Chapter 8

Hydrology and Water Quality

Introduction

This chapter presents the existing conditions for regional hydrology and water quality in Stanislaus County and provides a program-level evaluation of the potential impacts of the RTP on hydrology and water quality in the county. The potential impacts of the RTP components are qualitatively compared to those of the RTP alternatives in this chapter. A discussion of the measures that would be used to mitigate significant impacts is also presented.

Setting

Regional Hydrology

Surface Water Resources

Three major rivers are located in Stanislaus County: the Stanislaus, Tuolumne, and the San Joaquin Rivers. The entire county is quite dry, with 12 inches of average annual precipitation in the valley.

The Stanislaus River is a principal tributary of the San Joaquin River that originates in the central Sierra Nevada. The watershed of the Stanislaus River is approximately 1,000 square miles. The river's water is used by the Modesto, Oakdale, and South San Joaquin Irrigation Districts.

The Tuolumne River originates at the Mt. Lyell Glacier in Yosemite National Park and drains a watershed of approximately 1,800 square miles. The Modesto and Turlock Irrigation Districts use the river's water to irrigate lands in their jurisdictions. The City and County of San Francisco also use water from the Tuolumne River via the Hetch Hetchy Aqueduct.

The San Joaquin River originates on the western slope of the Sierra Nevada in Fresno County. It flows northwest through Stanislaus County until it joins the Sacramento River to form the Delta. The river's water is used for domestic,

agricultural, industrial, and recreational purposes and carries irrigation return waters, drainage water, groundwater discharge, and treated domestic and industrial wastes.

The county also includes a network of waterways that transport water through the county for use in irrigation and flood control. These waterways include the California Aqueduct, the Hetch Hetchy Aqueduct, the Delta-Mendota Canal, and various irrigation canals.

Groundwater Resources

Groundwater is contained in principally unconsolidated continental deposits; specifically deposits of Pleistocene age, and alluvium and flood basin deposits of Pleistocene and Holocene age. Groundwater is the major source of domestic and industrial water in Stanislaus County, and is used as a supplemental water supply for irrigation.

Three types of groundwater resources underlie the County: groundwater found in unconfined and semiconfined aquifers formed from alluvial deposits, groundwater in confined aquifers derived from alluvial and lake deposits, and saline groundwater occurring in primarily marine formations.

Regional Water Quality

Surface Water Quality

The three major rivers described in the previous section have excellent water quality in their mountain headwaters. As the rivers flow into the San Joaquin Valley, their water quality deteriorates because of inputs of agricultural return flows and nutrients from municipal, industrial, and agricultural sources.

Groundwater Quality

The quality of groundwater is determined by the geologic formation it flows through. Groundwater quality west of the San Joaquin River is currently deteriorating because of three factors: a rising perched water table that exposes groundwater to potential pollutants in the former vadose zone, saline build-up in the soil from leached irrigation water, and drawdown of the regional groundwater system.

Groundwater quality east of the San Joaquin River is good. The major factors that may lead to deterioration include increased pumping around Modesto and runoff of waste from former dairy operations. Groundwater quality is good in the Modesto area except for the extreme eastern portion. Development in this area has increased the amount of impervious surfaces, leading to a decrease in the

amount of rainfall recharged to the underlying aquifer. This decrease in water quantity has resulted in elevated chlorine concentrations.

Relevant Plans, Policies, and Regulations

Federal

Section 303(d) of the Clean Water Act established the Total Maximum Daily Load (TMDL) process to guide the application of state water quality standards (see discussion of state water quality standards below). To identify candidate waterbodies for TMDL analysis, a list of water quality–limited streams was generated by the State Water Resources Control Board (SWRCB). These streams are impaired by the presence of pollutants, including sediment, and are sensitive to disturbance.

The 1972 amendments to the federal Water Pollution Control Act established the National Pollutant Discharge Elimination System (NPDES) permit program to control discharges of pollutants from point sources. The 1987 amendments to the Clean Water Act created a new section of the Clean Water Act devoted to storm water permitting (Section 402[p]). The EPA has delegated permitting authority to SWRCB. SWRCB issues both general and individual permits for stormwater discharges. Construction activities are regulated under the NPDES general permit for construction activities if the total amount of ground disturbance during construction is more than 5 acres. EPA will issue a new general permit in December 2002 for activities that disturb between 1 and 5 acres. The appropriate Regional Water Quality Control Board (RWQCB) enforces the general permit.

Coverage under a general permit requires the preparation of a SWPPP. The SWPPP includes pollution prevention measures (erosion and sediment control measures and measures to control nonstormwater discharges and hazardous spills), demonstration of compliance with all applicable local and regional erosion and sediment control standards, identification of responsible parties, a detailed construction timeline, and a BMP monitoring and maintenance schedule.

Section 401 of the Clean Water Act requires that an applicant pursuing a federal permit to conduct any activity that may result in a discharge of a pollutant obtain a Water Quality Certification (or waiver). Water Quality Certifications are issued by RWQCBs in California.

Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. It requires:

1. avoidance of incompatible floodplain development,
2. consistency with the standards and criteria of the National Flood Insurance Program, and
3. restoration and preservation of the natural and beneficial floodplain values.

State

Section 1603 of the California Fish and Game Code regulates streambed alterations, including release of materials into streams, (see “State Policies and Regulations Concerning Waters of the United States” in chapter 6, “Biological Resources”). A streambed alteration agreement, issued by DFG, could be necessary for work within jurisdictional streams.

Under the Porter-Cologne Water Quality Control Act (Porter-Cologne), SWRCB has the ultimate authority over state water rights and water quality policy. However, Porter-Cologne also established nine RWQCBs to oversee water quality on a day-to-day basis at the local/regional level.

RWQCBs engage in a number of water quality functions in their respective regions. One of the most important functions is preparing and periodically updating Basin Plans (water quality control plans). Each Basin Plan establishes

1. beneficial uses of water designated for each water body to be protected
2. water quality standards, known as water quality objectives, for both surface water and groundwater
3. actions necessary to maintain these standards in order to control nonpoint and point sources of pollution to state waters

Permits issued to control pollution (i.e., NPDES permits) must implement Basin Plan requirements (i.e., water quality standards) that take into consideration beneficial uses to be protected.

Local

Below are water resources policies that could affect or be affected by the RTP. Policies may either support or conflict with proposed project improvements. The policies listed below were excerpted from the Stanislaus County General Plan, and from the general plans of incorporated cities within the county boundaries.

Stanislaus County General Plan

- **Goal 2** of the Stanislaus County General Plan (1994) is to “conserve water resources and protect water quality in the County. The following policies are designed to meet this goal:
- **Policy 5.** Protect groundwater aquifers and recharge areas, particularly those critical for the replenishment of reservoirs and aquifers.
- **Policy 6.** Preserve vegetation to protect waterways from bank erosion and siltation.

- **Policy 7.** New development that does not derive domestic water from pre-existing domestic and public water supply systems shall be required to have a documented water supply that does not adversely impact Stanislaus County water resources.
- **Policy 8.** The County shall continue and, if necessary, expand the water-monitoring program of the Stanislaus County Department of Environmental Resources.
- **Policy 9.** The County will investigate additional sources of water for domestic use.

City of Modesto Urban Area General Plan

The following policies apply to water resources:

- **Policy 2a.** New urban development shall be approved only when the developer shows it to be protected from “100-year” floods.
- **Policy 2b.** Existing urban development within areas subject to a “100-year” flood shall be provided with mitigation measures that offer protection from possible flooding.
- **Policy 2c.** Undeveloped floodway and floodplain areas shall be preserved for non-urban use.
- **Policy 2d.** Appropriate emergency plans for the safe evacuation of people from areas subject to inundation from dam failure shall be reviewed and periodically updated.
- **Policy 3a.** All of the Flood Hazard Policies adopted for the Baseline Developed Area apply equally within the Planned Urbanizing Area.

City of Turlock General Plan

Policies 6.2-a and 6.2-b guide water resource decisions in the City of Turlock.

- **Policy 6.2-a.** Continue efforts to safeguard the quality and availability of Turlock’s water supply.
- **Policy 6.2-b.** Undertake steps to minimize the depletion of groundwater reserves.

City of Hughson General Plan

The City of Hughson has the following policies relative to hydrology and water quality:

- **Policy 2(a).** The City will adopt and maintain a storm drain master plan for the City, including planned growth areas.
- **Policy 2(b).** The City will require fees in conjunction with new development to offset the cost of developing permanent drainage facilities.
- **Policy 2(c).** The City will require temporary drainage facilities where needed with new development when permanent facilities are not available.
- **Policy 3(a).** Adopt, as a City policy, provisions set forth in the updated Stanislaus County Civil Defense Plan with regard to earthquake and emergency preparedness for dam failure inundation.

City of Oakdale General Plan

The City of Oakdale has the following policy related to hydrology and water quality:

- **Policy OS-4.** Areas identified as significant groundwater recharge areas, both within the 2015 Boundary and in the adjacent County areas, should not be developed unless it includes features, which promote infiltration and groundwater recharge.

City of Newman General Plan

The City of Newman has the following policy related to hydrology and water quality:

- **Policy VI.A.6.** Prior to project approval, the City shall require developers to prepare and implement a soil erosion and sediment control plan that includes features such as mitigation of sediment runoff beyond project boundaries and revegetation and stabilization of disturbed soils.

City of Riverbank General Plan

The City of Riverbank has the following goals related to hydrology and water quality:

- **Goal IV.** To preserve the Stanislaus River and its riparian habitat from urban intrusion.
- **Goal V.** To prevent any erosion of soils.

City of Waterford General Plan

The City of Waterford has the following policies relative to hydrology and water quality:

- **Policy 7.4.1.** The surface and groundwater quality of Waterford shall not be degraded.
- **Policy 7.7.1.** The City shall adopt water conservation measures, which reduce water consumption, by user type.
- **Policy 7.7.2.** The quality and quantity of surface water runoff from a property shall not exceed existing flows or existing quality and shall comply with City standards for offsite drainage.
- **Policy 8.1.5.** The City shall develop standards for building within the 100 and 500 year floodplain.

City of Patterson General Plan

The City of Patterson has the following policies related to hydrology and water quality:

- **Policy VI.A.1.** The City shall prohibit the establishment of any new septic systems within areas where City sewer and water service will be available in the foreseeable future.
- **Policy VI A.2.** The City shall seek the elimination of existing septic tanks in urbanized areas.
- **Policy VI A.3.** In reviewing major new development proposals, the City shall consider the project's potential for adversely affecting water quality in the San Joaquin River and the area's groundwater resources.
- **Policy VI A.4.** The City shall regularly monitor water quality in City wells for evidence of toxics, saltwater intrusion, and other contaminants.
- **Policy VI A.5.** The City shall utilize the CEQA process to identify and avoid or mitigate potential groundwater pollution problems resulting from new commercial and industrial development.
- **Policy VI A.6.** The City shall support efforts at the county, regional, and statewide levels to reduce runoff of toxic agricultural chemicals into Salado Creek and the San Joaquin River.
- **Policy VI A.7.** The City shall implement measures to minimize the discharge of sediment into Salado Creek and the San Joaquin River.

Impacts and Mitigation Measures

Methods and Assumptions for the Impact Analysis

This assessment was limited to a qualitative evaluation of environmental impacts with respect to hydrology and water quality. The assessment did not include any sampling, site-specific review, laboratory analysis, or inspection of buildings or potential project sites.

Criteria for Determining Significance

Appendix G of the State CEQA Guidelines and StanCOG's adopted thresholds of significance were used to determine whether the proposed general plan would have a significant environmental effect.

State CEQA Guidelines

According to the State CEQA Guidelines, the RTP would have a significant effect on hydrology and water quality if it would

- violate any water quality standards or waste discharge requirements;
- substantially deplete groundwater supplies or interfere substantially with groundwater recharge;
- substantially alter the existing drainage pattern of the site or area;
- create or contribute runoff that would exceed the capacity of an existing or planned stormwater management system;
- degrade surface or groundwater quality;
- place structures within a 100-year floodplain;
- expose people or structures to significant risk from flooding; or
- increase the likelihood of inundation by seiche, tsunami, or mudflow.

StanCOG Adopted Thresholds of Significance

According to the thresholds established by StanCOG, the RTP would have a significant effect on hydrology and water quality if it would

- Degrade surface or groundwater quality

Impacts and Mitigation Measures of the Proposed RTP Components

Impacts Related to Highway Projects

There are several types of projects proposed for highway facilities in Stanislaus County. These include proposals to widen highways, construct or reconstruct interchanges, and create expressways on highway facilities. Below is an evaluation of impacts related to proposed projects located on highway facilities.

Impact HWQ-1: Potential Accelerated Erosion as a Result of Grading and Land-Clearing Activities

Land clearing and grading would be part of any road-widening project. Exposed soil can, depending on topography, soil type, and season, erode and move towards wetlands and bodies of water in the vicinity of the projects. This sediment could negatively influence life-history requirements for aquatic biota. These biological impacts are discussed further in chapter 6. Increased sediment loads can also result in increased water treatment costs and decrease aesthetic and recreational values. These consequences of potential erosion are considered significant. Implementation of Mitigation Measure HWQ-1 would reduce this impact to a less-than-significant level.

Mitigation Measure HWQ-1: Prepare and Implement SWPPPs

For projects that would disturb more than 5 acres during construction, StanCOG shall require project proponents to obtain coverage under the NPDES general permit by preparing and implementing SWPPPs. Beginning in December 2002, project proponents shall be required to prepare a SWPPP for projects disturbing between 1 and 5 acres. The SWPPP shall include pollution prevention measures (erosion and sediment control measures, measures to control stormwater runoff and nonstormwater discharges, and measures to prevent and respond to hazardous spills), demonstration of compliance with all applicable local and regional erosion and sediment control standards, identification of responsible parties, a detailed construction timeline, and a BMP monitoring and maintenance schedule.

Impact HWQ-2: Violation of Water Quality Standards, Waste Discharge Requirements, or Other Degradation of Surface or Groundwater Quality during Construction

The chief pollutant of concern for highway projects is sediment. As discussed above, potential impacts from sediment are considered significant. The accidental release of hazardous substances or substances that exceed RWQCB Basin Plan Standards is also a significant impact, even though Phase I and Phase II investigations may have been completed. Implementation of Mitigation Measure HWQ-1 would reduce this impact to a less-than-significant level.

Mitigation Measure HWQ-1: Prepare and Implement SWPPPs

This mitigation measure is described above, under Impact HWQ-1.

Impact HWQ-3: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge

Widened highways, new or improved interchanges, and other highway projects may result in an increase of paved (impermeable) surfaces. Any increase in impervious area within a groundwater recharge area could reduce the amount of water that percolates into underlying aquifers. Although the average contribution to groundwater from percolating rainwater is considered minimal, reducing the amount of recharge is considered a significant impact. Implementation of Mitigation Measure HWQ-2 would reduce this impact to a less-than-significant level.

Mitigation Measure HWQ-2: Design and Install Infiltration Devices

StanCOG shall require project proponents to design and install infiltration devices that reproduce the natural recharge rates of the soil that would be paved over.

Impact HWQ-4: Substantial Alteration of the Drainage Pattern of the Project Site

The projects are not expected to substantially alter existing drainage patterns. Grades would be restored to existing conditions to the extent practicable. In addition, any required stormwater management system would be designed to mimic existing drainage patterns to the extent practicable. Therefore, the impact is considered less than significant. No mitigation is required.

Impact HWQ-5: Increase in Runoff Peak Flows and Volumes

The increase in impervious surfaces associated with highway widenings is expected to contribute to a slight increase in runoff peak flows and volumes, compared to existing conditions. If postconstruction flows are not controlled, the scouring and localized flooding could occur. This is considered a significant impact. Implementation of Mitigation Measure HWQ-3 would reduce this impact to a less-than-significant level.

Mitigation Measure HWQ-3: Design and Implement Stormwater Management Measures

StanCOG shall require the project proponent to design and implement stormwater management measures that result in the runoff peak flows and volumes being similar to those under existing conditions. Any proposed stormwater management system shall be designed to manage runoff volumes and peak flows from storm events up to and including the 25-year, 24-hour design storm.

Impact HWQ-6: Creation or Contribution of Runoff that Would Exceed the Capacity of an Existing or Proposed Stormwater Management System

The projects would not create or contribute runoff that would exceed the capacity of existing stormwater management systems. Any proposed stormwater management system would be designed to manage runoff peak flows and volumes (See Mitigation Measure HWQ-3). Therefore, this impact is considered less than significant. No mitigation is required.

Impact HWQ-7: Placement of Structures in the 100-Year Floodplain

Projects located within 100-year floodplain (figure 6-2) would require a location hydrology study to assess whether floodflows would pass through bridges or other project-related facilities. This impact is considered less than significant. No mitigation is required.

Impact HWQ-8: Exposure of People or Structures to Significant Risk from Flooding

The projects are not expected to expose people or structures to flooding. The projects would be located outside of the floodplains of rivers and creeks. All culverts and bridges would be sized to prevent additional flooding. Therefore, this impact is considered less than significant. No mitigation is required.

Impact HWQ-9: Increased Likelihood of Inundation by Seiche, Tsunami, or Mudflow

The projects are located away from large inland waterbodies and the Pacific Ocean. Therefore, potential impacts from seiche and tsunami are highly unlikely. The projects will also take place in relatively flat areas. Potential impacts from mudflows are also highly unlikely. Therefore, the impact is assumed to be less than significant. No mitigation is required.

Impacts Related to Local Road Projects

Local road projects are the largest category of proposed RTP improvements. These include road widenings, intersection improvements, expressways on local roads, new construction, and operational improvements. Below is a discussion of impacts related to proposed projects located on local roads.

The impacts related to local road projects would be the same as those described above for highway projects. No additional impacts on hydrology and water quality would occur beyond those described above.

Impacts Related to Bicycle Projects

Several bicycle facility projects are proposed in the RTP. These include proposals to widen existing bikeways, install signage and/or striping for bikeways, and implement railroad-crossing improvements for bikeways. Below is a discussion of impacts related to proposed projects for bicycle facilities.

The impacts related to bicycle projects would be the same as those described above for highway projects. No additional impacts on hydrology and water quality would occur beyond those described above.

Impacts Related to Transit Projects

The RTP includes transit facility projects. These projects include passenger rail stations for high-speed, intercity, and commuter rail services, as well as bus maintenance yards. Below is a discussion of impacts related to proposed transit facilities.

The impacts related to the construction of passenger rail stations for high-speed, intercity, and commuter rail services, as well as bus maintenance yards, would be similar to those described above for highway projects. However, there would be the additional possibility of hazardous substance releases during operation of maintenance yards and refueling areas.

Impact HWQ-10: Violation of Water Quality Standards, Waste Discharge Requirements, or Other Degradation of Surface or Groundwater Quality during Operation of Maintenance Yards or Refueling Areas

Hazardous substance releases from maintenance yards and refueling areas may violate water quality standards, waste discharge requirements, or otherwise degrade surface or groundwater quality. However, StanCOG would require project proponents to follow an approved business plan that includes hazardous material response and notification procedures. The impact is therefore considered less than significant. No mitigation is required.

Impacts Related to Aviation Projects

Projects related to aviation systems are proposed in the RTP. These projects include improvements to airport facilities such as runways, taxiways, parking lots, and hangars. Below is a discussion of impacts related to projects proposed for aviation facilities.

Impacts related to improvements of airport facilities, such as runways, taxiways, parking lots, and hangars, would be the same as those described above for transit projects.

Combined Impacts and Mitigation Measures of the Proposed RTP Alternatives

Alternative 1: “Unconstrained” Projects

This alternative contains the most project components, because this alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. Therefore, because of the greater number of projects, it is likely that there could be more impacts on hydrology and water quality under this

alternative than under other alternatives and subalternatives. The combined impacts and necessary mitigation measures for this alternative are identified below.

Significant Impacts

Implementation of this alternative could result in the following hydrology and water quality–related impacts:

- Impact HWQ-1: Potential Accelerated Erosion as a Result of Grading and Land-Clearing Activities
- Impact HWQ-2: Violation of Water Quality Standards, Waste Discharge Requirements, or Other Degradation of Surface or Groundwater Quality during Construction
- Impact HWQ-3: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge
- Impact HWQ-5: Increase in Runoff Peak Flows and Volumes

Implementation of the following mitigation measures would reduce the impacts identified above to a less-than-significant level:

- Mitigation Measure HWQ-1: Prepare and Implement SWPPPs
- Mitigation Measure HWQ-2: Design and Install Infiltration Devices
- Mitigation Measure HWQ-3: Design and Implement Stormwater Management Measures

These impacts and mitigation measures are described in detail above, for the specific RTP components.

Significant Unavoidable Impacts

There would be no significant unavoidable impacts of this alternative on hydrology and water quality. No mitigation measures are proposed.

Subalternative 1a: Maintenance, Safety, and Community Enhancement Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on hydrology and water quality probably would be less extensive than would occur under Alternative 1.

Subalternative 1b: Congestion Relief Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on hydrology and water quality probably would be less extensive than would occur under Alternative 1.

Subalternative 1c: Economic Opportunities Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on hydrology and water quality probably would be less extensive than would occur under Alternative 1.

Subalternative 1d: Combined Projects Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on hydrology and water quality probably would be less extensive than would occur under Alternative 1.

Alternative 2: No Project, or “Current Plan”

There are fewer project components in the No-Project Alternative than in Alternative 1 because the currently adopted RTP, which would remain in place in lieu of the 2001 RTP, does not include the New Candidate projects that have been identified since the last RTP update. Therefore, it is likely that there would be fewer impacts on hydrology and water quality under this alternative than under Alternative 1.

Chapter 9

Geology, Soils, and Hazardous Materials

Introduction

This chapter discusses the geology, soils, and hazardous materials conditions in Stanislaus County, and provides a program-level evaluation of the potential impacts of the RTP associated with geology, soils, and hazardous materials in the county. Mineral resources are also discussed but will not be affected by the RTP. The potential impacts of the alternatives are qualitatively compared to those of the RTP components in this chapter. A discussion of the measures that would be used to mitigate impacts determined to be significant is also presented.

Setting

Regional Geology

Stanislaus County consists of three distinct geologic regions: the eastern dissected uplands, the San Joaquin Valley, and the western mountains. The eastern portion of the county comprises Pliocene and Pleistocene nonmarine and sedimentary deposits, recent river- and major stream–channel deposits, Pliocene nonmarine sedimentary rocks, Quaternary nonmarine terrace deposits, undivided Eocene and Miocene nonmarine sedimentary rocks, and Jurassic and/or Triassic metavolcanic rocks. The San Joaquin Valley portion is primarily made up of recent alluvial fan deposits, recent river- and major stream–channel deposits, and recent basin deposits. The western mountain portion of the county is composed of rocks of the Franciscan Formation, Mesozoic rocks, upper Cretaceous marine sedimentary rocks, Paleocene and Eocene marine sedimentary rocks, and Pliocene nonmarine sedimentary rocks (County of Stanislaus 1987).

Regional Geologic Hazards

Faults

Several faults extend through the county, although most have been inactive for the last 150 million years. The Ortigalita fault in the western portion of the county has been active within the last 12,000 years and has an associated Alquist-Priolo Earthquake Fault Zone.

Ground Shaking

Stanislaus County is subject to a range of ground-shaking intensities. Using the Modified Mercalli Intensity Scale of 1931 as a reference, the eastern half of the county can be expected to have an intensity of VI or VII, producing minor to moderate damage. The western half of the county can be expected to have an intensity of VII or VIII, producing considerable damage to ordinary structures (County of Stanislaus 1987). The probability of liquefaction (i.e., temporary loss of soil strength) and related ground failures is expected to be highest in areas that are subject to ground shaking; have clean, unconsolidated alluvial sediments and soils; and have groundwater within 50 feet of the ground surface.

Landslides

The Diablo Range in the western portion of the county are more prone to landsliding than other areas. Of the two geologic formations in this portion of the county (the Franciscan Formation and the Great Valley sequence), the Franciscan Formation is considered more unstable. Landslides in the Great Valley sequence is common adjacent to the Tesla-Ortigalita fault and along streams and roadcuts (County of Stanislaus 1987).

Soils

The SCS (now known as the Natural Resources Conservation Service [NRCS]) has mapped 30 different soil associations in the eight physiographic provinces in the county (Stanislaus Area Association of Governments 1993). In the portion of the county where most of the RTP projects would be implemented (east of I-5), there are six physiographic provinces and 16 soil associations. The physiographic provinces in this area are recent alluvial floodplains, basin lands, young alluvial fans, moderately old fans, low alluvial terraces, and high alluvial terraces. The following sections briefly describe the soil associations within each of the six physiographic provinces.

Recent Alluvial Floodplains

Soils in this physiographic province are members of the Columbia-Grangeville-Temple and the Honcut-Wyman associations. These soils are very young because of the repeated deposition of alluvium. Slopes are generally level. These soils are deep and range from very well drained and productive to poorly drained and saline-alkaline. Erosion hazard is estimated to be low.

Basin Lands

Soils in this physiographic province are members of the Camarillo-Orestimba, Waukena-Fresno, and Capay associations. Slopes are generally level. These soils are generally alluvial in origin and are poorly drained because of their high clay content. Some of these soils would be considered expansive under the Uniform Building Code. Erosion hazard is estimated to be low.

Young Alluvial Fans

Soils in this physiographic province are members of the Hanford-Tujunga, Vernalis-Salado-El Solyo, Hilmar-Delhi, Dinuba-Hanford, Myers-Stomar, and Modesto-Chualar associations. Slopes are generally level. These soils are generally found adjacent to the floodplains and basin lands on both sides of the San Joaquin River. Erosion hazard is estimated to be low.

Moderately Old Fans, and Low Alluvial Terraces

Soils in these physiographic provinces are members of the Azcharis-Positas, San Joaquin-Madera, and Madera associations. Slopes are generally level with some variability in the rolling hills. These soils are generally older than the soils of the young alluvial fans, resulting in rock-like hardness at shallow depths east of the San Joaquin River. Erosion hazard is estimated to be low to moderate.

High Alluvial Terraces

Soils in this physiographic province are members of the Whitney-Montpelier-Rocklin and Redding-Pentz-Peters associations. Slopes are generally level with some variability in the rolling hills. Where the land surface is nearly level or only gently undulating, the soils have a subsoil of dense clay or a hardpan. The soils have a lower clay content on the rolling hills. Erosion hazard is estimated to be low to moderate.

Mineral Resources

Significant sand and gravel resources exist in the floodplain and terrace deposits along the Stanislaus River along SR 108 between the towns of Riverbank and Knights Ferry. Based on a review of the Map of Principal Mineral-Producing Localities (California Department of Conservation and U.S. Geological Survey 1999), Stanislaus County is a major producer of construction sand and gravel.

Presence of Hazardous Materials

This section presents an overview of the potential for encountering hazardous materials in Stanislaus County. One source of information on hazardous materials in the RTP area can be found in the Central Valley RWQCB's Site Cleanup and Leaking Underground Storage Tank lists (State Water Resources Control Board 2001). These lists, updated quarterly, identify sites by name and street address, identify the pollutants of concern, and identify the agency overseeing cleanup activities.

Hazardous substances include both hazardous wastes and hazardous materials. In general, a material or waste is classified as hazardous if it is one of more than 700 chemicals specifically listed in the CCR; if it contains one of these chemicals; or if it is reactive, ignitable, corrosive, or toxic. Because of their potential threat to public health and the environment, hazardous substances are closely regulated by federal, state, and local laws that focus on controlling their production, handling, storage, transportation, and disposal.

Federal and state environmental laws provide that all property owners be required to pay for cleanup, when necessary, of contamination by hazardous materials on or originating from their land. Because of the potential liability, purchasers or developers of commercial, industrial, or agricultural property should perform environmental assessments before development or purchase. In addition to being liable for cleanup, the owner can be responsible for toxic effects on human health, and measures should be taken to avoid exposing people to hazardous materials.

Although there is already a substantial list of sources of hazardous materials in the project area, there may be other sources that have yet to be identified. Gas stations and industrial activities located next to the roadways in the planning areas may have released hazardous materials to the environment. Farms and other agricultural activities may have also released hazardous materials to the environment. The Union Pacific Railroad right-of-way could contain contamination of surface soils from creosote-treated wood used for railroad ties and power poles and slag that may have been used as track ballast. To determine the full extent of possible hazardous materials sources, Phase I and Phase II hazardous materials site assessments would need to be completed for suspect parcels in and adjacent to specific project areas. These assessments are beyond the scope of this program-level analysis.

The first step in identifying sources of hazardous materials is to conduct a database search of federal, state, and local agency records. A database search is the principle source of information to verify the presence of hazardous materials/wastes in the RTP planning area. The results of these searches include lists of sites with known, potential, or existing hazardous materials in a specified search area. Individual sites can occur on several lists for the same reason and are sometimes repeated under different names on the same list. A summary of the databases that should be searched is presented below.

Lists such as the National Priorities List of Superfund Sites (NPL), the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS), Annual Workplan (AWP), the CAL-SITES Database, Cortese, the Toxic Pit List, and the aforementioned Leaking Underground Storage Tank list indicate sites with known soil and/or groundwater contamination or high potential for contamination.

Relevant Plans, Policies, and Regulations

Federal

Geology and Soils Regulations

Non-point source pollution from sediment is regulated under NPDES requirements. EPA has delegated authority to SWRCB to administer the NPDES program. The general permit is enforced by one of the nine RWQCBs. A project that would result in the disturbance of more than 5 acres of land must obtain coverage under the state's general permit for construction activities. Development of a SWPPP (which includes erosion and sediment control measures) is required to obtain coverage under the general permit. A SWPPP for each RTP project that exceeds the 5-acre disturbance threshold would be prepared and implemented. Beginning in December 2002, project proponents will be required to prepare a SWPPP for projects disturbing between 1 and 5 acres.

Hazardous Materials Regulations

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) of 1976 (substantially amended in 1984), administered by EPA, is the principal federal legislation regulating hazardous waste. RCRA imposes reporting, permitting, and operation control requirements on those who generate, treat, store, or dispose of hazardous materials or hazardous waste. RCRA is implemented by Title 40 of the CFR. The recent amendments to this act involve stringent monitoring of landfills and regulation of underground storage tanks for hazardous materials and hazardous wastes.

Comprehensive Environmental Response, Compensation, and Liability Act

In response to cleaning up pre-RCRA hazardous waste sites, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 1980 (commonly referred to as “Superfund”). Consequently, abandoned hazardous waste sites had to be inspected and cleaned up, and the waste had to be properly disposed.

Superfund Amendments and Reauthorization Act

The risk to those exposed to hazardous waste as a result of RCRA and CERCLA was addressed in the Superfund Amendments and Reauthorization Act (SARA) of 1986. As a result of SARA, the federal Occupational Safety and Health Administration (OSHA) published hazardous waste clean-up regulations in Section 29 CFR 1910.120.

Federally Reported Environmental Data

National Priorities List of Superfund Sites

The NPL is EPA’s database of more than 1,200 sites designated for priority cleanup under the Superfund program. NPL sites may encompass relatively large areas.

Resource Conservation and Recovery Information System (RCRIS)

The RCRIS is an EPA database that includes selective information on sites that generate, transport, store, treat, and/or dispose of hazardous waste as defined by RCRA. Identification on this list does not indicate that there has been an impact on the environment.

Comprehensive Environmental Response, Compensation and Liability Information System

CERCLIS is an EPA database that contains information on potential hazardous waste sites that have been reported to EPA by states, municipalities, private companies, and individuals, pursuant to Section 103 of CERCLA. CERCLIS contains sites that are either proposed for or on the NPL, as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

Corrective Action Report (CORRACTS)

CORRACTS is an EPA database that identifies hazardous waste handlers with RCRA corrective action activity.

RCRA Administrative Action Tracking System (RAATS)

RAATS is an EPA database that contains records based on enforcement actions issued under RCRA pertaining to major violators, and includes administrative and civil actions brought by EPA.

PCB Activity Database System (PADS)

PADS is an EPA database that identifies generators, transporters, commercial storers, and/or brokers and disposers of polychlorinated biphenyls (PCBs) who are required to notify EPA of such activities.

State Policies

Geology and Soils Regulations

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was signed into law December 22, 1972, and went into effect March 7, 1973. The act, codified in the Public Resources Code as Division 2, Chapter 7.5, has been amended 11 times. The purpose of the act is to prohibit the construction of most structures for human occupancy across the traces of active faults and to thereby mitigate the hazard of fault rupture (Public Resources Code, Section 2621.5).

The California Surface Mining and Reclamation Act

The California Surface Mining and Reclamation Act (Pub. Res. Code, Section 2710 et seq.) establishes statewide mineral conservation policies that are implemented by counties and cities through local surface mining ordinances. The ordinances apply to surface mining operations and would not be applicable to the RTP. Nonetheless, these policies discourage local governments from allowing new incompatible uses (essentially defined as permanent, urban uses) in areas identified by the state geologist as containing mineral resources that are either locally important or of statewide value.

Uniform Building Code

The Uniform Building Code (UBC) is updated periodically by the International Conference of Building Officials. The UBC is a standard reference in California for earthquake and seismic design measures.

Hazardous Materials Regulations

California regulations governing hazardous materials are, at least, as stringent as federal regulations. The state has been granted primacy (primary responsibility for oversight) by EPA to administer and enforce hazardous waste management programs. State regulations also have detailed planning and management requirements to ensure that hazardous materials are properly handled, stored, and disposed of to reduce human health risks. California regulations pertaining to hazardous waste management are published in the CCR, previously called the California Administrative Code. Title 26, administered by the California EPA (Cal-EPA), is the largest state code and incorporates all the regulations that deal with toxic materials from other titles.

Department of Toxic Substances Control

Regulation for hazardous waste management at the state level falls primarily under CCR, Title 22, which is overseen by the Department of Toxic Substances Control (DTSC). The DTSC regulates the treatment, storage, and disposal of hazardous waste in accordance with CCR, Title 22, and the federal regulations, 40 CFR. DTSC administers the state and federal superfunds for cleanup of major hazardous waste contamination sites.

Regional Water Quality Control Board

Responsibilities for water quality control fall primarily under CCR, Title 23, which is overseen primarily by RWQCBs. The RWQCBs are responsible for protecting beneficial uses of water. Beneficial uses, which can be actual or potential, include municipal water supply, recreation, industrial water supply, and agricultural water supply. The RWQCBs have authority to supervise hazardous waste cleanup at sites referred by local agencies and cases where water quality is affected or threatened.

The DTSC or applicable RWQCB may be responsible for cleanup of significant contamination by hazardous wastes. The agencies often coordinate with each other to ensure that the requirements of each agency are implemented and consistent.

California Occupational Safety and Health Administration

Health and safety regulations applying to investigation and cleanup of sites contaminated with hazardous waste are enforced by the California OSHA (Cal-OSHA) under CCR, Title 8, and the adopted federal regulations, 29 CFR 1910.

Reported Environmental Data

Annual Workplan

The AWP database, formerly Bond Expenditure Plan (BEP), is compiled by Cal-EPA and identifies known hazardous substance sites targeted for cleanup.

CAL-SITES (formerly ASPIS)

The CAL-SITES database is compiled by Cal-EPA and lists known and potential hazardous waste sites.

Notify 65

The Notify 65 database is compiled by SWRCB and contains Proposition 65 notification records about any release that could affect drinking water and thereby expose the public to a potential health risk.

The California Hazardous Material Incident Report System

The California Hazardous Material Incident Report System (CHMIRS) database is compiled by the Office of Emergency Services (OES) and contains information on reported hazardous material incidents (accidental spills or releases).

Cortese Database

The Cortese database is compiled by Cal-EPA and OES and identifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, sites with known underground storage tanks (USTs) having a reportable release, and solid waste disposal facilities from which there is known migration.

Toxic Pit List

The Toxic Pit List is compiled by SWRCB and identifies sites subject to the Toxic Pit Cleanup Act. The database lists sites suspected of containing hazardous substances where cleanup has not been completed.

Solid Waste Information System

The Solid Waste Information System (SWIS) database is compiled by the Integrated Waste Management Board and contains an inventory of solid waste disposal facilities or landfills. These may be active or inactive facilities or open dumps that failed to meet RCRA criteria for solid waste landfills or disposal sites.

Leaking Underground Storage Tank

The Leaking Underground Storage Tank database is compiled by SWRCB and contains an inventory of reported leaking underground storage tanks statewide.

UST Database

The UST database is compiled by SWRCB and lists registered underground storage tanks. USTs are regulated under Subtitle I of RCRA. Identification on this list does not indicate that there has been an impact on the environment.

Solid Waste Assessment Test Program

The Solid Waste Assessment Test Program (SWAT) database is compiled by SWRCB and contains information on groundwater monitoring of sanitary landfills.

Hazardous Waste Information System

The Hazardous Waste Information System (HWIS) database is compiled by Cal-EPA and identifies hazardous waste generators and hazardous waste treatment, storage, and disposal facilities. Identification on this list does not indicate that there has been an impact on the environment.

Local

Below are geologic and hazardous materials policies that could affect or be affected by the RTP. The policies listed below were excerpted from the Open Space, Conservation, and Safety Elements of the Stanislaus County General Plan, and from the general plans of incorporated cities in the county. Policies may either support or conflict with proposed project improvements.

Stanislaus County General Plan

Geology and Soils

- **Conservation and Open Space Element Policy 16** discourages development on lands that are subject to flooding, landslide, faulting, or any natural disaster to minimize loss of life and property.
- **Conservation and Open Space Element Policy 27** states that the County shall emphasize the conservation and development of lands having significant deposits of extractive mineral resources by not permitting uses that threaten the potential to extract the minerals.
- **Safety Element Policy 1** states that the County will adopt (and implement as necessary) plans to minimize the impacts of a natural disaster.
- **Safety Element Policy 3** states that development should not be allowed in areas that are particularly susceptible to seismic hazard.
- **Safety Element Policy 4** states that development west of I-5 in areas susceptible to landslides (as identified in this element) shall be permitted only when a geological report is presented with a) documented evidence that no such potential exists on the site, or b) identifying the extent of the problem and the mitigation measures necessary to correct the identified problem.
- **Safety Element Policy 5** states that Stanislaus County shall support efforts to identify and rehabilitate structures that are not earthquake resistant.

Hazardous Materials

- **Safety Element Policy 13** requires the County to coordinate efforts to identify hazardous materials and prepare and implement plans for management of spilled hazardous materials as required. The specific implementation measures include: 1) provide planning efforts to locate and minimize effects of hazardous materials through emergency plan and 2) develop an Area Plan for Emergency Response to Hazardous Substance Release.

City of Modesto Urban Area General Plan

Geology and Soils

- **Seismic and Geological Hazards Policy 2(a)** states that the City shall continue to use building codes as the primary tool for reducing seismic risks in structures. The UBC, which has been adopted by Stanislaus County, the City of Modesto, and other cities in the county, is intended to ensure that buildings resist, without collapse, major earthquakes of the intensity or severity of the strongest experienced in California but with some structural as well as nonstructural damage. In most structures, it is expected that structural damage could be limited to repairable damage, even in a major earthquake.

- **Seismic and Geological Hazards Policy 2 (b)** states that the City shall continue to require all new buildings in the City to be built under the seismic requirements of the UBC, 1979 (or subsequent) editions.
- **Seismic and Geological Hazards Policy 2 (c)** requires the City to continue to explore measures to induce building owners to upgrade and retrofit structures to render them seismically safe.
- **Public Safety Policy 1 (a)** Miscellaneous Issues states that any construction which occurs as a result of the general plan must conform with the current UBC regulations, which address seismic safety of new structures and slope requirements. As appropriate, the City will require a geotechnical analysis prior to tentative map review in order to ascertain site-specific subsurface information necessary to estimate foundation conditions. These geotechnical studies should reference and make use of the most recent regional geologic maps available from the California Department of Conservation Division of Mines and Geology.
- **Public Safety Policy 2(a)** states that fluvial erosion related to construction shall be controlled by a construction erosion program which shall be filed with the City Public Works & Transportation Department and kept current throughout any site development phase.
- **Public Safety Policy 2(b)** states that the erosion control program shall include “best management practices” as appropriate, given the specific circumstances of the site and/or project. Table 9-2 in the Master Environmental Impact Report for the City of Modesto Urban Area General Plan presents examples of best management practices.
- **Public Safety Policy 2(c)** states that sediment control basins to capture eroded sediments and contain them on the project sites shall consider appropriate design criteria as outlined in Table 9-3 in the Master Environmental Impact Report for the City of Modesto Urban Area General Plan.

Hazardous Materials

The City of Modesto has no specific goals, policies, or plans related to hazardous materials in its general plan.

City of Turlock General Plan

Geology and Soils

- **Open Space and Conservation Element Policy 6.7-a** requires the City to cooperate with regional agencies to protect significant mineral resources in the RTP area that may be identified in the future.
- **Safety Element Policy 9.2-a** requires the City to continue to use building codes as the primary tool for reducing seismic risk in structures.

Hazardous Materials

- **Open Space and Conservation Element Policy 6.6-f** requires the City to maintain an updated inventory of identified hazardous waste sites.
- **Open Space and Conservation Element Policy 6.6-g** requires that contaminated sites be cleaned up prior to approval of development or land use change.
- **Open Space and Conservation Element Policy 6.6-h** requires the City to update its Master Environmental Assessment periodically to include information on all known contaminated sites in the city.

City of Hughson General Plan

Geology and Soils

- **Safety Element Policy 1(a)** states that the City will continue enforcing its minimum requirement that all new buildings conform to state standards set forth in the Dangerous Building Code, 1979 edition of the UBC.
- **Safety Element Policy 1(b)** states that the City should initiate a building inspection program and dangerous building upgrading and abatement plan.
- **Safety Element Policy 1(c)** requires that the City adopt, as a policy, provisions set forth in the updated Stanislaus County Civil Defense Plan with regard to earthquake and emergency preparedness.

Hazardous Materials

The City of Hughson has no specific goals, policies, or plans related to hazardous materials in its general plan.

City of Oakdale General Plan

Geology and Soils

- **Safety Element Policy S2** states that the City shall maintain and improve the Multi-hazard Functional Plan that addresses identified hazards emergency preparedness and procedures for coordinating public action during times of disaster.
- **Safety Element Policy S26** states that where significant geologic and seismic hazards are evident, project proponents shall be required to either avoid hazards or engineer improvements to minimize exposure of residents or employees.

Hazardous Materials

The City of Oakdale has no specific goals, policies, or plans related to hazardous materials in its general plan.

City of Newman General Plan

Geology and Soils

- **Health and Safety Element Policy VII.A.1** requires the preparation of soils reports for all new development.
- **Health and Safety Element Policy VII.A.2** requires preparation of geotechnical reports for all new major development projects and for projects proposed in areas where geologic hazards may exist.
- **Health and Safety Element Policy VII.A.3** requires underground utilities to be designed to withstand seismic forces.

Hazardous Materials

- **Health and Safety Element Policy VII.C.8** requires that a hazardous materials site assessment be conducted prior to development approval for site, based on historical land uses.

City of Riverbank General Plan

Geology and Soils

One of the City's general plan goals is to prevent the erosion of soils.

- **General Plan Policy A-1** states that the City will work with Stanislaus County to develop an Emergency Plan.
- **General Plan Policy A-2** states that the City will train its personnel in disaster preparedness.
- **General Plan Policy A-3** states that the City will provide the tools to deal with emergencies.

Hazardous Materials

The City of Riverbank has no specific goals, policies, or plans related to hazardous materials in its general plan.

City of Waterford General Plan

Geology and Soils

- **Safety Element Policy 8.1.1** states that the City shall adopt the latest edition of the UBC and Seismic and Dangerous Building Codes as they become available.

Hazardous Materials

The City of Waterford has no specific goals, policies, or plans related to hazardous materials in its general plan.

City of Patterson General Plan

Geology and Soils

- **Safety Element Policy VII.A.1** states that the City shall require preparation of geotechnical reports and impose appropriate mitigation measures to ensure, within limits of technical and economic feasibility, that new structures are able to withstand the effects of seismic activity, including liquefaction.
- **Safety Element Policy VII.A.2** states that underground utilities, particularly water and natural gas mains, shall be designed to withstand seismic forces in accordance with state requirements.

Hazardous Materials

The City of Patterson has no specific goals, policies, or plans related to hazardous materials in its general plan.

Impacts and Mitigation Measures

Methods and Assumptions Used for the Impact Analysis

Geology and Soils

This assessment was limited to a qualitative evaluation of environmental concerns associated with geology, soils, and mineral resources in the county. The assessment involved the use of existing soil surveys and geologic maps. A site visit was not conducted.

Hazardous Materials

This assessment was limited to a qualitative evaluation of environmental concerns associated with the potential presence of hazardous materials in the county. A database search was not conducted. This analysis did not include any sampling, site specific review, laboratory analysis, or inspection of buildings or site surfaces. This assessment is not intended as and does not represent a Phase I site assessment (sometimes referred to as a Preliminary Site Assessment), which would be conducted during subsequent environmental reviews.

Criteria for Determining Significance

Appendix G of the State CEQA Guidelines and StanCOG's adopted thresholds of significance were used to determine whether the RTP would have a significant environmental effect.

State CEQA Guidelines

According to the State CEQA Guidelines, the RTP would have a significant impact related to geology, soils, and mineral resources if it would

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault; strong seismic ground shaking; seismic-related ground failure, including liquefaction; or landslides;
- result in substantial soil erosion or the loss of topsoil;
- be located on a geologic unit or soil that is unstable or that would become unstable as result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- be located on an expansive soil;
- have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater; or
- affect existing and/or future mineral extraction operations.

In addition, the RTP would have a significant impact on the environment related to hazardous materials if it would

- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
- be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- result in a safety hazard for people residing or working in the project area, for projects located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport;
- result in a safety hazard for people residing or working in the project area, for projects in the vicinity of a private airstrip;
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

StanCOG Adopted Thresholds of Significance

According to the thresholds established by StanCOG, the RTP would have a significant impact related to geology, soils, and mineral resources if it would

- involve mass grading on slopes of more than 10% to prepare roads or repair landslides;
- result in a hazardous condition, such as a cut slope of more than 1.5:1, that could pose a significant threat to public safety or property;
- create a cut slope more than 15 feet high;
- accelerate soil instability from erosion; or
- affect a significant or unique geologic or topographic feature, including, but not limited to, hilltops, ridges, hill slopes, canyons, ravines, rock outcrops, bodies of water, streambeds, and wetlands.

Impacts and Mitigation Measures of the Proposed RTP Components

Impacts Related to Highway Projects

There are several types of projects proposed for highway facilities in Stanislaus County. These include proposals to widen highways, construct or reconstruct interchanges, and create expressways on highway facilities. Below is an evaluation of impacts related to proposed projects located on highway facilities.

Impact GSHM-1: Exposure of People or Structures to Significant Geologic, Seismic, or Soil-Related Hazards

The western portion of the county is geologically and seismically active. Proposed RTP projects that are located in this area may be subject to possible geologic, seismic, or soil-related hazards. As noted in the previous section, Stanislaus County and most of the cities in the RTP project area have policies that address geologic, seismic, and soil-related hazards. By adhering to these policies, the potential impacts of the RTP components would be minimized. This impact is considered less than significant. No mitigation is required.

Impact GSHM-2: Potential Alteration or Destruction of a Unique Geologic or Topographic Feature

The alignments of highways proposed for modification in the RTP are located within existing right-of-way that has already been disturbed and in areas where there are no unique geologic or topographic features. Therefore, no impact is anticipated. No mitigation is required.

Impact GSHM-3: Possible Conflict with Future Mineral Exploration and Access to Resource Sites

If the projects are located in identified mineral resource areas, and if the existing rights-of-way provide for surface mining, future mineral exploration could affect operation of the proposed highway projects. However, the extent of future mineral exploration is too speculative to examine in this analysis. Also, highway facilities would be located only where allowed by the landowner or the right-of-way owner. Therefore, the proposed project would not result in the reduction of availability of known mineral resources or of any locally important mineral resources to a greater extent than under the current restrictions affecting the rights-of-way within which the facilities would be placed. Therefore, the impact is considered less than significant. No mitigation is required.

Impact GSHM-4: Potential Increase in Soil Erosion Rates

Mass grading on slopes greater than 10%, or the creation of cut slopes greater than 1.5:1 or higher than 15 feet could expose a significant amount of soil to wind and water erosion. However, given that a majority of the proposed projects would take place on nearly level slopes, the need to mass grade on slopes greater than 10% is not anticipated. Similarly, the need for significant cut slopes is unlikely. Graded areas, if left unstabilized, could be sources of sediment. As discussed in chapter 6, releases of sediment from disturbed areas could result in detrimental impacts on aquatic habitats. Impacts on aquatic systems could result from an increase in sediment input, contaminant input, and removal of riparian vegetation. Construction activities adjacent to waterways could disturb soils and cause sediment to be transported into and through the channel; this would result in temporary increases in turbidity and sedimentation downstream of construction sites. This is considered a significant impact. Implementation of Mitigation Measure HWQ-1 would reduce this impact to a less-than-significant level.

Mitigation Measure HWQ-1: Prepare and Implement SWPPPs

This mitigation measure is described in chapter 8, "Hydrology and Water Quality," under Impact HWQ-1.

Impact GSHM-5: Potential Exposure of Workers and Residents to Hazardous Wastes or Materials that are Excavated, Disturbed, or Exposed during Construction Trenching or Tunneling

Known and potential hazardous materials or waste sites have been identified in the RTP planning area. Construction of highway projects could result on exposure of workers or residents to hazardous wastes or materials, posing potential threats to their health. This is considered a significant impact. Implementation of Mitigation Measure GSHM-1 would reduce this impact to a less-than-significant level.

Mitigation Measure GSHM-1: Conduct Phase I and Possibly Phase II Hazardous Materials Studies to Identify Soil and Groundwater Contamination and Reduce Risk of Exposure

StanCOG shall require project proponents to complete Phase I hazardous materials studies for each proposed public facility. If Phase I assessments indicate a potential for soil contamination in or adjacent to

the alignments, a Phase II study shall be completed. Phase II studies shall include soil sampling and analysis for anticipated contaminating substances. If soil contaminated by potentially hazardous materials is exposed during construction, the local responsible agency shall be notified. A workplan to characterize and possibly remove contaminated soil may be required by the local responsible agency or other regulatory agency. Phase I and Phase II studies are not normally monitored. However, oversight could be provided by the local responsible agency or by StanCOG.

Impact GSHM-6: Potential Exposure of Construction Workers and Residents to Contaminated Groundwater during Trench or Tunnel Dewatering

Groundwater may occur near the surface along buried infrastructure alignments. Trenches or tunnels may intersect groundwater that could require dewatering. If contamination exists, contaminated groundwater could be pulled to the surface. Contaminated water could require special handling and disposal procedures. Because workers or residents could be exposed to contaminated groundwater, and contaminated groundwater requires special handling and disposal procedures, this impact is considered significant. Implementation of Mitigation Measure GSHM-1 would reduce this impact to a less-than-significant level.

Mitigation Measure GSHM-1: Conduct Phase I and Possibly Phase II Hazardous Materials Studies to Identify Soil and Groundwater Contamination and Reduce Risk of Exposure

This mitigation measure is described above, under Impact GSHM-5.

Impact GSHM-7: Potential Short-Term Surface Water Quality Degradation from Accidental Release of Toxic Chemicals and Miscellaneous Wastes during Construction

Implementation of the RTP components would require extensive construction. Transportation corridor alignments could cross streams, rivers, wetlands, and other bodies of water. Construction would involve the use of toxic chemicals, such as gasoline, oils, grease, lubricants, and other petroleum-based products, which could be released into waterways accidentally. The impact of toxic construction-related materials on water quality is determined largely by the duration and timing of construction and by the effectiveness of BMPs used. Construction occurring in the dry season has less potential for causing toxic chemicals to be flushed into a stream by runoff. However, low summer flows are less able to dilute pollutants entering the water column. Because of the threat to public water supplies and the risk of damage to aquatic and terrestrial habitats, this impact is considered significant. Implementation of Mitigation Measure HWQ-1 would reduce this impact to a less-than-significant level.

Mitigation Measure HWQ-1: Prepare and Implement SWPPPs

This mitigation measure is described in chapter 8, "Hydrology and Water Quality," under Impact HWQ-1.

Impacts Related to Local Road Projects

Local road projects are the largest category of proposed RTP improvements. These include road widenings, intersection improvements, expressways on local roads, new construction, and operational improvements. Below is a discussion of impacts related to proposed projects located on local roads.

The impacts related to local road projects would be the same as those described above for the highway projects. No additional geology or soil-related impacts would occur beyond those described above. Hazardous materials would be covered under the permit programs described above.

Impacts Related to Bicycle Projects

Several bicycle facility projects are proposed in the RTP. These include proposals to widen existing bikeways, install signage and/or striping for bikeways, and implement railroad-crossing improvements for bikeways. Below is a discussion of impacts related to proposed projects for bicycle facilities.

The impacts related to bicycle projects would be the same as those described above for the highway projects. No additional geology or soil-related impacts would occur beyond those described above. Hazardous materials would be covered under the permit programs described above.

Impacts Related to Transit Projects

The RTP includes transit facility projects. These projects include passenger rail stations for high-speed, intercity, and commuter rail services, as well as bus maintenance yards. Below is a discussion of impacts related to proposed transit facilities.

The impacts related to passenger rail stations for high-speed, intercity, and commuter rail services, as well as for bus maintenance yards, would be the same as those described above for the highway projects. No additional geology or soil-related impacts would occur beyond those described above. Hazardous materials would be covered under the permit programs described above.

Impacts Related to Aviation Projects

Projects related to aviation systems are proposed in the RTP. These projects include improvements to airport facilities such as runways, taxiways, parking lots, and hangars. Below is a discussion of impacts related to projects proposed for aviation facilities.

The impacts related to improvements to airport facilities would be the same as those described above for the highway projects. No additional geology or soil-related impacts would occur beyond those described above. Hazardous materials would be covered under the permit programs described above.

Combined Impacts and Mitigation Measures of the Proposed RTP Alternatives

Alternative 1: “Unconstrained” Projects

This alternative contains the most project components, because this alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. Therefore, because of the greater number of projects, it is likely that there could be more impacts on geology under this alternative than under other alternatives and subalternatives. The combined impacts and necessary mitigation measures for this alternative are identified below.

Significant Impacts

Implementation of this alternative would result in the following significant geology-, soils- and hazardous materials–related impacts:

- Impact GSHM-4: Potential Increase in Soil Erosion Rates
- Impact GSHM-5: Potential Exposure of Workers and Residents to Hazardous Wastes or Materials that are Excavated, Disturbed, or Exposed during Construction Trenching or Tunneling
- Impact GSHM-6: Potential Exposure of Construction Workers and Residents to Contaminated Groundwater during Trench or Tunnel Dewatering
- Impact GSHM-7: Potential Short-Term Surface Water Quality Degradation from Accidental Release of Toxic Chemicals and Miscellaneous Wastes during Construction

Implementation of the following mitigation measures would reduce the impacts identified above to a less-than-significant level:

- Mitigation Measure HWQ-1: Prepare Storm Water Pollution Prevention Plans (SWPPPs)
- Mitigation Measure GSHM-1: Conduct Phase I and Possibly Phase II Hazardous Materials Studies to Identify Soil and Groundwater Contamination and Reduce Risk of Exposure

These impacts and mitigation measures are described in detail above, for the specific RTP components.

Significant Unavoidable Impacts

There are no significant unavoidable impacts of this alternative on geology, soils, and hazardous materials. No mitigation measures are proposed.

Subalternative 1a: Maintenance, Safety, and Community Enhancement Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on geology probably would be less extensive than would occur under Alternative 1.

Subalternative 1b: Congestion Relief Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on geology probably would be less extensive than would occur under Alternative 1.

Subalternative 1c: Economic Opportunities Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on geology probably would be less extensive than would occur under Alternative 1.

Subalternative 1d: Combined Projects Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on geology probably would be less extensive than would occur under Alternative 1.

Alternative 2: No Project, or “Current Plan”

There are fewer project components in the No-Project Alternative than in Alternative 1 because the currently adopted RTP, which would remain in place in

lieu of the 2001 RTP, does not include the New Candidate projects that have been identified since the last RTP update. Therefore, it is likely that there would be fewer impacts on geology under this alternative than under Alternative 1.

Chapter 10

Transportation, Traffic, and Access

Introduction

This chapter discusses the transportation and circulation conditions in Stanislaus County, and provides a program-level evaluation of the potential impacts of the RTP on the transportation systems (highways, local roads, bikeways, bus and rail transit systems, and aviation) in the county. The potential impacts of the RTP components are qualitatively compared to those of the RTP components in this chapter. A discussion of the measures that would be used to mitigate significant impacts is also presented.

Setting

Street and Highway System

The study area for this transportation analysis is Stanislaus County in its entirety, including the nine incorporated cities and the unincorporated areas. The study area is consistent with the area analyzed by StanCOG's computer travel demand model.

Roadway Classification System

The roadway network within Stanislaus County is categorized into several street classifications, which are as follows:

- *Freeways/Highways*—A freeway may be defined as a divided highway with full control of access and two or more lanes for the exclusive use of high volumes of traffic in each direction. These facilities do not provide direct access to land and, in general, access is restricted and provided only at interchanges with arterials. These types of facilities serve primarily regional, through trips and connect to other regional and interregional facilities.

- *Expressways*—An expressway also serves through trips, but provides limited access to land uses via local streets. Expressways serve both regional and local trips.
- *Arterial Roadways*—Arterials are designed to carry high volumes of local traffic. Local streets feed into arterials, which in turn feed into regional facilities, such as expressways and freeways/highways. Land uses can be directly served by arterials.
- *Collector Streets*—Collector streets, as the name implies, collect and distribute traffic from residential or local roadways to facilities that are designed to carry higher volumes of traffic, such as arterials. Collectors carry light to moderate traffic and serve adjacent land uses.
- *Residential or Local Streets*—These facilities are located in neighborhoods and primarily serve residential land uses. Traffic volumes are typically very light on these facilities. These streets feed into collector streets, described above.

Freeways/Highways

Several freeways and state highways serve Stanislaus County and are depicted in figure 2-1. The 2001 RTP includes several projects that are proposed to provide additional capacity to the highway network in the area. Below is a description of freeways in the county.

- **I-5** is a four-lane freeway that runs from north to south through western Stanislaus County and is the largest of the major regional facilities in the area. I-5 is a major federal interstate freeway and travels from the Canadian border to Mexico.
- **SR 33** is a two-lane and four-lane, north-south route that runs parallel to I-5 between Patterson and Newman.
- **SR 99** is the second largest regional facility in the area. SR 99 is a four-lane, north-south highway that traverses the central portion of the county through most of the major cities, including Modesto, Ceres, and Turlock.
- **SR 108** has an east-west alignment from Riverbank and SR 219 to the county line; the highway continues into Tuolumne County and on to the recreational areas of the Stanislaus National Forest. SR 108 ranges from two to six lanes. Within the county, SR 108 connects to SR 120.
- **SR 120** is a major east-west, two- and four-lane state highway in northern Stanislaus County that is the continuation of the primary pathway to Yosemite National Park. SR 120 connects Oakdale to San Joaquin County. This highway is known as East Yosemite Avenue and East Jackson Avenue in the county.
- **SR 132** travels throughout the county in an east-west two-lane configuration, through the heart of Modesto. In the county, this highway is known as Maze Boulevard west of Modesto and as Yosemite Boulevard east of the city.

- **SR 165** is a north-south facility located in the southern portion of the county, between the Merced County line and SR 99 in Turlock.
- **SR 219** is a two- and four- lane, east-west highway that connects with SR 99 near Salida and SR 108 in Modesto.

Expressways

Stanislaus County has an extensive regional expressway network. Projects proposed in the RTP include new additions to the expressway system and the widening of existing facilities. Expressways are located on I-5 and on SRs 33, 132, and 219, as well as on local arterial roads. The locations of existing expressways are shown in figure 10-1.

Local Roadways

The local roadway system consists of roads under the jurisdiction of individual city or county public works departments. Local roads provide access between neighboring locations and offer routes from the urbanized areas of communities onto the state highway system. Local roadways in Stanislaus County consist of arterials, collector streets, and residential or local streets. Some of these roads are considered “regionally significant” and several RTP projects are proposed for these roads.

- **Albers/Geer Road** is a north-south arterial. From SR 108 to Hatch Road through the communities of Oakdale and Empire, the facility is known as Albers Road (County Road 14). South of Hatch Road to SR 99, through Modesto and Turlock, it is known as Geer Road, and is also designated as SR 165. It varies in width from two to four lanes.
- **Briggsmore Avenue** is an east-west arterial in Modesto. There is an interchange with SR 99 at Briggsmore Avenue.
- **Carpenter Road** is a two- to six-lane arterial that runs from SR 99 in Modesto to Crows Landing Road in southern Stanislaus County.
- **Claribel Road** runs from east to west between SR 108 in Modesto to the Oakdale-Waterford Highway.
- **Claus Road (County Road 7)** is a two-lane arterial running between the Stanislaus River and SR 132.
- **Crows Landing Road** is a two-lane, north-south arterial that parallels Carpenter Road between SR 99 in Modesto and SR 33. West of SR 33 it becomes Fink Road.
- **Faith Home Road/Garner** is a north-south arterial running between Hatch Road and the county line. Between the Tuolumne River and Yosemite Boulevard, it is known as Garner Road.

- **Grayson Road (County Road 16)** runs westward from Crows Landing Road to SR 33. West of SR 33, the road continues and becomes Howard Road until it reaches I-5. It is a two-lane facility.
- **Hatch Road** is an east-west road running between the shores of the Tuolumne River in Modesto to Albers Road in Hughson.
- **Keyes Road** begins east of Carpenter Road in Grayson and continues eastward to Crows Landing Road, where it becomes County Road 16. From Crows Landing Road, it continues into Merced County, where it connects with SR 59.
- **Kiernan Avenue** is an east-west arterial that begins at the Stanislaus River and runs eastward to SR 108, where it becomes Claribel Road. Between SR 99 in Salida and McHenry Avenue in Modesto, it is designated as SR 219. There is an interchange at SR 99.
- **Las Palmas Avenue** is an east-west arterial running between the San Joaquin River and the junction of SR 33 at Patterson. It serves as County Road 17 in this area.
- **Maze Boulevard** is the portion of SR 132 located between SR 99 in Modesto and the San Joaquin County line to the west.
- **McHenry Avenue** is a two-lane, north-south facility that operates between the community of Escalon in San Joaquin County and the city of Modesto. It is designated as SR 108 between Patterson Road and SR 132.
- **Oakdale-Waterford Highway** is a north-south arterial designated as County Road 9 between Albers Road in Oakdale and the city of Waterford. South of Waterford, it becomes Hickman Road and continues to the county line as County Road 9.
- **Patterson Road** is the primary east-west arterial in Riverbank. The road travels between Riverbank to just east of Claus Road, where it continues on to the county line as SR 108.
- **Pelandale Avenue** is an east-west arterial just south of Kiernan Avenue in Modesto. There is an interchange at SR 99.
- **Santa Fe Avenue** is a two-lane, north-south arterial designated as County Road 7 between the community of Empire and the Merced County line. The road continues through Hughson into Merced County and parallels the railroad tracks for its entire alignment in the two counties.
- **Sperry Avenue** is an east-west arterial in Patterson between SR 33 and I-5.
- **West Main Street (County Road 17)** is a major east-west facility that travels between the San Joaquin River in Patterson and SR 99 in Turlock.
- **Whitmore Avenue** is the principal arterial between Ceres and Hughson. It extends from the Tuolumne River through Ceres and Hughson to Hickman Road (County Road 9).

- **Yosemite Boulevard** is the portion of SR 132 between SR 99 and Tuolumne County. It continues through that county as a major access road to Yosemite National Park.

Other routes of regional significance are shown in figure 10-2.

Existing Traffic Conditions

Levels of Service

The quality of service provided by a roadway is measured by its level of service (LOS). This measurement method uses a letter rating to describe the peak-period driving conditions for a particular facility. The ratings range from LOS A, which represents free-flow traffic conditions with little or no delay experienced by motorists, to LOS F, which describes congested conditions where traffic flows exceed design capacity. LOS definitions established by the Transportation Research Board are shown in table 10-1.

Table 10-1. Level of Service Definitions

LOS Rating	Definition
LOS A	Free flow; insignificant delays
LOS B	Stable operations; minimal delays
LOS C	Stable operations; acceptable delays
LOS D	Approaching unstable flow; queues develop rapidly but no excessive delays
LOS E	Unstable flow; significant delays
LOS F	Forced flow; low operating speeds

Source: Transportation Research Board 1994.

The LOS standard in the current Stanislaus County General Plan is LOS C or better for all roadways. When measuring LOS, Stanislaus County uses the criteria established in the current edition of the Highway Capacity Manual published by the Transportation Research Board. Several of the cities in the county, including Newman, Riverbank, Oakdale, and Patterson have also adopted LOS C as a standard for all of their roadways. Turlock has adopted a LOS C standards for freeways and expressways, and LOS D for arterials and collector streets. Modesto has a minimum threshold of LOS D.

The LOS on highways is a function derived from the traffic speed and the rate of vehicular flow. LOS criteria for highways are established by Caltrans and take into account variables such as annual average daily traffic, roadway capacity, grade, environment (urban versus rural), and other considerations as appropriate.

According to Caltrans policy, LOS D is the minimum acceptable standard for planning purposes; LOS E and F are considered unacceptable.

Local Roadway Volumes

StanCOG conducted traffic volume counts at key roadways in Stanislaus County for the purposes of this analysis. The count locations include representative highways and arterials. The count data are shown in table 10-2. Daily traffic volumes range from more than 75,000 vehicles per day on SR 99 to more than 30,000 vehicles per day on arterials such as Golden State Boulevard and less than 2,000 vehicle per day on local streets such as Patterson Road.

Table 10-2. Selected Street and Highway Volumes

Street/Highway	Location	Traffic Volume
I-5	South of Fink Road	30,064
I-5	North of Howard Road	32,119
SR 33	North of Grayson Road	10,120
SR 33	South of West Stuhr Road	7,054
SR 33	South of Sperry Road	2,735
SR 99	North of Service Road	69,755
SR 99	South of West Main (Turlock)	43,819
SR 99	North of SR 219	57,756
SR 99	North of SR 132	77,005
SR 108	W of Coffee Road	14,937
SR 108	East of Claus Road	16,024
SR 108	North of Roseburg Avenue	29,812
SR 108/120	East of Stearns Road	13,036
SR 132	East of Geer/Albers Roads	12,907
SR 132	West of San Joaquin River	23,488
SR 132 (Maze Boulevard)	East of Carpenter Road	11,088
SR 132	East of Oakdale-Waterford Highway	5,124
SR 132	West of El Vista/Mitchell Road	22,506
SR 165	North of SR 99	18,457
SR 219	East of SR 99	15,322
SR 219 (Kiernan Avenue)	West of SR 108	15,118
9th Street (Modesto)	Tuolumne River	22,420
Briggsmore	West of McHenry Avenue	21,293
Carpenter Road	North of Tuolumne River	18,453
Claribel Avenue	South of Coffee Road	14,050
Claus Road	South of Orangeburg Avenue	14,030
Crows Landing Road	South of Hatch Road	27,022
Geer Road	West of Santa Fe Avenue	5,503
Golden State	North of Keyes Road	9,314

Street/Highway	Location	Traffic Volume
Boulevard		
Hatch Road	North of Main Street (Turlock)	30,744
Keyes Road	West of Geer Road	2,363
Las Palmas Avenue	West of Mitchell Road	14,302
Oakdale Road	West of San Joaquin River	15,816
Patterson Road	North of Briggsmore Avenue	30,057
Pelandale Avenue	West of Dale Road	6,860
Santa Fe Avenue	North of Hatch Road	14,943
Sperry Road	West of Ward Avenue	2,629
West Main Street	East of Crows Landing Road	6,959
Whitmore Avenue	West of Hatch Road	16,294

Source: Stanislaus Council of Governments 2001.

Stanislaus County is a rural county, with agricultural as a major economic factor. Consequently, goods movement is critical to the county's economy, and trucks are a significant component of the traffic stream. Where trucks use several local roadways to travel throughout the county, the amount of truck traffic has the potential to affect overall traffic flow. Table 10-3 shows the proportion of average daily traffic volume that comprises trucks.

Table 10-3. Percentage of Truck Traffic on Selected Roads in Stanislaus County

Roadway/Location	Annual Average Daily Traffic Volume	Percentage of Average That Are Trucks
SR 120/Valley Home Road	30,000	17.0%
SR 120/Oakdale West at SR 108	45,500	10.4%
SR 132/Modesto at SR 99	30,800	11.4%
SR 132/El Vista Avenue	23,800	9.6%
SR 132/Hickman Road/F Street	13,300	10.6%

Source: California Department of Transportation Traffic and Vehicle Data Systems Unit 1998.

Changes in Transportation Supply and Demand

Increases in Person Trips and Vehicle Trips

Increases in population, housing, and employment in the county have been projected for the next several years, as shown in table 10-4. These increases likely will result in increased numbers of trips made by people living in the region. Table 10-5 indicates the magnitude of increased person trips and vehicle trips over the 25-year planning horizon for the 2001 RTP. The table indicates

that, during the term of the RTP, person trips in the county will increase by nearly 50%.

Table 10-4. Projected Increases in Population, Households, and Employment in Stanislaus County

	Estimated 1999	Projected 2025
Population	432,965	826,123
Households		
Single Family	116,520	220,640
Multiple Family	38,407	75,672
Employment	168,126	323,010

Source: StanCOG Adopted Land Use Projections 2001.

The StanCOG travel demand model was used to develop future year scenarios. The model analyzed the following scenarios:

- **Existing Conditions.** For this scenario, the model assumes the 2000 Land Use scenario (population, housing, and employment projections) and the 2000 street and road network.
- **No-Build Conditions.** For this scenario, the model assumes the 2025 Land Use scenario and the 2000 street and road network.
- **No-Project Conditions.** For this scenario, the model assumes the 2025 Land Use scenario and the 2025 street and road network. The 2025 street and road network used for this scenario assumes only capacity-increasing projects that would be built if StanCOG approves no other projects, as identified in the 1998 RTP. This scenario is equivalent to the project alternative identified as the “N0-Project” or “Current Plan” Alternative.
- **“Unconstrained” Projects.** For this scenario, the model assumes the 2025 Land Use scenario and the 2025 street and road network, which would encompass all projects included in the No-Project scenario plus all projects submitted to StanCOG by member agencies, Caltrans, and other entities.

These scenarios are represented in the tables below.

Table 10-5. Projections of Person Trips and Vehicle Trips in Stanislaus County

	Existing (1999)	No Build (2025)	Alternative 2 No-Project Alternative (Current Plan) (2025)	Alternative 1 (“Unconstrained” Projects) (2025)
Person Trips	1,551,603	2,870,455	2,931,663	2,943,142
Vehicle Trips	1,193,541	2,208,042	2,255,125	2,263,955
Percent Change	–	46%	47%	47%

Source: Stanislaus Council of Governments 2001.

Increases in Vehicle Miles Traveled

As development in the county grows during the next 20 years, more residents, housing units, and jobs will result in additional person and vehicle trips and increased traffic volumes. As a function of congestion, increases in vehicle miles traveled (VMT) can be anticipated. Table 10-6 presents VMT for different roadway types.

Table 10-6. Projected Vehicle Miles Traveled

Roadway Type	Existing	No-Project Alternative (Current Plan)	Alternative 1 ("Unconstrained" Projects)
Freeways, expressways	2,922,372	4,961,705	5,299,123
Principal arterials	3,575,739	5,777,751	6,220,519
Minor arterials	2,305,235	4,142,747	4,064,942
Urban and rural collectors	1,003,002	2,257,589	2,313,847
Total	9,806,348	17,139,792	17,898,431

Source: Stanislaus Council of Governments 2001.

Alternate Transportation Modes

Transit Network

Public transit service is provided through a network of local and interregional carriers. Buses, commuter rail, and dial-a-ride services operate throughout the county. The projects proposed in the RTP would provide more trips and facilities to enhance existing transit services.

Bus Transit

Two types of bus transit service is provided in Stanislaus County: fixed route service and dial-a-ride. These types of services are described below.

- **Fixed Route (Bus) Service** is provided on a repetitive, fixed-schedule basis along specific routes, with vehicles stopping to pick up and deliver passengers to specific locations.
- **Demand Responsive or Dial-a-Ride** provides service with passenger cars, vans, or buses with fewer than 25 seats and operates in response to calls from passengers. Vehicles do not operate over a fixed route or on a fixed schedule.

Bus transit service is provided by Stanislaus Regional Transit (StaRT), which is operated by the County, and by Modesto Area Express (MAX), operated by the City of Modesto. StaRT operates five fixed routes, described below. Fixed route service is available on weekdays and Saturdays except in Patterson/Turlock, where it is available on weekdays only.

- **Modesto/Turlock Bus.** The Route 10 Express operates Monday through Friday between 5:20 a.m. and 6:33 p.m. This bus makes 10 round trips between Modesto and Turlock.

Route 15 operates Monday through Friday between 5:30 a.m. and 9:00 p.m. This bus operates eight round trips between Modesto and Turlock and serves the communities of Ceres and Keyes. On Saturday between 6:20 a.m. and 7:50 p.m., four round trips are provided. The Saturday service is combined with the Modesto/Riverbank/Oakdale route.
- **Modesto/Riverbank/Oakdale Bus.** Monday through Friday between 6:00 a.m. and 7:00 p.m., this bus operates seven round trips between Modesto and Oakdale. On Saturday between 7:45 a.m. and 6:11 p.m., three round trips are provided. Riverbank is also served by this bus service. The Saturday service is combined with the Modesto/Turlock route.
- **Westside Stage.** Monday through Friday, between 6:05 a.m. and 8:10 p.m., the Westside Stage operates four trips between Modesto and Gustine. On Saturday between 7:45 a.m. and 7:55 p.m., three round trips are provided. Newman and Patterson, in addition to the communities of Wesley, Grayson, and Crows Landing are also served.
- **Newman/Patterson/Turlock (Westside Runabout) Bus.** Monday through Saturday, between 9:00 a.m. and 6:00 p.m., this bus operates three round trips between Patterson and Turlock.

StART also operates the “runabout” service, which combines the designated time points of a fixed route service with the demand responsiveness of a dial-a-ride service. This service is available for residents of Turlock, Modesto, Ceres, Hughson, Oakdale, Riverbank, Gustine, Newman, Patterson, and the communities of Keyes, Empire, Crows Landing, Wesley, and Grayson.

MAX operates 17 fixed routes in Modesto and the communities of Salida and Empire. Dial-a-ride service is also provided within Modesto. MAX provides commuter express service with links to the Altamont Commuter Express (ACE) station in Lathrop/Manteca, to the Amtrak Station in Modesto, and to the Dublin/Pleasanton Bay Area Rapid Transit (BART) station.

New bus transit service has been inaugurated in the city of Turlock. The Bus Line Service of Turlock (BLST or “Blast”) began operation in November 1998. BLST operates three routes with timed stops and transfer points.

The Riverbank Oakdale Transit Authority (ROTA) operates dial-a-ride service in Riverbank and Oakdale and provides a link to Modesto.

Rail Transit

Current rail transit service in Stanislaus County is provided by the Amtrak intercity rail service, through the Caltrans Division of Rail. The San Joaquin route operates from San Francisco to Bakersfield. San Joaquin trains operate five

times in each direction, 365 days per year. At present, four round trips operate daily between the Bay Area and Bakersfield, with stops in Modesto and Turlock/Denair.

Access to rail transit services outside of the county is provided by MAX, which offers Express Commuter Service to the ACE train station in Lathrop and the BART station in Dublin/Pleasanton. MAX also connects with the Amtrak station in Modesto.

The ACE train provides commuter service weekdays between the San Joaquin Valley and Livermore, Pleasanton, Fremont, and the Santa Clara Valley. It is a train specially outfitted for commuters and offers stops at Lathrop/Manteca and Tracy, as well as Stockton. Trains make three trips each morning to the Santa Clara Valley from the San Joaquin Valley and three trips back to the San Joaquin Valley each evening. An extension of ACE service to Stanislaus County has been proposed using track connections in southern San Joaquin County.

The California High Speed Rail Authority has developed a plan for a grade-separated high-speed rail line through the Central Valley. The alignment would generally follow the Union Pacific Railroad tracks through the San Joaquin Valley, with a potential station serving the city of Modesto. Several general alignments that would serve Modesto are under consideration.

Transit Ridership

Transit ridership has shown an increase in Stanislaus County in the past several years. Most recently, in the Modesto urbanized area, reported annual transit ridership was nearly 4 million passengers. Available information reveals that, on a daily basis, about 13,000 people rode transit in the region. Table 10-7 identifies transit usage in Stanislaus County. This information is derived from the National Transit Database, developed by the Federal Transit Administration, using information provided by transit operators. In Stanislaus County, information was provided by MAX.

Table 10-7. Stanislaus County Transit Ridership

Year	Average Daily Ridership (Weekday)	Annual Ridership (Unlinked Trips)
1999	13,071	3,934,581
1998	10,648	3,182,149
1997	10,079	2,882,134
1996	9,946	2,768,455

Source: Federal Transit Administration 2001.

Bicycle Network

The regional network of bicycle facilities includes a variety of Class I, II, and III bikeways within the cities and communities of Stanislaus County. These facilities are shown in figure 10-3.

Class I bicycle facilities are grade-separated from other uses and are also known as bike paths. Class II facilities are more commonly known as bike lanes, and are designated by striping in paved roads or street rights-of-way. Bicyclists using these facilities share the roadway with cars. The bike lanes are clearly marked and distinguished as guideways for bicycles. Class III facilities are bike routes that share right-of-way with other vehicles but have no striping or recognizable designation other than signage.

Aviation Facilities

There are several airports in Stanislaus County. Three are public use airports and there is one naval auxiliary landing facility.

- The Modesto City-County Airport was first opened for general aviation use in 1929 on 82 acres. Over the years, the airport has been enlarged to its present 450 acres. The airport was originally named Modesto Municipal Airport, and was subsequently renamed the Modesto City-County Airport. In October 1974, Harry Sham Field was added to the name in honor of Harry Sham, the airport manager between 1949–1968. This facility is the only airport that accommodates commercial service, with daily scheduled commuter flights to San Francisco via United Airlines Express. The airport is located within the Modesto city limits, and the city of Ceres is located south of the airfields.
- The Oakdale Municipal Airport is a general aviation facility owned and operated by the City of Oakdale in an unincorporated portion of the county.
- The Turlock Municipal Airport is a general aviation facility located in Merced County, and was formerly owned by the United States Air Force at Castle Air Force Base.

Relevant Plans, Policies, and Regulations

This section lists transportation policies that could affect or be affected by the RTP. Policies may either support or conflict with proposed project improvements. In addition to state regulations, local regulations and policies were excerpted from the Transportation and Circulation Elements of the Stanislaus County General Plan, and from the general plans of incorporated cities in the county. Excerpts from the long-range plans of transportation system operators also are included. There are no applicable federal regulations.

State

California Rail Passenger Program Report

The California Rail Passenger Program Report, prepared by Caltrans, is an examination of intercity passenger rail transportation in California. The report reviews the current operations of state-supported intercity rail passenger service and outlines 10-year plans for 1999–2009 for capital improvements and service expansions. The report outlines an “Intercity Rail Program Vision.” The vision encompasses the following relevant policies:

- **Policy 1:** Provide a rail transportation alternative to other travel modes.
- **Policy 2:** Provide relief to highway and airway congestion.
- **Policy 3:** Improve air quality, conserve fuel, and contribute to efficient and environmentally superior land use.

Local

Stanislaus County General Plan

The Circulation Element of the Stanislaus County General Plan contains the following relevant policies:

- **Policy 1.** Development will be permitted only when facilities for circulation exist, or will exist as part of the development, to adequately handle increased traffic.
- **Policy 2.** Circulation systems shall be designed and maintained to promote safety and minimize traffic congestion.
- **Policy 3.** The County Capital Improvement Program (CIP) shall be consistent with the General Plan.
- **Policy 4.** A circulation system shall be developed that provides for streets in all classifications (freeway, expressway, major, collector, local, minor, and private) as necessary to provide access to all parts of the county based on the anticipated land use.
- **Policy 5.** Transportation requirements of commercial and industrial development shall be considered in all planning, design, construction, and improvements.
- **Policy 6.** Bikeways and pedestrian paths shall be routed to provide reasonable access from residential areas to major bicycle and pedestrian traffic destinations such as schools, recreation and transportation facilities, centers of employment, and shopping areas.
- **Policy 7.** The Airport Land Use Commission Plan and County Airport Regulations shall be updated as necessary, maintained, and enforced.

- **Policy 8.** Support public transit as a viable transportation choice.

City of Modesto Urban Area General Plan

The Urban Area General Plan for the City of Modesto contains the following relevant circulation and transportation policies:

- **Policy 5a.** The streets and highways system should be coordinated with Caltrans', the County's, and other jurisdictions' existing facilities and plans. The adoption of a regional expressway system by SAAG should be supported, and the components of the regional system that lie in the City's Sphere Of Influence should be incorporated into the City's Circulation and Transportation Diagram. The expressway system should be designed to accommodate mass transit.
- **Policy 5b.** Transportation Control Measures (TCMs) should be implemented where feasible or mandated by other agencies, to reduce vehicle miles of travel, vehicle idling, or traffic congestion. Alternatives to the drive-along auto mode, such as mass transit, ride sharing, and telecommuting, should be encouraged. In addition, the City should encourage innovative means to reduce traffic congestion and enhance air quality, such as teleconferencing centers, fiber optic communication networks, and trip reduction programs.
- **Policy 5i.** The use of the bicycle shall be promoted as an alternative mode of transportation. An adequate and safe bicycle system should be provided to connect residential areas with shopping and employment areas in and adjacent to the City for present and future transportation needs. Right-of-way for bicycle usage should be considered in the planning of new streets and in street improvements. Facilities for mode transfer from bicycle to park-and-ride lots, transit, and rail should be considered and provided when necessary.

City of Turlock General Plan

The 1992–2015 Turlock General Plan identifies the following relevant “Guiding Policies”:

- **Policy 5.2-b.** Identify, schedule, and implement roadway improvements as development occurs in the future.
- **Policy 5.4-c.** Provide safe and direct pedestrian routes and bikeways between places.
- **Policy 5.5-a.** Maintain existing facilities and operations at the Turlock Airport and seek to improve facilities as funding appropriations permit.

City of Hughson General Plan

The Hughson General Plan identifies the following relevant recommendations:

- **D.1.** Public transportation should be considered when local, public support is sufficient to ensure successful operation of such a service.
- **E. 2-a.** The City should actively direct its support for optimum rail service.

City of Oakdale General Plan

The 2015 Oakdale General Plan contains the following relevant “Guiding Transportation Polices”:

- **Policy CT1.** Establish, construct, and maintain the functional integrity of arterials and major collectors to relieve congestion at the intersection of SRs 108/120 and to promote an efficient truck system through the City.
- **Policy CT6.** Coordinate city plans and policies with county and regional transportation and land use plans and policies.
- **Policy CT7.** Promote public transit systems and improve general accessibility of services and alternatives to motor vehicles by providing incentives to use such services.

City of Newman General Plan

The Newman General Plan contains the following relevant policies related to transportation and circulation:

- **Policy II.A.2.** Streets shall be dedicated, widened, extended, and constructed according to city standards.
- **Policy II.B.3.** The city shall cooperate with Stanislaus County and other transportation agencies in exploring the long-term possibility of developing commuter rail service on the West Side.
- **Policy II.G.1.** The city shall create and maintain a safe and convenient system of pedestrian and bicycle facilities that encourages walking or bicycling as an alternative to driving.

City of Riverbank General Plan

The City of Riverbank’s General Plan identifies the following relevant policies:

- **Policy 1.** Development will be permitted only when facilities for circulation exist, or will exist as part of the development, to adequately handle increased traffic.

- **Policy 6.** Bicycle and pedestrian paths shall be routed to provide reasonable access from residential areas to major bicycle and pedestrian traffic generators, such as schools, recreation facilities, centers of employment and shopping areas.
- **Policy 7.** Provide for the public transit needs of city residents.

City of Waterford General Plan

The Waterford General Plan identifies the following relevant policy:

- **Policy 5.1.3.** Developers of all subdivisions are responsible for the installation of minor or residential streets, and completing improvements to city standards.

City of Patterson General Plan

The Patterson General Plan contains the following relevant policies:

- **Policy III.A.3.** Streets shall be dedicated, widened, extended, and constructed according to City standards.
- **Policy III.A.5.** The City shall promote development of an expressway to facilitate east-west travel and to divert through-traffic from Sperry Avenue and East Las Palmas Avenue.
- **Policy III.A.6.** The City shall work with the County in developing funding for the southern bypass expressway, including consideration for some city participation.
- **Policy III.A.7.** The City shall promote development of the southern bypass expressway within the time frame of the General Plan.
- **Policy III.G.1.** The City shall create and maintain a safe and convenient system of pedestrian and bicycle pathways that encourages walking or bicycling as an alternative to driving.
- **Policy III.G.2.** The City shall establish a safe and convenient network of identified bicycle routes connecting residential areas by the shortest possible routes with recreation, shopping, and employment areas within the city.

Stanislaus Council of Governments Regional Bicycle Action Plan

The Regional Bicycle Action Plan contains the following relevant policies from its section on “Bicycle Facility Design Guidelines”:

- **Policy 2.1.** Wherever possible, the most generous standard for developing bicycle facilities should be utilized. Facilities less generous than those

described are permitted, but StanCOG, Caltrans, and American Association of State Highway and Transportation Officials (AASHTO) should be consulted for additional guidance.

- **Policy 2.6.** Class III bicycle facilities may be used to close gaps between segments of Class II bicycle facilities in order to provide continuity in the system. Implementation of Class II facilities will be pursued for gap closure segments of Class III facilities along otherwise continuous Class II facilities.
- **Policy 2.13.** Pavement markings and facility signage should be designed and posted in accordance with Caltrans and AASHTO standards and guidelines.
- **Policy 2.17.** Local agencies shall include needed railroad crossing improvements in the Transportation Improvement Program and their Capital Improvement Programs.

Stanislaus County Regional Aviation System Plan

The Stanislaus County Regional Aviation System Plan identifies regional air transportation policies. They are:

- **Policy 1.** Encourage the use of air as an alternative for the movement of people and goods.
- **Policy 2.** Support the Airport Land Use Commission (ALUC) in its effort to ensure compatible land uses surrounding the airports.
- **Policy 3.** Assure optimum arrangements for interface with ground transportation for the benefit of the total transportation system.

Central Stanislaus Freight Study

Relevant objectives from the final report for the Central Stanislaus Freight Study are:

- **Goal 1, Objective 2.** Improve travel time and reliability between SR 132/Yosemite Boulevard and SR 99 for both north- and southbound travel.
- **Goal 2, Objective 2.** Reduce the number of turns, signals, and access points between SR 132/Yosemite Boulevard and SR 99.

Impacts and Mitigation Measures

Methods and Assumptions for the Impact Analysis

Future traffic volume projections for the year 2025 were prepared for the impact analysis by StanCOG staff. The tool used to develop the volumes is the StanCOG Travel Demand Model, which is maintained and run by agency staff.

Model runs and data outputs from the model were reviewed to determine the overall impacts of the RTP components. Scenarios that represented implementation of the “Unconstrained” Projects Alternative, as well existing conditions, future baseline conditions, and the No-Project or “Current Plan” Alternative, were developed. A more detailed transportation and traffic impact analysis would be required during subsequent environmental review for individual RTP projects.

Criteria for Determining Significance

Appendix G of the State CEQA Guidelines and StanCOG’s adopted thresholds of significance were used to determine whether the RTP would have a significant environmental effect.

State CEQA Guidelines

According to the State CEQA Guidelines, the RTP would have a significant impact on the street and highway system or on alternative modes of transportation if it would

- cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the v/c ratio on roads, or congestion at intersections);
- exceed, either individually or cumulatively, an LOS standard established by the county congestion management agency for designated roads or highways;
- result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- result in inadequate emergency access;
- result in inadequate parking capacity; or
- conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

StanCOG Adopted Thresholds of Significance

According to the thresholds established by StanCOG, the RTP would have a significant impact on the street and highway system or on alternative modes of transportation if it would

- create a need for system modifications or improvements, using standard traffic engineering practices;
- generate transit demand that current and planned systems cannot accommodate;
- cause bicycle/pedestrian/automobile conflict or create travel demand that is not served by appropriate facilities;
- provide access to the regional system requiring an unsafe driveway, a new signal, or major revisions to an existing signal (and affect the regional system with a new traffic control);
- restrict access to publicly or privately held land;
- create infrastructure that is not anticipated physically and temporally by adopted plans; or
- require capacity-enhancing alterations of existing facilities.

Impacts and Mitigation Measures of the Proposed RTP Components

Impacts Related to Highway Projects

There are several types of projects proposed for highway facilities in Stanislaus County. These include proposals to widen highways, construct or reconstruct interchanges, and create expressways on highway facilities. Below is an evaluation of impacts related to proposed projects located on highway facilities.

Impact TRN-1: Substantial Increase in Traffic in Relation to the Existing Traffic Load and Capacity of the Street System

Projections of future traffic levels indicate that VMT and vehicle trips will increase by nearly 50% over the 25-year planning horizon of the RTP. This type of growth likely would exceed the capacity of the existing roadway system. The highway projects in the RTP, although developed to address this increase in traffic, could contribute additional further traffic to the roadways. This impact is considered significant. Implementation of Mitigation Measure TRN-1 would reduce this impact, but not to a less-than-significant level, because vehicle trips likely would increase with population, housing, and employment growth during the next 25 years. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure TRN-1: Establish Criteria for Implementation of High Occupancy Vehicle Facilities within the Stanislaus Region

The proposed 2001 RTP includes a policy to support the development of a system of HOV lanes to reduce traffic volumes and to increase the person-carrying capacity of the state highway system. StanCOG shall

establish criteria for the implementation of HOV facilities within the Stanislaus region to encourage carpooling and reduce vehicle trips.

Impact TRN-2: Violation, Either Individually or Cumulatively, of an LOS Standard Established by the County Congestion Management Agency for Designated Roads or Highways

StanCOG is the congestion management agency for Stanislaus County. StanCOG has adopted LOS D as the standard for roads and highways in urban areas of the county, and LOS C for non-urban areas. These LOS standards are generally consistent with concept LOS set by Caltrans District 10 for the state highway system. The highway projects contained in the RTP could increase capacity yet contribute traffic volume. The projected increase in traffic volume would cause a violation of StanCOG's LOS standard. This impact is considered significant. Implementation of Mitigation Measure TRN-2 would reduce this impact, but not to a less-than-significant level. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure TRN-2: Develop and Implement a Comprehensive Traffic Management Plan for Regionally Significant Routes

StanCOG shall develop and implement a comprehensive traffic management plan to identify bottlenecks and poor LOS on routes of regional significance in Stanislaus County. In addition, StanCOG shall implement the recommendations of the San Joaquin Valley and Modesto-Ceres Urban Focus Area Intelligent Transportation Deployment Plan and integrate traffic calming and system management strategies into highway projects that request funding from StanCOG.

Impact TRN-3: Creation of Need for Capacity-Enhancing Alterations to Existing Facilities

Several of the highway projects in the RTP involve widening state highways, adding expressways on highway facilities, and constructing or reconstructing interchanges. Although these projects may be viewed as improvements to the state highway system, they would require alterations to existing facilities in the county and could increase the carrying capacity of these facilities to accommodate more vehicle trips. This impact is considered significant. Implementation of Mitigation Measure TRN-3 would reduce the impact, but not to a less-than-significant level. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure TRN-3: Refine Scope, Schedule, and Cost of State Highway Projects, and Refine Proposed Alignments and Establish Right-of-Way Limits for Proposed Expressways

StanCOG shall conduct corridor studies, major investment studies, and/or feasibility studies to refine the scope, schedule, and cost of state highway projects, and to refine proposed alignments and establish right-of-way limits for proposed expressways. The 2001 RTP contains a policy to promote improvements to reduce congestion and facilitate movement on regionally significant routes. StanCOG shall incorporate this policy in the RTP that is ultimately selected and shall conduct further studies to

refine the scope, schedule, and cost of highway, interchange, and expressway projects. As part of these studies, StanCOG shall evaluate the proposed alignments and establish right-of-way limits for highway projects in conjunction with Caltrans in the interest of reducing congestion and facilitating movement on regionally significant routes. In addition, because the highway improvements could increase capacity and thereby increase vehicle trips, StanCOG shall support the use of alternative modes of transportation by reviewing local and state design standards to ensure that provisions are made for alternative travel modes.

Impact TRN-4: Modifications or Improvements of Regional Transportation System

Implementation of the RTP would require physical improvements of the highways in Stanislaus County. The RTP has been developed to address critical needs or deficiencies in the highway system in the region, and projects have been proposed either by Caltrans or by local jurisdictions in conjunction with Caltrans. These projects have been justified by various traffic engineering studies, such as LOS analyses, accident reports, and others. Because the projects are proposed to correct problems in the highway system, the impact of changes and improvements required by the highway projects is considered beneficial. No mitigation is required.

Impact TRN-5: Creation of Infrastructure That Is Not Anticipated Physically and Temporally By Adopted Plans

The proposed highway projects were developed in response to changes in current highway conditions and projected growth in population, households, and employment in the region during the next 25 years. This growth is anticipated in the scope of the County's General Plan. It is projected that this growth will result in increased traffic congestion on the region's roadways. The Circulation Element of the Stanislaus County General Plan contains a policy and implementation measures that require the County's CIP to be consistent with the General Plan, and the CIP to be reviewed annually by the Planning Commission for conformity with the adopted General Plan. In addition, the California Transportation Commission guidelines for preparation of RTPs state that RTPs and circulation elements of applicable general plans should be consistent. The highway projects in the RTP are included in the CIP, which is consistent with the General Plan. The RTP is also directly consistent with the General Plan. Therefore, the proposed highway projects are anticipated by all applicable plans and are reviewed on an annual basis (in the case of the CIP), and bi- or triannually in the case of the RTP. Therefore, the inclusion of these projects in the plans is considered a beneficial impact. No mitigation is required.

Impact TRN-6: Potential Alteration of Present Patterns of Vehicular Circulation, Increased Traffic Delay, and Increased Traffic Hazards during Construction of RTP Component Projects

Construction of the RTP component projects could result in lane or road closures, detours, open trenches on bikeway facilities or closure of bikeway facilities, and addition of construction trucks and equipment on the surrounding roadway system. Construction within the state highway rights-of-way would require an

encroachment permit from Caltrans. Construction in Stanislaus County and its nine incorporated cities would require an encroachment permit from the relevant jurisdiction. As part of obtaining an encroachment permit, a detailed traffic control plan would need to be developed that would address the methods of traffic control during construction. All construction shall follow the local jurisdiction's standard construction specifications. In addition, construction within railroad rights-of-way would require an encroachment permit from the railroad operator. Although required permits would be obtained for construction, this impact is considered significant because construction could lead to traffic delays, temporary reductions in roadway LOS, damage to property, or injury.

Mitigation Measure TRN-4: Develop and Implement a Traffic Control Plan for Construction of RTP Projects

StanCOG shall require project proponents to develop, in coordination with Stanislaus County and local public works departments, a traffic control plan for construction projects to reduce the effects of construction on the roadway system in the RTP project area throughout the construction period. Project proponents shall submit the plan for approval at least 30 working days before commencement of work and shall implement the plan.

Impacts Related to Local Road Projects

Local road projects are the largest category of RTP improvements. These include road widenings, intersection improvements, expressways on local roads, new construction, and operational improvements. Below is a discussion of impacts related to proposed projects located on local roads.

The impacts related to local road projects would be the same as those described above for highway projects; in addition to those impacts, the following impact also would result from local road projects:

Impact TRN-7: Conflicts among Bicycles, Pedestrians, and Automobiles

Bikeway facilities in Stanislaus County would be located on highways, expressways, and local roads and would therefore operate alongside automobiles and pedestrians, as well as among trucks, transit, and other elements of the traffic stream. There is a potential for conflict among bicycles, pedestrians, and automobiles as a result of operating alongside each other. Implementation of Mitigation Measure TRN-4 would reduce this impact to a less-than-significant level.

Mitigation Measure TRN-5: Integrate Bicycle and Pedestrian Facilities and Amenities into Local Road Projects on Regionally Significant Roadways

StanCOG shall require project proponents to integrate bicycle and pedestrian facilities and amenities into local road projects on regionally significant roadways. To minimize the potential for conflicts among

bicycles, pedestrians, and automobiles on local roads, StanCOG shall prepare a regional pedestrian plan that identifies key activity centers that can be improved to encourage pedestrian travel, and identify the routes of regional significance that serve these centers. StanCOG shall require project proponents to incorporate pedestrian facilities, safety improvements, and attractive landscaping into the design and development of projects as a condition of funding approval.

Impacts Related to Bicycle Projects

Several bicycle facility projects are proposed in the RTP. These include proposals to widen existing bikeways, install signage and/or striping for bikeways, and implement railroad-crossing improvements for bikeways. Below is a discussion of impacts related to proposed projects for bicycle facilities.

Impact TRN-8: Substantial Increase in Hazards Caused by Design Features or Incompatible Uses

Several railroad crossing improvements for bicycle facilities are proposed in the RTP. Because these projects are proposed at locations with a junction of a railroad right-of-way and a roadway with a bicycle facility, hazards to bicyclists could occur, even though the projects are designed to improve safety. This impact is considered significant. Implementation of the Mitigation Measure TRN-5 would reduce this impact to a less-than-significant level.

Mitigation Measure TRN-6: Ensure that Roadways are Adequately Maintained to Facilitate Bicycle Travel

StanCOG shall ensure that project proponents develop and implement operations and maintenance programs. The purpose of these programs shall be to adequately maintain roadway facilities to create a safe and efficient environment for bicycle travel. In addition, StanCOG shall provide funding for the design and implementation of projects that are geared toward correcting identified unsafe roadway conditions.

Impacts Related to Transit Projects

The RTP includes transit facility projects. These projects include passenger rail stations for high-speed, intercity, and commuter rail services, as well as bus maintenance yards. Below is a discussion of impacts related to proposed transit facilities.

Impact TRN-9: Generation of Transit Demand That Current and Planned Systems Cannot Accommodate

Major improvements to passenger rail services are proposed in the 2001 RTP, with additional trips proposed for current services, and stations proposed at several locations to provide access to new, high-speed and commuter rail services. Although demand for these services has been forecast, demand could exceed patronage forecasts, particularly for services that are designed to

maximize speed and convenience for passengers while minimizing travel times. If regional demand exceeds planned capacity, the impact would be considered significant. Implementation of the Mitigation Measure TRN-6 would reduce this impact to a less-than-significant level.

Mitigation Measure TRN-7: Support Local Transit Operators and Caltrans in Developing Short- and Long-Range Regional Transit Plans to Facilitate the Use of Public Transportation

To ensure that the region's transit services are able to accommodate future transit demand, StanCOG shall ensure that the Regional Transit Study is completed, in cooperation with local transit operators and Caltrans. In addition, StanCOG shall aid these services in the procurement of funding and assist in the preparation of long-range transit plans for each transit operator in Stanislaus County. StanCOG shall ensure that the recommendations of the completed Regional Transit Study are incorporated into these long-range transit plans. In addition, StanCOG shall identify and integrate rail passenger projects into the RTP. StanCOG shall participate in the development of the Intercity Rail Passenger Program in conjunction with Caltrans and ensure that the recommended station locations for ACE commuter rail service are incorporated into local general plans.

Impact TRN-10: Inadequate Parking Capacity

The RTP includes projects to construct passenger rail stations in Stanislaus County. If the demand for high-speed rail or ACE commuter rail services increases or exceeds patronage forecasts, parking demand at the rail stations could exceed available capacity. This impact is considered significant. Implementation of Mitigation Measure TRN-7 would reduce this impact to a less-than-significant level.

Mitigation Measure TRN-8: Promote the Integration of Public Transportation Systems with Other Modes of Travel

To help reduce parking demand at passenger rail stations, StanCOG shall evaluate the ability of transit users to access public transportation by other means (i.e., without needing parking space). StanCOG shall conduct a study to evaluate the ability of the regional transportation system to accommodate automobile, bus, bicycle, and pedestrian connections to and between transit services. StanCOG shall incorporate the study recommendations into the RTP and work with the local jurisdictions to incorporate the recommendations into local general plans.

Impacts Related to Aviation Projects

Projects related to aviation systems are proposed in the RTP. These include improvements to airport facilities, such as runways, taxiways, parking lots, and hangars.

Impact TRN-11: Potential Change in Air Traffic Patterns

The proposed aviation projects in the RTP would not require any change in air traffic patterns. Therefore, there would be no impact. No mitigation would be required.

Combined Impacts and Mitigation Measures of the Proposed RTP Alternatives

Alternative 1: “Unconstrained” Projects

This alternative contains the most project components, because this alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. Therefore, because of the greater number of projects, it is likely that there could be more impacts on transportation under this alternative than under other alternatives and subalternatives. The combined impacts and necessary mitigation measures for this alternative are identified below.

Significant Impacts

Implementation of this alternative would result in the following significant transportation-related impacts:

- Impact TRN-6: Potential Alteration of Present Patterns of Vehicular Circulation, Increased Traffic Delay, and Increased Traffic Hazards during Construction of RTP Component Projects
- Impact TRN-7: Conflicts among Bicycles, Pedestrians and Automobiles
- Impact TRN-8: Substantial Increase in Hazards Caused By Design Features or Incompatible Uses
- Impact TRN-9: Generation of Transit Demand That Current and Planned Systems Cannot Accommodate
- Impact TRN-10: Inadequate Parking Capacity

Implementation of the following mitigation measures would reduce the impacts identified above to a less-than-significant level:

- Mitigation Measure TRN-4: Develop and Implement a Traffic Control Plan for Construction of RTP Projects
- Mitigation Measure TRN-5: Integrate Bicycle and Pedestrian Facilities and Amenities into Local Road Projects on Regionally Significant Roadways
- Mitigation Measure TRN-6: Ensure that Roadways are Adequately Maintained to Facilitate Bicycle Travel

- Mitigation Measure TRN-7: Support Local Transit Operators and Caltrans in Developing Short- and Long-Range Regional Transit Plans to Facilitate the Use of Public Transportation
- Mitigation Measure TRN-8: Promote the Integration of Public Transportation Systems with Other Modes of Travel

Significant Unavoidable Impacts

Implementation of this alternative would result in the following significant and unavoidable transportation-related impacts:

- Impact TRN-1: Substantial Increase in Traffic in Relation to the Existing Traffic Load and Capacity of the Street System
- Impact TRN-2: Violation, Either Individually or Cumulatively, of an LOS Standard Established By the County Congestion Management Agency for Designated Roads or Highways
- Impact TRN-3: Creation of Need for Capacity-Enhancing Alterations to Existing Facilities

Implementation of the following mitigation measures would reduce the impacts identified above, but not to a less-than-significant level:

- Mitigation Measure TRN-1: Establish Criteria for Implementation of High Occupancy Vehicle Facilities within the Stanislaus Region
- Mitigation Measure TRN-2: Develop and Implement a Comprehensive Traffic Management Plan for Regionally Significant Routes
- Mitigation Measure TRN-3: Refine Scope, Schedule, and Cost of State Highway Projects, and Refine Proposed Alignments and Establish Right-of-Way Limits for Proposed Expressways

These impacts and mitigation measures are described in detail above, for the specific RTP components.

Subalternative 1a: Maintenance, Safety, and Community Enhancement Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on transportation probably would be less extensive than would occur under Alternative 1.

Subalternative 1b: Congestion Relief Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on transportation probably would be less extensive than would occur under Alternative 1.

Subalternative 1c: Economic Opportunities Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on transportation probably would be less extensive than would occur under Alternative 1.

Subalternative 1d: Combined Projects Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on transportation probably would be less extensive than would occur under Alternative 1.

Alternative 2: No Project, or “Current Plan”

There are fewer project components in the No-Project Alternative than in Alternative 1 because the currently adopted RTP, which would remain in place in lieu of the 2001 RTP, does not include the New Candidate projects that have been identified since the last RTP update. Therefore, it is likely that there would be fewer impacts on transportation under this alternative than under Alternative 1.

Introduction

This chapter describes the air quality setting in Stanislaus County and provides a program-level evaluation of the potential impacts of the RTP on air quality in the Stanislaus County region. Specifically, it focuses on the relationship between topography and climate, discusses federal and state ambient air quality standards and existing air quality conditions in the project area, describes the overall regulatory framework for air quality management in California and the region, and identifies sensitive receptors in the county. The potential impacts of the RTP alternatives are qualitatively compared to those of the RTP components in this chapter. A discussion of the measures that would be used to mitigate significant impacts is also presented.

Setting

Climate and Topography

Stanislaus County is located in the San Joaquin Valley Air Basin (SJVAB). The SJVAB, which is approximately 250 miles long and averages 35 miles wide, is the second largest air basin in the state. The SJVAB is defined by the Sierra Nevada mountains in the east (8,000–14,000 feet above sea level), the Coast Ranges in the west (averaging 3,000 feet above sea level), and the Tehachapi Mountains in the south (6,000–8,000 feet above sea level). The valley is basically flat with a slight downward gradient to the northwest. The valley opens to the sea at the Carquinez Straits, where the Delta empties into San Francisco Bay. The San Joaquin Valley could therefore be considered a “bowl” open only to the north.

The SJVAB has an “inland Mediterranean” climate averaging more than 260 sunny days per year. The valley floor experiences warm, dry summers and cool, wet winters. Summer high temperatures often exceed 100°F, averaging in the low 90s in the northern valley and high 90s in the south. In the entire San Joaquin Valley, high daily temperature readings in summer average 95°F. During the last 30 years, the San Joaquin Valley averaged 106 days per year with

90°F or hotter, and 40 days per year with 100°F or hotter. The daily summer temperature variation can be as high as 30°F.

In winter, as the cyclonic storm track moves southward, the storm systems moving in from the Pacific Ocean bring a maritime influence to the San Joaquin Valley. The high mountains to the east prevent the cold, continental air masses of the interior from influencing the valley. Winters are mild and humid. Temperatures below freezing are unusual. Average high temperatures in the winter are in the 50s, but highs in the 30s and 40s can occur on days with persistent fog and low cloudiness. The average daily low temperature is 45°F.

Although marine air generally flows into the basin from the Delta, the region's topographic features restrict air movement through and out of the basin. The Coastal Range hinders wind access into the San Joaquin Valley from the west, the Tehachapis prevent southerly passage of airflow, and the high Sierra Nevada is a significant barrier to the east. These topographic features result in weak airflow that becomes blocked vertically by high barometric pressure over the San Joaquin Valley. As a result, the SJVAB is highly susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal height of summer inversion layers (1,500–3,000 feet above sea level).

Existing Air Quality Conditions

Air Quality Pollutants and Ambient Air Quality Standards

The federal and state governments have established ambient air quality standards for six criteria pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter 10 microns or less in diameter (PM₁₀), and lead. Ozone is generally considered a regional pollutant, because it and its precursors affect air quality on a regional scale. Pollutants such as CO, NO₂, SO₂, and lead are considered local pollutants that tend to accumulate in the air surrounding the pollutant source. PM₁₀ is considered a localized pollutant as well as a regional pollutant. In Stanislaus County, especially east of I-5, PM₁₀ and ozone are of particular concern.

Air basins are classified as either attainment or nonattainment with respect to state and federal ambient air quality standards. These classifications are determined by comparing actual monitored air pollutant concentrations to state and federal standards. The pollutants of greatest concern in the valley are ozone, CO, and PM₁₀. The state and federal ambient air quality standards are summarized in table 11-1. Table 11-2 summarizes the local air quality monitoring data taken from the City of Modesto.

Ozone

Ozone is a severe eye, nose, and throat irritant. It is also an oxidant that increases susceptibility to respiratory infections, and can cause substantial damage to vegetation and other materials. Ozone attacks synthetic rubber, textiles, plants, and other materials and can cause extensive cell damage and leaf discoloration in plants.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (ROG) and oxides of nitrogen (NO_x), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone primarily is a summer air pollution problem. The ozone precursors ROG and NO_x are emitted by stationary combustion engines and mobile sources, such as construction equipment.

State and federal standards for ozone have been set for a 1-hour averaging time. The state requires that a 1-hour ozone standard of 0.09 parts per million (ppm) not be violated. The federal 1-hour ozone standard is 0.12 ppm, not to be violated more than three times in any 3-year period. As shown in table 11-2, pollutants at the monitoring station have consistently violated the state 1-hour ozone standard during the 3 most recent years for which data are available. The SJVAB is therefore classified as a nonattainment area for the state and federal ozone standards.

Carbon Monoxide

CO is essentially inert to plants and materials but can have significant effects on human health. CO is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. Effects on humans range from slight headaches to nausea to death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

State and federal CO standards have been set for both 1-hour and 8-hour averaging times. The state 1-hour standard is 20 ppm by volume, and the federal 1-hour standard is 35 ppm. Both state and federal standards are 9 ppm for the 8-hour averaging period. The CO monitoring data collected for the 3 most recent years for which data are available show no violations of the state or federal CO standards. Stanislaus County is classified as an attainment area for the state and federal CO standards.

PM10

Health concerns associated with suspended particulate matter focus on particles small enough to reach the lungs when inhaled. Particulates can damage human health and retard plant growth. Particulates also reduce visibility, soil buildings and other materials, and corrode materials.

PM10 emissions are generated by a wide variety of sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic and construction equipment, and secondary aerosols formed by reactions in the atmosphere.

The state PM10 standards are 50 micrograms per cubic meter (μ/m^3) as a 24-hour average and $30 \mu/m^3$ as an annual geometric mean. The federal PM10 standards are $150 \mu/m^3$ as a 24-hour average and $50 \mu/m^3$ as an annual arithmetic mean.

The monitoring data shown in table 11-2 show that PM10 concentrations have violated the state 24-hour PM10 standard during the 3 most recent years for which data are available. The SJVAB is therefore classified as a nonattainment area for the state and federal PM10 standards.

Relevant Plans, Policies, and Regulations

Regulatory Framework

The county is located in the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD). The SJVUAPCD has jurisdiction for air quality issues throughout the eight-county SJVAB, which includes Stanislaus County. The SJVUAPCD administers air quality regulations developed at the federal, state, and local levels. Air quality regulations applicable to the RTP are described below.

Federal Requirements

The primary legislation that governs federal air quality regulations is the Clean Air Act Amendments of 1990. The act and amendments delegate primary responsibility for clean air to EPA. EPA develops rules and regulations to preserve and improve air quality and delegates specific responsibilities to state and local agencies.

EPA has established National Ambient Air Quality Standards (NAAQS) for criteria pollutants (table 11-1). Criteria pollutants include CO, NO₂, SO₂, ozone, PM10, and lead.

If an area does not meet the federal NAAQS shown in table 11-1, federal clean air planning requirements specify that states develop and adopt State Implementation Plans (SIPs), which are air quality plans showing how air quality

standards will be attained. In California, EPA has delegated authority to prepare SIPs to the California Air Resources Board (ARB), which, in turn, has delegated that authority to individual air districts.

The county is located in a federal nonattainment area for ozone and PM10. The SJVUAPCD has adopted a SIP that addresses PM10, ozone, and the ozone precursors NO_x and ROG. The SIP specifies that the regional air quality standards for ozone and PM10 can be met through additional source controls and through trip-reduction strategies. The SIP also establishes “emission budgets” for transportation and stationary sources. The budgets, developed through air quality modeling, reveal how much air pollution can occur in an area without causing violations of the NAAQS.

Under EPA rules, the 2001 RTP is subject to an air quality conformity analysis. The conformity analysis would test predicted ozone precursor emissions from the 2001 RTP against conformity budgets as defined in EPA-approved ozone attainment plans. For PM10, the test is slightly different. PM10 emissions resulting from the project must be shown to be less than those resulting from no-build conditions (current street and roadway network maintained through 2025). StanCOG and project proponents cannot implement certain transportation projects unless they come from an approved, conforming transportation plan. The purpose of conformity is to ensure that the 2001 RTP helps achieve and maintain federal ozone and PM10 standards. The air quality analysis in this EIR is intended to demonstrate compliance with CEQA and is not an air quality conformity analysis.

State Requirements

ARB, which is part of Cal-EPA, develops air quality regulations at the state level. The state regulations mirror federal regulations by establishing industry-specific pollution controls for criteria, toxic, and nuisance pollutants. California also requires areas to develop plans and strategies for attaining state ambient air quality standards as set forth in the California Clean Air Act of 1988 (table 11-1). In addition to developing regulations, ARB develops motor vehicle emission standards for California vehicles.

Local Requirements

At the local level, the SJVUAPCD is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws. Air quality is also managed through land use and development planning practices. These practices are implemented in Stanislaus County through the general planning process.

Impacts and Mitigation Measures

Methods and Assumptions for the Impact Analysis

The proposed project would generate construction-related emissions and operation-related emissions. The approach used to evaluate construction- and operation-related impacts is described below.

Methods for Assessing Construction-Related Impacts

SJVUAPCD does not require construction emissions estimates for proposed projects. Instead, it requires implementation of effective and comprehensive control measures (SJVUAPCD 1998). PM10 emitted during construction activities varies greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, and weather conditions. Despite this variability in emissions, experience has shown that there are several feasible control measures that can be reasonably implemented to reduce PM10 emissions during construction.

SJVUAPCD has determined that compliance with its Regulation VIII, including implementation of all feasible control measures specified in its Guide for Assessing and Mitigating Air Quality Impacts (SJVUAPCD 1998), constitutes sufficient mitigation to minimize adverse air quality effects. Consequently, this air quality analysis assumes that StanCOG will ensure that project proponents comply with Regulation VIII, and that such compliance will be sufficient to eliminate any potentially substantial adverse air quality effects generated by construction activities.

Methods for Assessing Operation-Related Impacts

The operation-related emissions that would be associated with implementation of the RTP primarily are CO, PM10, and ozone precursors (ROG, NO_x) emitted as vehicle exhaust. Ozone precursors and PM10 emissions during operation of the RTP were estimated using the StanCOG travel model and ARB's EMFAC and Burden models.

Criteria for Determining Significance

Appendix G of the State CEQA Guidelines, StanCOG's proposed thresholds of significance, and standard professional practice were used to determine whether the RTP would have a significant environmental effect.

State CEQA Guidelines

According to the State CEQA Guidelines, the RTP components would have a significant effect on air quality if they would

- conflict with or obstruct implementation of the applicable air quality plan;
- violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including release of emissions that exceed quantitative thresholds for ozone precursors);
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

StanCOG Adopted Thresholds of Significance

According to the thresholds of significance established by StanCOG, the RTP components would have a significant effect on air quality if they would

- expose sensitive receptors to substantial pollutant concentrations;
- produce greater than 10 tons per year of ROG;
- produce greater than 10 tons per year of NO_x;
- exceed National or California Ambient Air Quality Standard for CO (9 ppm 8-hr average; 20 ppm 1-hr average); or
- not comply with SJVUAPCD's Regulation VIII regarding particulate matter emissions from construction activities.

Other Significance Considerations

In addition to the significance criteria listed above, emission thresholds are identified in SJVUAPCD's Guide for Assessing and Mitigating Air Quality Impacts (SJVUAPCD 1998). SJVUAPCD's threshold of significance for project operations is 10 tons per year of ROG or NO_x. SJVUAPCD has not established a significance threshold for PM₁₀. However, because the SJVAB is classified as a serious nonattainment area for the federal PM₁₀ standard, emissions exceeding the SJVUAPCD's New Source Review threshold of 15 tons per year is considered a significant impact (Mitchell pers. comm.).

Impacts and Mitigation Measures of the Proposed RTP Components

Impacts Related to Highway Projects

Several types of highway projects are proposed for Stanislaus County. These projects include widening highways, constructing or reconstructing interchanges, and creating expressways on highways. The following evaluation identifies impacts related to these projects.

Impact AQ-1: Short-Term Increase in PM10 Emissions Resulting from Construction Activities

Construction activities would generate fugitive dust and PM10 from vehicle exhaust. Activities that would emit fugitive dust and PM10 include excavating soils and sediment; loading the excavated material onto trucks; tracking dirt onto paved surfaces; and emitting exhaust from trucks. Wind-blown dust in construction areas would also contribute to fugitive dust and PM10 emissions. Because construction activities could result in a significant increase in PM10, this impact is considered significant. Implementation of Mitigation Measure AQ-1 would reduce this impact to a less-than-significant level.

Mitigation Measure AQ-1: Implement Regulation VIII Control Measures During Construction

StanCOG shall require the project proponent to implement the following Regulation VIII Control Measures at all construction sites:

- a. All disturbed areas, including storage piles, that are not being actively used for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover.*
- b. All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.*
- c. All land clearing, grubbing, scraping, excavation, land leveling, grading, cut-and-fill, and demolition activities shall be effectively controlled of fugitive dust emissions using application of water or by presoaking.*
- d. With the demolition of buildings up to six stories high, all exterior surfaces of the building shall be wetted during demolition.*
- e. When materials are transported off-site, all material shall be covered or effectively wetted to limit visible dust emissions, or at least 6 inches of freeboard space from the top of the container shall be maintained.*
- f. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. (The use of dry rotary brushes is expressly prohibited except where preceded or*

accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)

- g. Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions using sufficient water or chemical stabilizer/suppressant.*

Enhanced Control Measures—*The following measure shall be implemented at construction sites when required to mitigate significant PM10 impacts (these measures shall be implemented in addition to Regulation VIII requirements):*

- a. Limit traffic speeds on unpaved roads to 15 miles per hour.*
- b. Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1%.*

Additional Control Measures—*The following control measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or that for any other reason warrant additional emissions reductions:*

- a. Install wheel washers for all trucks or wash off all trucks and equipment leaving the site.*
- b. Install wind breaks at windward side(s) of construction areas.*
- c. Suspend excavation and grading activity when winds exceed 20 miles per hour.*
- d. Limit area subject to excavation, grading, and other construction activity at any one time.*

Impact AQ-2: Increase in Operational NO_x and PM10 Emissions

Increases in vehicle trips would increase operational NO_x and PM10 emissions. Emissions were estimated by StanCOG using a special version of Burden/EMFAC 7F and 7G that was developed to generate emissions estimates to 2025, instead of 2010 (7F) and 2020 (7G). Emissions for one existing and 3 future-year scenarios were estimated:

- **Existing Conditions.** For this scenario, the model assumes the 2000 Land Use scenario (population, housing, and employment projections) and the 2000 street and road network
- **No-Build Conditions.** For this scenario, the model assumes the 2025 Land Use scenario and the 2000 street and road network.
- **No-Project Conditions.** For this scenario, the model assumes the 2025 Land Use scenario and the 2025 street and road network. The 2025 street and road network used for this scenario assumes only capacity-increasing projects that would be built if StanCOG approves no other projects, as identified in the 1998 RTP. This scenario is equivalent to the project alternative identified as the No-Project, or “Current Plan” Alternative.

- **“Unconstrained” Projects.** For this scenario, the model assumes the 2025 Land Use scenario and the 2025 street and road network, which would encompass all projects included in the No-Project scenario plus all projects submitted to StanCOG by member agencies, Caltrans, and other entities.

Emissions in tons per year for each of the modeled scenarios are presented in table 11-3.

Table 11-3. Operational Emissions Summary (In Tons Per Year)

Pollutant	Existing (2000)	No Build (2025)	No Project (2025)	“Unconstrained” Projects (2025)	No Build Minus Existing	No Project Minus Existing	“Unconstrained” Projects Minus Existing
ROG	2,549.2	1,066.9	1,119.8	1,143.5	-1,482.3	-1,429.3	-1,405.6
NO _x	2,787.9	2,641.9	2,840.1	2,951.0	-146.0	52.2	163.2
CO	37,854.0	25,981.0	27,331.0	27,915.0	-11,873.0	-10,523.0	-9,939.0
PM10	1,278.0	1,898.0	1,876.0	1,924.0	621.0	599.0	646.0

Even under the build scenarios, some pollutants (CO and ROG) are expected to decrease over the 25-year planning period because of technological improvements and increased fuel efficiency. However, the increase in emissions from the 2000 existing scenario to the 2025 “unconstrained” projects scenario is substantially above SJVUAPCD’s operational thresholds of 10 tons per year for NO_x and 15 tons per year for PM10. Therefore, this impact is considered significant. Transportation control measures (TCMs) are available to reduce air emissions associated with transportation projects. TCMs are designed to reduce VMT and vehicle trips, and to increase vehicle occupancy. Examples of TCMs include ridesharing programs; transportation infrastructure improvements, such as adding bicycle and HOV lanes; and expanded public transit services. Implementation of the TCMs identified in Mitigation Measure AQ-2 would reduce emissions of NO_x and PM10, as well as ROG and CO, although not to a less-than-significant level for all projects. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure AQ-2: Implement Transportation Control Measures to Reduce NO_x and PM10 Emissions

StanCOG shall require the project proponent to implement the following transportation control measures to reduce NO_x and PM10 emissions associated with transportation projects:

- Implement measures to reduce vehicle trips. For example, provide bicycle facilities to encourage bicycle use instead of driving.*
- Implement measures to reduce VMT. For example, provide satellite offices or telecommuting centers to reduce the length of employee commute trips.*
- Implement measures, such as ramp metering, to improve traffic flow and reduce congestion. Such measures allow vehicles to operate at*

steady and moderate speeds, thus lowering the pollution emitted per mile traveled.

- d. Implement support measures, such as “guaranteed ride home” programs, that encourage employees to use commute alternatives by allaying concerns over being without a vehicle in case of an emergency.*

Impacts Related to Local Road Projects

This section discusses impacts related to projects proposed for local roads. Local road projects are the largest category of proposed RTP improvements. These projects include proposals for widening roads, improving intersections, constructing new roads, and implementing operational improvements.

The impacts related to local road projects would be the same as those described above for the highway projects. No additional impacts would occur beyond those described above.

Impacts Related to Bicycle Projects

This section discusses impacts related to proposed bicycle facility projects. Several bicycle facility projects are proposed in the RTP. These include proposals to widen existing bikeways, install signage and/or stripe bikeways, and implement railroad crossing improvements for bikeways. The following is a discussion of the impacts related to different types of bicycle facility projects.

Impact AQ-3: Short-Term Increase in PM10 Emissions Resulting from Construction Activities Related to Bicycle Projects

The short-term construction impact related to bicycle projects would be the same as those described above for the highway projects. For reasons described for highway projects, construction activities could result in a significant increase in PM10. This impact is considered significant. Implementation of Mitigation Measure AQ-1 would reduce this impact to a less-than-significant level.

Mitigation Measure AQ-1: Implement Regulation VIII Control Measures During Construction

This mitigation measure is described above, under Impact AQ-1.

Impact AQ-4: Increase in Operational NO_x and PM10 Emissions Related to Bicycle Projects

There would no operation-related impacts associated with bicycle projects, because bicycle use would generate no emissions and would occur instead of or in addition to vehicle use. No impact would occur. No mitigation is required.

Impacts Related to Transit Projects

The RTP includes transit facility projects, such as passenger rail stations for high-speed, inter-city, and commuter rail services, as well as bus maintenance yards.

The impacts related to transit projects would be the same as those described above for highway projects. No additional impacts would occur beyond those described above.

Impacts Related to Aviation Projects

Projects related to aviation systems are proposed in the RTP. These projects include improvements to airport facilities such as runways, taxiways, parking lots, and hangars. Below is a discussion of impacts related to projects proposed for aviation facilities.

Impact AQ-5: Short-Term Increase in PM10 Emissions Resulting from Construction Activities Related to Aviation Projects

The short-term construction impact related to aviation projects would be the same as those described above for the highway projects. For reasons described for highway projects, construction activities could result in a significant increase in PM10. This impact is considered significant. Implementation of Mitigation Measure AQ-1 would reduce this impact to a less-than-significant level.

Mitigation Measure AQ-1: Implement Regulation VIII Control Measures During Construction

This mitigation measure is described above, under Impact AQ-1.

Impact AQ-6: Increase in Operational NO_x and PM10 Emissions Related to Aviation Projects

There would no operation-related impacts associated with aviation projects, because use of the proposed aviation improvement projects would generate no emissions. No impact would occur. No mitigation is required.

Combined Impacts and Mitigation Measures of the Proposed RTP Alternatives

Alternative 1: “Unconstrained” Projects

This alternative contains the most project components, because this alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. Therefore, because of the greater number of projects, it is likely that there could be more impacts on air quality under this alternative than

under other alternatives and subalternatives. The combined impacts and necessary mitigation measures for this alternative are identified below.

Significant Impacts

Implementation of this alternative would result in the following air quality impacts:

- Impact AQ-1: Short-Term Increase in PM10 Emissions Resulting from Construction Activities
- Impact AQ-3: Short-Term Increase in PM10 Emissions Resulting from Construction Activities Related to Bicycle Projects
- Impact AQ-5: Short-Term Increase in PM10 Emissions Resulting from Construction Activities Related to Aviation Projects

Implementation of the following mitigation measures would reduce the impacts identified above to a less-than-significant level:

- Mitigation Measure AQ-1: Implement Regulation VIII Control Measures During Construction

These impacts and mitigation measures are described in detail above, for the specific RTP components.

Significant Unavoidable Impacts

Implementation of this alternative would result in the following significant and unavoidable air quality impacts:

- Impact AQ-2: Increase in Operational NO_x and PM10 Emissions

Implementation of the following mitigation measures would reduce the impacts identified above, but not to a less-than-significant level:

- Mitigation Measure AQ-2: Implement Transportation Control Measures to Reduce NO_x and PM10 Emissions

Subalternative 1a: Maintenance, Safety, and Community Enhancement Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on air quality probably would be less extensive than would occur under Alternative 1.

Subalternative 1b: Congestion Relief Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on air quality probably would be less extensive than would occur under Alternative 1.

Subalternative 1c: Economic Opportunities Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on air quality probably would be less extensive than would occur under Alternative 1.

Subalternative 1d: Combined Projects Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the impacts on air quality probably would be less extensive than would occur under Alternative 1.

Alternative 2: No Project, or “Current Plan”

There are fewer project components in the No-Project Alternative than in Alternative 1 because the currently adopted RTP, which would remain in place in lieu of the 2001 RTP, does not include the New Candidate projects that have been identified since the last RTP update. Therefore, it is likely that there would be fewer impacts on air quality under this alternative than under Alternative 1.

Introduction

This chapter discusses noise impacts associated with implementation of the RTP components. Impacts and mitigation are evaluated and discussed at a program level of detail, consistent with the level of detail provided in the RTP. The impacts of the RTP alternatives are qualitatively compared to those of the RTP components.

Noise Terminology

Acoustical terms used in this analysis are defined as follows:

- *Sound* is a vibratory disturbance created by a vibrating object that, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism such as the human ear or a microphone.
- *Noise* is sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- *Ambient* noise is the composite of noise from all sources near and far in a given environment exclusive of particular noise sources to be measured.
- *A decibel (dB)* is a unitless measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-Pascals.
- *An A-weighted decibel (dBA)* is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- *The equivalent sound level (L_{eq})* is the equivalent steady-state sound or vibration level that in a stated period of time would contain the same acoustical or vibration energy. $L_{eq}(h)$ is the L_{eq} over a 1-hour period.
- *The maximum sound level (L_{max})* is the highest instantaneous sound level measured during a specified period.

- *The day-night level (L_{dn})* is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring between 10 p.m. and 7 a.m.
- *The community noise equivalent level (CNEL)* is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring between 7 p.m. and 10 p.m., and 10 dB added to the A-weighted sound levels occurring between 10:00 p.m. and 7:00 a.m.

In general, human sound perception is such that a 3-dB change in sound level is generally perceived as being just noticeable, a 5-dB change is clearly noticeable, and a 10-dB change is perceived as a doubling or halving of sound level. Additional terminology related to air blast and ground vibration effects from blasting is discussed below.

Setting

Noise-Sensitive Land Uses

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely effect the use of the land. In Stanislaus County, noise-sensitive land uses include residences, hospitals, schools, libraries, and certain types of passive recreational uses.

Existing Noise Environment

The primary sources of transportation noise in the county are traffic on surface roadways, trains, and aircraft.

Traffic Noise

Major sources of traffic noise in the county include traffic traveling on I-5, SR 33, SR 99, SR 108, SR 132, SR 165, and SR 219. Traffic traveling on local arterials and collector streets is also a source of noise.

To characterize existing traffic noise levels in the county, noise from traffic traveling on primary roadways was modeled using FHWA's Traffic Noise Prediction Model (FHWA-RD-77-108) and traffic data provided by StanCOG and Caltrans. Table 12-1 summarizes modeled traffic noise levels under existing conditions for selected primary roadways in the county. The distances in feet to various noise contours (60, 65, and 70 L_{dn}) for the modeled streets are provided, along with the modeled sound at 100 feet from the roadway centerline.

Table 12-1. Summary of Traffic Modeling for Existing Conditions

Roadway	Location	Sound Level at 100 Feet from Centerline (L _{dn})	Distance to Contour (feet)		
			70 L _{dn}	65 L _{dn}	60 L _{dn}
I-5	South of Fink Road	75	215	464	1,000
I-5	North of Howard Road	75	215	464	1,000
SR 33	North of Grayson Road	71	117	251	541
SR 33	South of West Stuhr Road	67	63	136	293
SR 33	South of Sperry Road	63	34	74	158
SR 99	North of Service Road	79	398	858	1,848
SR 99	South of West Main (Turlock)	77	293	631	1,359
SR 99	North of SR 219	79	398	858	1,848
SR 99	North of SR 132	80	464	1,000	2,154
SR 108	West of Coffee Road	64	40	86	185
SR 108	East of Claus Road	65	46	100	215
SR 108	North of Roseburg Avenue	67	63	136	293
SR 108/120	East of Stearns Road	68	74	158	341
SR 132	East of Geer/Albers Roads	70	100	215	464
SR 132	West of San Joaquin River	73	158	341	736
SR 132	East of Carpenter Road	67	63	136	293
SR 132	East of Oakdale-Waterford Highway	63	34	74	158
SR 132	West of El Vista/Mitchell Road	68	74	158	341
SR 165	North of SR 99	69	86	185	398
SR 219	East of SR 99	68	74	158	341
SR 219	West of SR 108	71	117	251	541
9th Street (Modesto)	Tuolumne River	66	54	117	251
Carpenter Road	North of Tuolumne River	70	100	215	464
Claribel Avenue	South of Coffee Road	69	86	185	398
Claus Road	South of Orangeburg Avenue	69	86	185	398
Crows Landing Road	South of Hatch Road	67	63	136	293
East Avenue (Turlock)	West of Santa Fe Avenue	65	46	100	215
Geer Road	North of Keyes Road	67	63	136	293
Golden State Boulevard	North of Main Street (Turlock)	72	136	293	631
Hatch Road	West of Mitchell Road	69	86	185	398
Las Palmas Avenue	West of San Joaquin River	69	86	185	398
Oakdale Road	North of Briggsmore Avenue	67	63	136	293

Roadway	Location	Sound Level at 100 Feet from Centerline (L_{dn})	Distance to Contour (feet)		
			70 L_{dn}	65 L_{dn}	60 L_{dn}
Patterson Road	West of Albers Road	59	18	40	86
Prescott Road	South of Standiford Avenue	62	29	63	136
Sylvan Avenue	West of Coffee Road	67	63	136	293

Note: Where barriers are located between the roadway and adjacent residences, the predicted sound level would be approximately 3 to 5 dB less, and the distance to the contour would be approximately half the distance indicated.

Train Noise

Sources of train noise in the project area include high-speed mainline operations on the Burlington Northern Santa Fe (BNSF) track (formerly the Atchison, Topeka and Santa Fe track) and the Union Pacific Railroad track (formerly the Southern Pacific Transportation Company track). Low-speed mainline and switching operations on the BNSF, Union Pacific Railroad, Sierra Railroad, Modesto and Empire Traction Company Railroad, and Tidewater Southern Railroad tracks are also sources of noise.

Based on information contained in the Stanislaus County General Plan Noise Element, year 2000 60- L_{dn} noise contours for the BNSF and Union Pacific Railroad operations are approximately 820 feet and 800 feet, respectively, from the track centerline. For the Modesto and Empire Traction Company, the worst-case distance to the 60 L_{dn} contour, based on horn use at crossings and switching movements, is 530 feet. For the Sierra Railroad, the 60 L_{dn} contour is confined to the right-of-way. For the Tidewater Southern Railroad, the 60 L_{dn} contour is approximately 150 feet from grade crossings where horns are used. Where no horns are used, the 60 L_{dn} contour is within the right-of-way.

Aircraft Noise

Primary sources of aircraft noise in the project area include airport operations at the Modesto City-County Airport, Oakdale Municipal Airport, and the Turlock Municipal Airport. Operations at the Crow's Landing Naval Auxiliary Landing Facility are also a source of aircraft noise. However, their aircraft are not based at this facility. It is used for landing and touch-and-go training by the Navy, and is not included in the RTP.

The most recently updated aircraft noise contours for the Modesto City-County Airport and the Oakdale Municipal Airport are provided in the Stanislaus County General Plan Noise Element. Contours for the Turlock Municipal Airport are published in the comprehensive land use plan for the airport.

Relevant Policies, Plans, and Regulations

Federal

Federal Highway Administration

Title 23, Part 772, of the CFR defines procedures for conducting noise studies and evaluating noise abatement for federally funded highway construction or reconstruction projects. A project is considered to result in a traffic noise impact if predicted worst-hour traffic noise levels approach or exceed the noise abatement criteria (NAC) listed in table 12-2, or if the project would result in a substantial increase in noise relative to existing conditions. The definition of *approach* and *substantial* is left to the state highway agencies to determine. Caltrans defines *approach* as being within 1 dB of the NAC and *substantial* as being a 12-dB increase (California Department of Transportation 1998).

Table 12-2. Activity Categories and Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level, dBA- $L_{eq}(h)$	Description of Activities
A	57—Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67—Exterior	Picnic and recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals
C	72—Exterior	Developed lands, properties, or activities not included in Categories A or B above
D	B	Undeveloped lands
E	52—Interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Federal Transit Administration

Noise impact criteria used by the FTA for federally funded transit project are defined in FTA's Transit Noise and Vibration Impact Assessment (Federal Transit Administration 1995). FTA applies two different sets of criteria for measuring noise impacts, depending on the type of project that is being considered: bus and rail facilities, or highway/transit projects. These sets of criteria are described below.

Bus and Rail Facilities

Bus and rail facilities include bus and rail fixed guideway, such as commuter rail, light rail and busways. The assessment of noise impacts from these sources is based on measurements of existing community noise levels, as well as project-generated noise. Noise impacts are characterized in three categories: no impact, impact, and severe impact. The criterion for the onset of impact varies according

to the existing noise level and the predicted project noise level, and it is determined by the minimum measurable change in community reaction. The corresponding criterion for severe impact also varies according to the existing noise level as well as the project noise level, but it is determined by the change in community reaction between an acceptable and an unacceptable noise environment.

The noise criteria and descriptors depend on land use classifications, as defined in table 12-3. The noise impact criteria allow incremental noise level increases above existing ambient noise, up to a point. An impact is determined to be the increment between the ambient and noise attributed to the project. These criteria curves are depicted in figure 12-1. The curve that determines onset of noise impact stops increasing at 65 dBA for Category 1 and 2 land uses, and at 70 dBA for Category 3 land uses. The curve for onset of severe noise impact flattens out at 75 dBA for Categories 1 and 2 and at 80 dBA for Category 3.

Table 12-3. Land Use Categories and Metrics for Transit Noise Impact Criteria

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor $L_{eq}(h)^*$	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use.
2	Outdoor L_{dn}	Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor $L_{eq}(h)^*$	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Buildings with interior spaces where quiet is important, such as medical offices, conference rooms, recording studios, and concert halls, fall into this category, as well as places for meditation or study associated with cemeteries, monuments, and museums. Certain historical sites, parks, and recreational facilities are also included.

* L_{eq} for the noisiest hour of transit-related activity during hours of noise sensitivity.

Highway/Transit Projects

FTA noise impact criteria for highway/transit projects (transit that is located within highway right-of-way) are based on FHWA noise prediction procedures and on the impact criteria discussed above to ensure consistency between highway noise evaluation procedures. The FHWA noise design levels are appropriate for high occupancy vehicle (HOV) lane projects or bus-only highways.

Federal Railroad Administration

Noise impact criteria used by the Federal Railroad Administration (FRA) for federally funded rail projects are defined in the FRA noise impact assessment manual entitled High Speed Ground Transportation Noise and Vibration Impact Assessment (Federal Rail Administration 1998). Criteria used by FRA have been adapted from and are essentially the same as the criteria developed by FTA, discussed above.

Federal Aviation Administration

The Federal Aviation Administration (FAA) Airport Environmental Handbook provides guidelines for assessing noise impacts associated with federally funded airport improvement projects. In general, a noise impact is considered to occur if a project results in an increase in noise of $1.5 L_{dn}$ or greater over any noise-sensitive area located within the $65 L_{dn}$ contour.

State

General Plans

In California, cities and counties are required to adopt a noise element as part of their general plans. The purpose of noise elements is to establish a land use pattern that minimizes the exposure of residents of the community to excessive noise. The State of California General Plan Guidelines, published by the Governor's Office of Planning and Research, define land-use compatibility guideline criteria for noise exposure. These criteria, which are shown in table 12-4, are the basis for most land-use compatibility criteria used by cities and counties.

California Department of Transportation

Procedures used by Caltrans to assess noise abatement and mitigation are described in the Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects (California Department of Transportation 1998). The noise abatement criteria are the same as those described above for FHWA.

California Code of Regulations

The CCR contains requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings to limit the extent of noise transmitted into habitable spaces. These requirements are known collectively as the California Noise Insulation Standards and set forth an

interior standard of 45 dB (CNEL or L_{dn}). These standards are typically enforced by local agencies through the building permit application process.

Local

As discussed above, cities and counties are required to adopt a noise element as part of their general plans. Noise elements serve as a planning guide for development. In addition, most jurisdictions have noise ordinances that serve as enforcement mechanisms to control noise from specific human-made sources.

The project area encompasses Stanislaus County and the nine incorporated cities within its boundaries. These jurisdictions each have their own noise ordinances and general plan noise elements. Below is a brief discussion of noise ordinances and noise elements from the counties and cities in the project area.

Stanislaus County

Stanislaus County’s General Plan Noise Element establishes noise level performance standards for areas in the county. Table 12-5 summarizes the County’s standards.

Table 12-5. Stanislaus County General Plan Noise Element Standards

Noise Level Performance Standards			
Category	Cumulative Number of Minutes That Noise Occurs during Any 1-Hour Time Period	Exterior Noise Level Standards	
		Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

Each of the noise level standards shall be reduced by 5 dBA for pure tone noises, noise consisting primarily of speech or music, or for recurring impulsive noises. The standards should be applied at a residential or other noise-sensitive land use and not on the property of a noise-generating land use.

Maximum Allowable Noise Exposure from Stationary Noise Sources ¹		
	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly L _{eq}	50	45
Maximum Level	70	65

¹ As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property line noise mitigation measures.

The County's noise element has explicit limitations for the new development of noise-sensitive land uses in noise-affected areas. Development in these noise-affected areas must incorporate effective mitigation measures in the project design to reduce noise levels to below

- 60 dBA L_{dn} /CNEL or less in outdoor activity areas and 45 dBA L_{dn} /CNEL or less in interior living spaces or other noise-sensitive interior spaces, for noise from traffic, railroads, and airports. Where it is not possible to reduce exterior noise sources to 60 dBA L_{dn} /CNEL or less using a practical application of the best available noise-reduction technology, an exterior noise level of up to 65 dBA L_{dn} /CNEL will be allowed. Under no circumstance will interior noise levels be allowed to exceed 45 dBA L_{dn} /CNEL with the windows and doors closed.
- 60 dBA L_{dn} /CNEL or less in interior living spaces or other noise-sensitive interior spaces, for noise resulting from local industries or other stationary noise sources.

In addition, the guidelines in table 12-5 must be met. The County's noise element further states that new development of commercial, industrial, or other noise-generating land uses will not be permitted if resulting noise levels from the project will exceed 60 dBA L_{dn} /CNEL in noise-sensitive areas.

Stanislaus County does not have a noise ordinance.

City of Modesto

The City of Modesto uses the state land use compatibility guidelines to establish guidelines for noise. Table 12-4 summarizes the land use compatibility guidelines used by Modesto. For areas zoned for single-family residential uses, Modesto has established 65 dBA L_{dn} as the maximum acceptable noise level. For areas zoned for other uses, the standards from table 12-4 apply.

The City also has established a noise ordinance to control noise. The noise ordinance prohibits the "loud and raucous discharge into the open air of the steam of any steam equipment or exhaust from any stationary internal-combustion engine." In addition, the noise ordinance prohibits the loud and raucous operation or use of any of the following items before 7:00 a.m. or after 9:00 p.m. daily (except Saturday and Sunday and on state or federal holidays, when the prohibited time shall be before 9:00 a.m. and after 9:00 p.m.):

- a hammer, or any other device or implement used to pound or strike an object
- an impact wrench, or other tool or equipment powered by compressed air
- a hand-powered saw
- any tool or piece of equipment powered by an internal-combustion engine such as, but not limited to, chainsaws, backpack blowers, and lawn mowers

- any electrically powered (whether by alternating current electricity or by direct current electricity) tool or piece of equipment used for cutting, drilling, or shaping wood, plastic, metal, or other materials or objects, such as, but not limited to, a saw, drill, lathe, or router
- heavy equipment (e.g., bulldozers, steam shovels, road graders, back hoes), ground drilling and boring equipment (e.g., derricks or dredges), hydraulic crane and boom equipment, portable power generator or pump, pavement equipment (e.g., pneumatic hammers, pavement breakers, tampers, compacting equipment), pile-driving equipment, vibrating roller, sand blaster, gunite machine, trencher, concrete truck, or hot kettle pump
- any construction, demolition, excavation, erection, alteration, or repair activity. In the case of urgent necessity and in the interest of public health and safety, the Chief Building Official may issue a permit for exemption from these. Such period shall not exceed 3 working days in length while the emergency continues but may be renewed for successive periods of 3 days or less while the emergency continues. The Chief Building Official may limit such permit as to time of use and/or permitted action, depending upon the nature of the emergency and the type of action requested.

City of Turlock

The City of Turlock's General Plan Noise Element establishes 60 dBA L_{dn} /CNEL as the maximum acceptable noise level for residential, theater, auditorium, music hall, meeting hall, church, transient lodging, motel, hotel, school, library, museum, hospital, and nursing home uses.

Turlock's noise ordinance establishes limits for exterior and interior noise, as well as for construction activities. Table 12-6 summarizes the exterior noise limits for the city, and Table 12-7 summarizes the interior noise limits.

Table 12-6. City of Turlock Noise Ordinance—Exterior Noise Limits (Levels Not to Be Exceeded More Than 30 Minutes in Any Hour)

Receiving Land Use Category	Time Period	Noise Level (dBA) by Noise Zone Classification		
		Rural/Suburban	Suburban	Urban
Residential	10:00 p.m.–7:00 a.m.	40	45	50
One and two-family	7:00 a.m.–10:00 p.m.	50	55	60
	10:00 p.m.–7:00 a.m.	45	50	55
Multiple dwelling	7:00 a.m.–10:00 p.m.	50	55	60
Public space	7:00 a.m.– 10:00 p.m.	50	55	60
Limited commercial			55	
Multiple dwellings	10:00 p.m.–7:00 a.m.		60	
	7:00 a.m.–10:00 p.m.		60	
Commercial	10:00 p.m.–7:00 a.m.		65	
Light industrial	7:00 a.m.–10:00 p.m.		70	
Heavy industrial	Any time		75	
	Any time			

Table 12-7. City of Turlock Noise Ordinance—Maximum Permissible Dwelling-Interior Sound Levels

Noise Zone	Type of Land Use	Time Interval	Allowable Interior Noise Level (dBA)
All	Residential	10:00 p.m.–7:00 a.m.	35
		7:00 a.m.–10:00 p.m.	45

Turlock’s noise ordinance further states that time-duration adjustments shall be added to the levels shown in table 12-6. These adjustments shall be added to the appropriate zoning noise levels based on the duration of the noise, and noise levels shall not exceed these cumulative noise levels. The adjustments are listed in table 12-8.

Table 12-8. City of Turlock Noise Ordinance—Exterior Duration Adjustment Corrections

Duration (Greater Than)	Adjustment (dBA)
30 minutes per hour	+ 0
15 minutes per hour	+ 5
5 minutes per hour	+ 10
1 minute per hour	+ 15
Any period of time	+ 20

Turlock’s noise ordinance establishes limits on construction activities. The ordinance sets limits on the days of construction, times of construction, and maximum allowable construction noise levels. According to the noise ordinance, operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between 7:00 p.m. and 7:00 a.m. on weekdays or 8:00 p.m. and 9:00 a.m. on weekends or holidays such that the sound creates a noise disturbance across a residential or commercial real property line is prohibited. Maximum allowable construction noise levels for construction equipment are summarized in tables 12-9 and 12-10.

Table 12-9. City of Turlock Noise Ordinance—Mobile Construction Equipment

Time Interval	One- and Two-Family Residential ¹	Multiple-Family Residential ¹	Commercial and Industrial ¹
Daily 7:00 a.m.–7:00 p.m.	75	80	85
Weekends/Holidays 9:00 a.m.–8:00 p.m.	60	65	70

¹Figures indicate maximum sound levels for nonscheduled, intermittent, short-term operation (fewer than 10 days per month) of mobile equipment.

Table 12-10. City of Turlock Noise Ordinance—Stationary Construction Equipment

Time Interval	One- and Two-Family Residential ¹ (dBA)	Multiple-Family Residential ¹ (dBA)	Commercial and Industrial ¹ (dBA)
Daily	60	65	70
7:00 a.m. - 7:00 p.m.	50	55	60
Weekends/Holidays			
9:00 a.m. - 8:00 p.m.			

¹Figures indicate maximum sound levels for repetitively scheduled and relatively long-term operation (periods of 10 days or more per month) of stationary equipment.

In addition, the operating or permitting the operation of any device creating a vibration that annoys or disturbs at least 2 reasonable people of normal sensitivity residing in separate residences at or beyond the property boundary of the source on private property, or at least 150 feet from the source on a public space or public right-of-way, is prohibited.

City of Hughson

Hughson uses the state’s land use compatibility guidelines (table 12-4) to establish guidelines for noise. The City has identified noise-affected areas as those exposed to existing or projected exterior noise levels exceeding 60 dBA L_{dn}. As such, new development of residential or other noise-sensitive land uses

are not permitted in noise-affected areas unless effective noise mitigation measures are incorporated into the project design to reduce noise levels in outdoor activity areas to 60 dBA L_{dn} /CNEL or less and interior noise levels to 45 dBA L_{dn} /CNEL or less.

Hughson’s noise ordinance does not set explicit noise limits. It prohibits the generation of noise that disturbs discomfort, causes annoyance, or disturbs the peace and quiet. The noise ordinance is applicable between 10:00 p.m. and 7:00 a.m., Monday through Friday, and between 10:00 p.m. and 8:00 a.m. on Saturday, Sunday, and legal holidays.

City of Oakdale

Oakdale’s General Plan Noise Element establishes 60 dBA L_{dn} /CNEL as the maximum acceptable noise level for low-density single-family residential, duplex, and mobile home land uses. Multiple-family residential, transient lodging, motel, and hotel land uses have a maximum acceptable noise level of 65 dBA L_{dn} /CNEL, and office buildings, business, commercial, residential, school, library, church, hospital, and nursing home land uses have a maximum acceptable noise level of 70 dBA L_{dn} /CNEL.

Oakdale does not have a noise ordinance.

City of Newman

Newman’s General Plan Noise Element establishes noise level performance standards for areas in the city. Table 12-11 summarizes Newman’s standards for noise from nontransportation sources, and table 12-12 summarizes the City’s standards for noise from transportation sources.

Table 12-11. City of Newman Noise Element—Noise Level Performance Standards for New Projects Affected by or Including Nontransportation Sources

Noise Level Descriptor	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly L_{eq} , dB	50	45
Maximum level, dB	70	65

Each of the noise levels specified above shall be lowered by 5 dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings)

Table 12-12. City of Newman Noise Element—Maximum Allowable Noise Exposure for Transportation Noise Sources

Land Use	Outdoor Activity Areas ¹ (L _{dn} /CNEL, dBA)	Interior Spaces	
		L _{dn} /CNEL, dBA	L _{eq} /, dBA ²
Residential	60 ³	45	--
Transient lodging	60 ³	45	--
Hospitals, nursing homes	60 ³	45	--
Theatres, auditoriums, music halls	--	--	35
Churches, meeting halls	60 ³	--	40
Office buildings	60 ³	--	45
Schools, libraries, museums	--	--	45
Playgrounds, neighborhood parks	70	--	--

¹Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

²As determined for a typical worst-case hour during periods of time.

³Where it is not possible to reduce noise in outdoor activity areas to 60 dBA L_{dn}/CNEL or less using a practical application of the best available noise reduction measures, an exterior noise level of up to 65 dBA L_{dn}/CNEL may be allowed, provided that available exterior noise-level reduction measures have been implemented and interior noise levels are in compliance with this table.

Newman does not have a noise ordinance.

City of Riverbank

Riverbank uses the state’s land use compatibility guidelines (table 12-4) to establish guidelines for noise. Riverbank has identified noise-affected areas as those exposed to existing or projected exterior noise levels exceeding 60 dBA L_{dn}. As such, new development of residential or other noise-sensitive land uses are not permitted in these areas unless effective noise mitigation measures are incorporated into the project design to reduce outdoor noise levels to 60 dBA L_{dn}/CNEL or less and interior noise levels to 45 dBA L_{dn}/CNEL or less. Where it is not possible to reduce exterior noise sources to 60 dBA L_{dn}/CNEL or less using a practical application of the best available noise-reduction technology, an exterior noise level of up to 65 dBA L_{dn}/CNEL will be allowed. Under no circumstance will interior noise levels be allowed to exceed 45 dBA L_{dn}/CNEL with the windows and doors closed.

Riverbank’s noise ordinance sets the maximum allowable exterior and interior noise levels and establishes limits on the hours and days that construction is allowed. Table 12-13 summarizes Riverbank’s exterior and interior noise standards.

Table 12-13. City of Riverbank Noise Ordinance—Exterior and Interior Noise Level Standards

Time Period	Allowable Equivalent Hourly Sound Level (L _{eq})	Allowable Maximum Sound Level (L _{max})
Exterior Noise Level Standards		
7:00 a.m. – 10:00 p.m.	50 dBA	70 dBA
10:00 p.m. - 7:00 a.m.	45 dBA	65 dBA
Interior Noise Level Standards		
7:00 a.m. – 10:00 p.m.	40 dBA	60 dBA
10:00 p.m. - 7:00 a.m.	35 dBA	55 dBA

Riverbank exempts construction activities from the stipulations of the noise ordinance, provided construction activities occur only between 6:00 a.m. and 6:30 p.m., Monday through Friday, and between 8:00 a.m. and 5:00 p.m. on weekends and legal holidays. Construction activities that occur outside of these guidelines are subject to the noise standards in table 12-13.

City of Waterford

Waterford’s General Plan Noise Element establishes 60 dBA L_{dn} as the exterior noise level standard and 45 dBA L_{dn} as the interior noise level standard for noise-sensitive land uses. These criteria must be applied whenever new commercial, industrial, or other noise-generating land uses are proposed for areas containing noise-sensitive land uses. Table 12-14 summarizes exterior noise level limits for based on land use.

Table 12-14. City of Waterford Noise Element—Exterior Noise Level Limits (dBA)

Receiving Land Use	Nighttime (10:00 p.m. to 7:00 a.m.)			Daytime (7:00 a.m. to 10:00 p.m.)		
	Rural Suburban	Suburban	Urban	Rural Suburban	Suburban	Urban
One- and two-family residential	40	45	50	50	55	60
Multiple-family residential	45	50	55	50	55	60
Public space	50	55	60	50	55	60
Limited commercial	--	55	--	--	60	--
Commercial	--	60	--	--	65	--
Light industrial	--	70	--	--	70	--
Heavy industrial	--	75	--	--	75	--

Waterford’s noise ordinance sets maximum allowable exterior and interior noise levels. Exterior noise limits in the noise ordinance are the same as the exterior noise guidelines from the noise element, table 12-14. The City’s interior noise limits are summarized in table 12-15.

Table 12-15. City of Waterford Noise Ordinance—Maximum Permissible Dwelling Interior Sound Levels

Noise Zone	Type of Land Use	Time Interval	Allowable Interior Noise Level (dBA)
All	Multiple family	10:00 p.m. to 7:00 a.m.	35
	Residential	7:00 a.m. to 10:00 p.m.	45

The City’s noise ordinance further states that time duration adjustments shall be added to the levels shown in tables 12-14 and 12-15. These adjustments shall be added to the appropriate zoning noise levels based on the duration of the noise, and noise levels shall not exceed these cumulative noise levels. The adjustments are shown in table 12-16.

Table 12-16. City of Waterford Noise Ordinance—Duration Adjustment Corrections

Duration (Greater Than)	Adjustment (dBA)
Exterior	
30 minutes per hour	+ 0
15 minutes per hour	+ 5
5 minutes per hour	+ 10
1 minute per hour	+ 15
Any period of time	+ 20
Interior	
5 minutes per hour	+ 0
1 minute per hour	+ 5
Any period of time	+ 10

The City’s noise ordinance also establishes limits on construction activities. The ordinance sets limits on the days of construction, times of construction, and maximum allowable construction noise levels. Construction activities are only allowed between 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 8:00 p.m. on weekends and holidays. Construction noise levels may not exceed the noise levels in table 12-17.

Table 12-17. City of Waterford Noise Ordinance—Construction Noise Levels

Time Period	R-1 and R-2 Residential (dBA)	R-3 and Above Multiple-Family Residential (dBA)	Commercial and Industrial (dBA)
Mobile Equipment			
Daily 7:00 a.m. to 7:00 p.m.	75 ¹	80 ¹	85 ¹
Weekends 9:00 a.m. to 8:00 p.m. and legal holidays	60 ¹	65 ¹	70 ¹
Stationary Equipment			
Daily 7:00 a.m. to 7:00 p.m.	60 ²	65 ²	70 ²
Weekends 9:00 a.m. to 8:00 p.m. and legal holidays	50 ²	55 ²	60 ²

¹Figures indicate maximum sound levels for nonscheduled, intermittent, short-term operation (less than 10 days per month) of mobile equipment

²Figures indicate maximum sound levels for repetitively scheduled and relatively long-term operation (periods of 10 days or more per month) of stationary equipment.

In addition, the operating or permitting the operation of any device creating a vibration that annoys or disturbs at least two reasonable people of normal sensitivity residing in separate residences at or beyond the property boundary of the source on private property, or at least 150 feet from the source on a public space or public right-of-way, is prohibited.

City of Patterson

Patterson uses the state’s land use compatibility guidelines (table 12-4) to establish guidelines for noise.

Patterson’s noise ordinance establishes hours of operations for construction activities, but does not give explicit maximum allowable noise levels. The noise ordinance states that construction may not occur within a residential zone, or within a radius of 500 feet from such zones, between 10:00 p.m. and 7:00 a.m., unless a permit authorizing an exception to the hours of construction is obtained.

City of Ceres

Ceres’ General Plan Noise Element establishes noise level performance standards for areas. Table 12-18 summarizes Ceres’ standards for noise from nontransportation sources, and table 12-19 summarizes the city’s standards for noise from transportation sources.

Table 12-18. City of Ceres Noise Element—Noise Level Performance Standards for New Projects Affected by or Including Nontransportation Sources

Noise Level Descriptor	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly L_{eq} , dB	55	45
Maximum level, dB	75	65

Each of the noise levels specified above shall be lowered by 5 dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

Table 12-19. City of Ceres Noise Element—Maximum Allowable Noise Exposure Transportation Noise Sources

Land Use	Outdoor Activity Areas ¹ L_{dn} /CNEL, dBA	Interior Spaces	
		L_{dn} /CNEL, dBA	L_{eq} , dBA ²
Residential	60 ³	45	--
Transient lodging	60 ³	45	--
Hospitals, nursing homes	60 ³	45	--
Theatres, auditoriums, music halls	--	--	35
Churches, meeting halls	60 ³	--	40
Office buildings	--	--	45
Schools, libraries, museums	--	--	45
Playgrounds, neighborhood parks	70	--	--

¹Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

²As determined for a typical worst-case hour during periods of time.

³Where it is not possible to reduce noise in outdoor activity areas to 60 dBA L_{dn} /CNEL or less using a practical application of the best available noise reduction measures, an exterior noise level of up to 65 dBA L_{dn} /CNEL may be allowed, provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

The noise element further states that, if it is impractical to achieve the noise level standards shown in table 12-19 because of roadway improvement projects, the following criteria shall be used to determine the significance of increases in noise related to roadway improvement projects:

- Where existing traffic noise levels are less than 60 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a 5-dB L_{dn} increase in noise levels caused by a roadway improvement project will be considered significant.

- Where existing traffic noise levels are between 60 and 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a 3-dB L_{dn} increase in noise levels caused by a roadway improvement project will be considered significant.
- Where existing traffic noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a 1.5-dB L_{dn} increase in noise levels caused by a roadway improvement project will be considered significant.

Ceres' noise ordinance establishes hours of operations for construction activities, but does not give explicit maximum allowable noise levels. The noise ordinance states that construction may not occur outside of the hours of 7:00 a.m. and 10:00 p.m., unless the Building Inspector or City Engineer issues a permit authorizing an exception to the hours of construction.

Impacts and Mitigation Measures

Methods and Assumptions for the Impact Analysis

Under CEQA, the significance of noise impacts associated with implementation of the proposed project must be identified. For this EIR, noise impacts are identified based on program-level information.

Traffic noise modeling for major roadways was conducted to assess the overall effects of the RTP components. The FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) and traffic data provided by StanCOG and Caltrans were used for this assessment. Traffic noise modeling was conducted for existing, no-project, and "unconstrained" project conditions. These modeling results were compared to determine the contribution the RTP components would have to noise in the region.

The effects of the RTP components on noise generated by rail, aircraft, and transit operations was assessed based on a review of related projects and information in the Central Stanislaus Freight Study (Stanislaus Council of Governments 2001) and the Stanislaus County Regional Aviation System Plan 1998 Update (Stanislaus Council of Governments 1998).

The process of determining the significance of noise impacts involved establishing thresholds at which impacts would be considered significant. Noise effects associated with the RTP components were evaluated using the significance thresholds, and mitigation measures were identified to reduce significant impacts.

Criteria for Determining Significance

Appendix G of the State CEQA Guidelines and StanCOG's adopted thresholds of significance were used to determine whether the RTP components would have a significant environmental effect.

State CEQA Guidelines

According to the State CEQA Guidelines, the RTP would have a significant noise impact if it would

- expose people to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

StanCOG Adopted Thresholds of Significance

According to the thresholds established by StanCOG, the RTP would have a significant noise impact if it would

- result in operational noise from surface traffic, rail, aircraft, or transit operations that exceeds exterior or interior noise standards or abatement/mitigation criteria in local noise element policies or state or federal regulations or guidelines;
- result in construction activity within 500 feet of a noise-sensitive use;
- result in construction activity that occurs for more than 1 day and adds 10 dBA to exterior ambient noise at noise-sensitive uses;
- result in construction activity that occurs for more than 10 days in 3 months and adds 5 dBA to exterior ambient noise at noise-sensitive use;
- result in construction activity that adds 5 dBA to exterior ambient noise at noise-sensitive uses between the hours of 9 p.m. to 7 a.m. Monday through Friday, or 6 p.m. to 8 a.m. on Saturday, or any time Sunday;
- result in the construction of a new rail line or an increase in the daily number or length of trains within 3,000 feet of a noise-sensitive use; or
- result in aircraft noise attributable to airport operations greater than 65 dB CNEL at noise-sensitive uses and an increase in ambient noise by 1.5 dB CNEL or more.

Impacts and Mitigation Measures of the Proposed RTP Components

Impacts Related to Highway Projects

There are several types of projects proposed for highway facilities in Stanislaus County. These include proposals to widen highways, construct or reconstruct interchanges, and create expressways on highway facilities. Below is an evaluation of impacts related to proposed projects located on highway facilities.

Impact NOISE-1: Exposure of Noise-Sensitive Land Uses to Construction Noise from Highway Projects

Construction activities associated with the highway and local road improvement projects in the RTP could intermittently generate high noise levels on and adjacent to the construction areas. Noise-generating construction activities associated with the RTP could include demolition, grading and earthmoving activities, hauling of materials, roadway construction activities, and building of structures. Residences and other noise-sensitive uses adjacent to construction sites could be exposed to construction noise.

Table 12-20 summarizes noise levels produced by construction equipment commonly used on roadway construction projects. Equipment involved in construction typically generates noise levels ranging from 80–89 dB at a distance of 50 feet from the construction equipment.

Table 12-20. Construction Equipment Noise

Type of Equipment	Maximum Level, dBA at 50 Feet
Scrapers	89
Bulldozers	85
Heavy trucks	88
Backhoe	80
Paver	89
Pneumatic tools	85
Concrete pump	82
Compactor	82

Noise produced by construction equipment would attenuate at a rate of approximately 6 dB per doubling of distance. Background sound levels in residential and other noise-sensitive areas are typically in the range of 45–60 dBA. Noise from construction therefore has the potential to be 5 to 10 dB above exterior ambient sound levels. Construction activities also could occur within 500 feet of a noise-sensitive use. This impact is therefore considered significant. Implementation of feasible noise mitigation measures would be expected to reduce construction noise impacts to a less-than-significant level in most cases. However, it is likely that there will be situations where noise cannot be reduced to a less-than-significant level, such as conditions where the noise source is

located immediately adjacent to residences. This impact is therefore considered significant and unavoidable. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level.

Mitigation Measure NOISE-1: Develop and Implement a Construction Noise Abatement/Mitigation Plan

StanCOG shall require project proponents to develop and implement a construction noise abatement/mitigation plan to reduce adverse noise effects from construction activity. Key elements of the plan shall include, but not be limited to, the following requirements:

- *Construction contractors shall comply with all relevant provisions of applicable local noise ordinances.*
- *All construction equipment shall have sound-control devices no less effective than those provided on the original equipment. No equipment shall have an unmuffled exhaust.*
- *As directed by the lead local agency, the contractor shall implement appropriate additional noise mitigation measures including, but not limited to*
 - *changing the location of stationary construction equipment,*
 - *shutting off idling equipment,*
 - *rescheduling construction activity,*
 - *notifying adjacent residents in advance of construction work, and*
 - *installing acoustic barriers around stationary construction noise sources or construction sites.*

Impact NOISE-2: Exposure of Noise-Sensitive Land Uses to Operational Noise from Highway Projects

Numerous highway improvement projects are identified in the RTP. These projects include widening highways and implementing interchange improvements. Table 12-21 summarizes predicted traffic noise levels along major highways and roadways in the county under existing, future no-project, and future “unconstrained” project conditions. Worst-hour L_{eq} values would be about 1 dB less than those shown in the table.

The results in table 12-21 indicate that traffic noise along existing roadways would exceed local planning standards and FHWA/Caltrans noise abatement criteria with implementation of the RTP. However, comparison of future “unconstrained” project conditions with future no-project conditions indicates that the change in traffic noise associated with implementation of the RTP would be small (less than 3 dB). This impact is considered significant.

Table 12-21. Comparison of Noise Modeling Results

Roadway	Location	L _{dn} at 100 Feet from Centerline			No-Project Minus Existing Conditions	Unconstrained Projects Minus Existing Conditions	Unconstrained Projects Minus No Project
		Existing	No Project	Unconstrained Projects			
I-5	South of Fink Road	75	78	78	3	3	0
I-5	North of Howard Road	75	78	78	3	3	0
SR 33	North of Grayson Road	71	73	73	2	2	0
SR 33	South of West Stuhr Road	67	70	70	3	3	0
SR 33	South of Sperry Road	63	67	66	4	3	-1
SR 99	North of Service Road	79	81	82	2	3	1
SR 99	South of West Main (Turlock)	77	80	81	3	4	1
SR 99	North of SR 219	79	82	82	3	3	0
SR 99	North of SR 132	80	82	83	2	3	1
SR 108	West of Coffee Road	64	66	67	2	3	1
SR 108	East of Claus Road	65	65	64	0	-1	-1
SR 108	North of Roseburg Avenue	67	68	68	1	1	0
SR 108/120	East of Stearns Road	68	69	69	1	1	0
SR 132	East of Geer/Albers Roads	70	72	73	2	3	1
SR 132	West of San Joaquin River	73	74	73	1	0	-1
SR 132	East of Carpenter Road	67	72	72	5	5	0
SR 132	East of Oakdale-Waterford Highway	63	64	64	1	1	0
SR 132	West of El Vista/Mitchell Road	68	70	71	2	3	1

Roadway	Location	L _{dn} at 100 Feet from Centerline			No-Project Minus Existing Conditions	Unconstrained Projects Minus Existing Conditions	Unconstrained Projects Minus No Project
		Existing	No Project	Unconstrained Projects			
SR 165	North of SR 99	69	71	71	2	2	0
SR 219	East of SR 99	68	72	72	4	4	0
SR 219	West of SR 108	71	76	76	5	5	0
9th Street (Modesto)	Tuolumne River	66	68	67	2	1	-1
Carpenter Road	North of Tuolumne River	70	72	74	2	4	2
Claribel Avenue	South of Coffee Road	69	73	72	4	3	-1
Claus Road	South of Orangeburg Avenue	69	72	74	3	5	2
Crows Landing Road	South of Hatch Road	67	68	69	1	2	1
East Avenue (Turlock)	West of Santa Fe Avenue	65	67	67	2	2	0
Geer Road	North of Keyes Road	67	69	70	2	3	1
Golden State Boulevard	North of Main Street (Turlock)	72	73	73	1	1	0
Hatch Road	West of Mitchell Road	69	72	73	3	4	1
Las Palmas Avenue	West of San Joaquin River	69	71	71	2	2	0
Oakdale Road	North of Briggsmore Avenue	67	70	70	3	3	0
Patterson Road	West of Albers Road	59	64	65	5	6	1
Prescott Road	South of Standiford Avenue	62	66	66	4	4	0
Sylvan Avenue	West of Coffee Road	67	69	70	2	3	1

Where barriers are located between the roadway and adjacent residences, the predicted sound level would be approximately 3 to 10 dB less, and the distance to the contour would be approximately half the distance indicated.

Implementation of feasible noise mitigation measures would be expected to reduce traffic noise impacts to a less-than-significant level in most cases. However, it is likely that there will be situations where noise cannot be reduced to a less-than-significant level. This impact is therefore considered to be significant and unavoidable. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level.

Mitigation Measure NOISE-2: Develop and Implement Traffic Noise Abatement/Mitigation Plan

StanCOG shall require project proponents to develop a traffic noise abatement/mitigation plan to reduce adverse noise effects resulting from roadway improvement projects. Key elements of the plan shall include, but not be limited to, the following requirements:

- *Proponents of roadway improvements shall conduct a detailed traffic noise impact and abatement/mitigation analysis of proposed roadway improvement projects in compliance with applicable local, state, and federal requirements.*
- *Sponsors of roadway improvement projects shall incorporate all reasonable and feasible noise abatement/mitigation measures into the design of the projects.*

Impacts Related to Local Road Projects

Local road projects are the largest category of proposed RTP improvements. These include road widenings, intersection improvements, expressways on local roads, new construction, and operational improvements. Below is a discussion of impacts related to proposed projects located on local roads.

In general, the impacts related to local road projects would be the same as those described above for the highway projects; the following impact, similar to Impact NOISE-2, would result from local road projects and merits separate discussion.

Impact NOISE-3: Exposure of Noise-Sensitive Land Uses to Operational Noise from Local Road Projects

The RTP includes the construction of new local roadways. At locations where new roadways are adjacent to noise-sensitive uses, it is likely that local planning standards and FHWA/Caltrans noise abatement criteria would be violated and that substantial increases in noise would occur. This impact is therefore considered significant. Implementation of Mitigation Measure NOISE-2 would reduce this impact, but not to a less-than-significant level. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure NOISE-2: Develop and Implement Traffic Noise Abatement/Mitigation Plan

This mitigation measure is described above, under Impact NOISE-2.

Impacts Related to Bikeway Projects

Several bicycle facility projects are proposed in the RTP. These include proposals to widen existing bikeways, install signage and/or striping for bikeways, and implement railroad-crossing improvements for bikeways. Below is a discussion of impacts related to proposed projects for bicycle facilities.

Impact NOISE-4: Exposure of Noise-Sensitive Land Uses to Construction Noise from Bicycle Projects

Construction activities associated with bicycle facility projects would be similar to those identified above for highway projects. For the reasons discussed for highway projects, this impact is considered significant. Implementation of feasible noise mitigation measures would be expected to reduce construction noise impacts to a less-than-significant level in most cases. However, it is likely that there will be situations where noise cannot be reduced to a less-than-significant level. This impact is therefore considered significant and unavoidable. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level.

Mitigation Measure NOISE-1: Develop and Implement a Construction Noise Abatement/Mitigation Plan

This mitigation measure is described above, under Impact NOISE-1.

Impact NOISE-5: Exposure of Noise-Sensitive Land Uses to Noise from Bicycle Projects

Operation of bikeways would not be a source of noise; maintenance activities would occur infrequently and would not generate substantial noise. Bicyclists using the bikeways also would not create significant noise. This impact is therefore considered less than significant. No mitigation is required.

Impacts Related to Transit Projects

The RTP includes transit facility projects. These projects include passenger rail stations for high-speed, intercity, and commuter rail services, as well as bus maintenance yards. Below is a discussion of impacts related to proposed transit facilities.

Impact NOISE-6: Exposure of Noise-Sensitive Land Uses to Construction Noise from Transit Projects

Rail projects identified in the RTP include a new high-speed rail line between Sacramento and Bakersfield; the addition of one round trip per day on existing tracks in 2002, 2005, and 2007; and construction of passenger rail stations in Turlock, Ceres, and Salida. In addition, the RTP includes the construction of bus maintenance yards in Modesto, Riverbank, Turlock, and Waterford. Construction activities associated with these projects would be similar to those identified above for highway projects. For the reasons discussed for highway projects, this impact is considered significant. Implementation of feasible noise mitigation measures would be expected to reduce construction noise impacts to a

less-than-significant level in most cases. However, it is likely that there will be situations where noise cannot be reduced to a less-than-significant level. This impact is therefore considered to be significant and unavoidable. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level.

Mitigation Measure NOISE-1: Develop and Implement a Construction Noise Abatement/Mitigation Plan

This mitigation measure is described above, under Impact NOISE-1.

Impact NOISE-7: Exposure of Noise-Sensitive Land Uses to Operational Noise from Rail Projects

Rail projects identified in the RTP include a new high-speed rail line between Sacramento and Bakersfield; addition of one round trip per day on existing tracks in 2002, 2005, and 2007; and construction of passenger rail stations in Turlock, Ceres, and Salida. These projects involve locating a new rail line and increasing the daily number or length of trains within 3,000 feet of noise-sensitive uses, such as residences. In addition, parking lot use and general activity associated with passenger rail stations could increase noise in the vicinity of the stations in Turlock, Ceres, and Salida. For these reasons, this impact is considered significant.

Implementation of feasible noise mitigation measures would be expected to reduce noise associated with rail activities to a less-than-significant level in many cases. However, it is likely that there will be situations where noise cannot be reduced to a less-than-significant level. This impact is therefore considered to be significant and unavoidable. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level.

Mitigation Measure NOISE-3: Develop and Implement an Operational Noise Abatement/Mitigation Plan for Rail Transit

StanCOG shall require project proponents to develop a rail noise abatement/mitigation plan to reduce adverse noise effects from rail projects. StanCOG shall require the project proponent to perform a general assessment of noise source levels in accordance with procedures defined by FTA, with a more detailed noise analysis to be performed at the project level of environmental review. The assessment and plan will be initially submitted to StanCOG and further incorporated into subsequent environmental review. Key elements of the plan shall include, but not be limited to, the following requirements:

- *Proponents of rail transit projects shall conduct a detailed noise impact and abatement/mitigation analysis of proposed projects in compliance with applicable local, state, and federal requirements.*
- *Proponents of rail transit projects shall incorporate all reasonable and feasible noise abatement/mitigation measures into the design of the projects, including measures such as operational restrictions, noise barriers, wheel truing, rail grinding and others.*

Impact NOISE-8: Exposure of Noise-Sensitive Land Uses to Construction Noise from Bus Maintenance Yard Projects

The RTP includes the construction of bus maintenance yards in Modesto, Riverbank, Turlock, and Waterford. Construction activities associated with these projects would be similar to those identified above for highway projects. For the reasons discussed for highway projects, this impact is considered significant. Implementation of feasible noise mitigation measures would be expected to reduce construction noise impacts to a less-than-significant level in most cases. However, it is likely that there will be situations where noise cannot be reduced to a less-than-significant level. This impact is therefore considered significant and unavoidable. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level.

Mitigation Measure NOISE-1: Develop and Implement a Construction Noise Abatement/Mitigation Plan

This mitigation measure is described above, under Impact NOISE-1.

Impact NOISE-9: Exposure of Noise-Sensitive Land Uses to Operational Noise from Bus Maintenance Yards

The RTP includes the construction of bus maintenance yards in Modesto, Riverbank, Turlock, and Waterford. Although specific details on the extent of activity at the yards is not yet known, data provided by the FTA indicate that a typical bus maintenance yard could produce noise at a level of about 78 dBA at 50 feet. This noise would attenuate at a rate of about 6 dB per doubling of distance. Where the bus yard is adjacent to noise sensitive land uses, it is likely that local planning standards and FTA noise impact criteria would be violated, and that substantial increases in noise would occur. This impact is therefore considered significant.

Implementation of feasible noise mitigation measures would be expected to reduce traffic noise impacts to a less-than-significant level in most cases. However, it is likely that there will be situations where noise cannot be reduced to a less-than-significant level. This impact is therefore considered significant and unavoidable. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level.

Mitigation Measure NOISE-4: Develop and Implement a Operational Noise Abatement/Mitigation Plan for Bus Maintenance Yards

StanCOG shall require project proponents develop a noise abatement/mitigation plan to reduce adverse noise effects from the operation of bus maintenance yards. StanCOG shall require the project proponent to perform a general assessment of noise source levels for stationary sources in accordance with procedures defined by FTA, with a more detailed noise analysis to be performed at the project level of environmental review. Key elements of the plan shall include, but not be limited to, the following requirements:

- *Proponents of bus maintenance yard projects shall conduct a detailed noise impact and abatement/mitigation analysis of proposed*

projects in compliance with any applicable local, state, and federal requirements.

- *Proponents of bus maintenance yard projects shall comply with all local noise ordinances regulating industrial uses, obtain all required permits, and incorporate all reasonable and feasible noise abatement/mitigation measures into the design of the projects, including measures such as limiting hours of operation, locating equipment away from sensitive land uses, and others.*

Impacts Related to Aviation Projects

Projects related to aviation systems are proposed in the RTP. These projects include improvements to airport facilities such as runways, taxiways, parking lots, and hangars. Below is a discussion of impacts related to projects proposed for aviation facilities.

Impact NOISE-10: Exposure of Noise-Sensitive Land Uses to Construction Noise from Aviation Projects

The RTP includes improvements to the Modesto City-County Airport, the Oakdale Municipal Airport, and the Turlock Municipal Airport. Construction activities associated with these projects would be similar to those identified above for highway projects. For the reasons discussed above, this impact is considered significant. Implementation of feasible noise mitigation measures would be expected to reduce construction noise impacts to a less-than-significant level in most cases. However, it is likely that there will be situations where noise cannot be reduced to a less-than-significant level. This impact is therefore considered to be significant and unavoidable. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level.

Mitigation Measure NOISE-1: Develop and Implement a Construction Noise Abatement/Mitigation Plan

This mitigation measure is described above, under Impact NOISE-1.

Impact NOISE-11: Exposure of Noise-Sensitive Land Uses to Operational Noise from Aviation Projects

The RTP includes improvements to the Modesto City-County Airport, the Oakdale Municipal Airport, and Turlock Municipal Airport. The extent to which these specific improvements would increase operations at the airports has not been determined yet. However, information in the Stanislaus County Regional Aviation System Plan Update (Stanislaus Council of Governments 1998) indicates that projected increased activity at the Modesto City-County Airport would result in increased noise levels in the airport's adjacent residential environment. Under with-project, worst-case conditions, approximately 1,036 dwelling units and one school would be subject to noise levels of 65 CNEL or higher. Although not explicitly stated in the RTP, it appears likely that there would be at least a 1.5-dB increase in noise in some areas currently exposed to aircraft noise greater than 65 dB CNEL. This impact is considered significant.

Implementation of feasible noise mitigation measures would be expected to reduce noise associated with aircraft activities to a less-than-significant level in many cases. However, it is likely that there will be situations where noise cannot be reduced to a less-than-significant level. This impact is therefore considered to be significant and unavoidable. Implementation of the following mitigation measure would reduce this impact, but not to a less-than-significant level.

Mitigation Measure NOISE-5: Develop and Implement Aircraft Noise Abatement/Mitigation Plan

StanCOG shall require project proponents to develop an aircraft noise abatement/mitigation plan to reduce adverse noise effects from aviation projects. Key elements of the plan shall include, but not be limited to, the following requirements:

- *Proponents of aviation projects shall conduct a detailed noise impact and abatement/mitigation analysis of proposed projects in compliance with applicable local, state, and federal requirements.*
- *Proponents of aviation projects shall incorporate all reasonable and feasible noise abatement/mitigation measures into the design of the projects.*

Combined Impacts and Mitigation Measures of the Proposed RTP Alternatives

Alternative 1: “Unconstrained” Projects

This alternative contains the most project components, because this alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. Therefore, because of the greater number of projects, it is likely that there could be more noise impacts under this alternative than under other alternatives and subalternatives. The combined impacts and necessary mitigation measures for this alternative are identified below.

Significant Unavoidable Impacts

Implementation of this alternative would result in the following significant and unavoidable noise-related impacts:

- Impact NOISE-1: Exposure of Noise-Sensitive Land Uses to Construction Noise
- Impact NOISE-2: Exposure of Noise-Sensitive Land Uses to Operational Noise from Highway Improvement Projects
- Impact NOISE-3: Exposure of Noise-Sensitive Land Uses to Operational Noise from Local Road Projects

- Impact NOISE-4: Exposure of Noise-Sensitive Land Uses to Construction Noise from Bicycle Projects
- Impact NOISE-6: Exposure of Noise-Sensitive Land Uses to Construction Noise from Transit Projects
- Impact NOISE-7: Exposure of Noise-Sensitive Land Uses to Operational Noise from Rail Projects
- Impact NOISE-8: Exposure of Noise-Sensitive Land Uses to Construction Noise from Bus Maintenance Yard Projects
- Impact NOISE-9: Exposure of Noise-Sensitive Land Uses to Operational Noise from Bus Maintenance Yards
- Impact NOISE-10: Exposure of Noise-Sensitive Land Uses to Construction Noise from Aviation Projects
- Impact NOISE-11: Exposure of Noise-Sensitive Land Uses to Operational Noise from Aviation Projects

Implementation of the following mitigation measures would reduce this impact, but not to a less-than-significant level:

- Mitigation Measure NOISE-1: Develop and Implement a Construction Noise Abatement/Mitigation Plan
- Mitigation Measure NOISE-2: Develop and Implement Traffic Noise Abatement/Mitigation Plan
- Mitigation Measure NOISE-3: Develop and Implement an Operational Rail Noise Abatement/Mitigation Plan for Rail Transit
- Mitigation Measure NOISE-4: Develop and Implement an Operational Noise Abatement/Mitigation Plan for Bus Maintenance Yards
- Mitigation Measure NOISE-5: Develop and Implement Aircraft Noise Abatement/Mitigation Plan

These impacts and mitigation measures are described in detail above, for the specific RTP components.

Subalternative 1a: Maintenance, Safety, and Community Enhancement Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the noise impacts probably would be less extensive than would occur under Alternative 1.

Subalternative 1b: Congestion Relief Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the noise impacts probably would be less extensive than would occur under Alternative 1.

Subalternative 1c: Economic Opportunities Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the noise impacts probably would be less extensive than would occur under Alternative 1.

Subalternative 1d: Combined Projects Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the noise impacts probably would be less extensive than would occur under Alternative 1.

Alternative 2: No Project, or “Current Plan”

There are fewer project components in the No-Project Alternative than in Alternative 1 because the currently adopted RTP, which would remain in place in lieu of the 2001 RTP, does not include the New Candidate projects that have been identified since the last RTP update. Therefore, it is likely that there would be fewer noise impacts under this alternative than under Alternative 1.

Introduction

This chapter describes existing energy consumption and conservation efforts in Stanislaus County as it relates to this project, and provides a program-level evaluation of the potential energy-related impacts of the RTP. The potential impacts of the RTP alternatives are qualitatively compared to those of the RTP components in this chapter. A discussion of the measures that would be used to mitigate significant impacts is also presented.

Setting

Energy Consumption

Stanislaus County's regional transportation system includes a street and highway system along with alternate transportation modes consisting of bicycles, transit, and aviation. For each of these systems (with the exception of bicycles), the primary sources of energy are gasoline and diesel fuel. Electricity consumption by the transportation system is negligible.

Street and Highway System

California's transportation system is the largest end-user of energy in the state, accounting for approximately 50% of total energy use (California Energy Commission 1999). On-road vehicles are estimated to consume approximately 80% of California's transportation energy, with cars, trucks, and buses accounting for nearly all of the on-road fuel consumption, 90% of which is gasoline.

Caltrans estimates that in 2000, more than 190 million gallons of gasoline and diesel fuel were consumed in Stanislaus County. In 2005, the average daily on-road vehicle energy consumption in Stanislaus County is expected to increase by

15%, reaching approximately 219 million gallons of gasoline and diesel fuel (California Department of Transportation 2000).

Alternate Transportation Modes

Alternate modes of transportation include bicycles, transit, and aviation. Of these, energy use associated with bicycles is limited to motorized vehicles used for maintenance of bike trails.

Airports in Stanislaus County rely on locally provided energy sources. Modesto City-County Airport receives its electrical power from the Modesto Irrigation District; it has a supplemental generation system, but the system is insufficient to provide lighting for the runway. Airports in Turlock and Oakdale receive electrical power from the Turlock Irrigation District and Oakdale Irrigation District, respectively (Stanislaus Council of Governments 1998).

Transit in Stanislaus County includes both bus and rail service. Both types of transit use diesel fuel as their primary energy source.

Relevant Plans, Policies, and Regulations

Transportation and air quality policies presented in the RTP that attempt to reduce the number of vehicle trips or trip lengths encourage reductions in energy consumption.

Ride-sharing programs, for example, can achieve a 2–5% savings in total direct transportation energy, whereas transit improvements can achieve a 1–3% savings. Traffic flow improvements, such as traffic signal timing synchronization, turn lane signalization, and intersection widening, can achieve a 1–4% energy savings by reducing vehicle idling and increasing peak-hour vehicle speeds (California Department of Transportation 1983).

Policies that promote the shift from automobile use to transit or nonmotorized modes such as bicycles directly reduce consumption of diesel fuel and gasoline by reducing automobile trips and vehicle miles traveled (VMT). By encouraging land use decisions that reduce VMT, the RTP helps to reduce the need for travel and thereby helps to reduce energy consumption.

Impacts and Mitigation Measures

Methods and Assumptions for the Impact Analysis

Implementation of the Stanislaus County 2001 RTP would affect energy use in two ways: project construction would require energy use, and project operations

would result in changes in energy use through changes in VMT and average speeds. The analysis in this EIR assesses the effects of implementing the 2001 RTP, assuming full implementation by 2020.

Criteria for Determining Significance

The State CEQA Guidelines do not specifically address significance criteria for energy-related impacts, and StanCOG has not adopted thresholds of significance for energy-related impacts. Therefore, the significance criteria used in this program EIR to determine whether the project would have a significant impact on energy is based on standard professional practice. For energy, a plan or a project may have a significant adverse impact if it would result in an increase in overall per capita energy consumption or an increase in reliance on nonrenewable resources.

Impacts and Mitigation Measures of the Proposed RTP Components

Impacts Related to Highway Projects

Impact E-1: Increased Energy Consumption Associated with Construction of Highway Projects

Construction of proposed highway projects, and highway projects in general, would require energy, primarily diesel fuel and gasoline. Detailed estimates of construction-related energy use are not available. Generally, however, energy used in road construction is a small percentage of the total energy used during road operations. Consequently, this impact is considered less than significant. No mitigation is required.

Impact E-2: Increased Energy Consumption Associated with Operation of Highway Projects

Table 13-1 shows the estimated vehicular fuel consumption on Stanislaus County's roadways in 2020 under three alternatives: no build (beyond what exists in 2001), the "No-Project" constrained road network in which the only construction is to alleviate congestion, and the "Unconstrained" Projects Alternative. The fuel consumption estimates take into account VMT projections for each alternative and 2020 average fuel economy rates (California Department of Transportation 2000).

As shown in table 13-1, energy consumption for vehicular travel under the 2001 RTP "Unconstrained" Projects scenario equals 995,075 gallons, which is equivalent to 140 billion British thermal units (Btu), on an average daily basis in 2020. This energy consumption is approximately 4% higher than the 2020 constrained scenario and 14% higher than the 2020 no-build alternative.

Table 13-1. Vehicle Energy Consumption

Scenario	Daily Vehicle Gasoline/Diesel Use (gallons)	Daily Vehicle Energy Use (in billion Btu)	Percent Change in Energy Used from "2000 Existing" (%)
2000 Existing	530,100	75	--
2020 No Build	875,659	123	64
2020 No Project	954,905	134	79
2020 Unconstrained	995,075	140	87

Notes:

This analysis uses VMT estimates prepared by StanCOG for 2020 conditions. 2000 conditions are based on Caltrans' Motor Vehicle Stock, Travel, and Fuel Forecast (California Department of Transportation 2000). Energy use also reflects average California fuel economy for 2020 (18.95 miles per gallon).

By 2020, implementing the 2001 RTP would lead to an approximately 87% increase in energy use relative to existing conditions. This increased energy consumption would outpace countywide population growth, which is expected to grow by 57% between 2000 and 2020 (California Department of Finance 2001). Thus, per capita energy consumption for transportation would increase under the 2001 RTP between 2000 and 2020. This impact is considered significant. No mitigation is available to reduce this impact to a less-than-significant level. Therefore, this impact is considered significant and unavoidable.

Impacts Related to Local Road Projects

This section discusses impacts related to projects proposed for local roads. Local road projects are the largest category of proposed RTP improvements. These projects include proposals for widening roads, improving intersections, constructing new roads, and implementing operational improvements.

The construction and operational energy impacts related to local road projects would be the same as those described above for highway projects. No additional impacts would occur beyond those described above for the highway projects.

Impacts Related to Bicycle Projects

This section discusses impacts related to proposed bicycle facility projects. Several bicycle facility projects are proposed in the RTP. These include proposals to widen existing bikeways, install signage and/or stripe bikeways, and implement railroad crossing improvements for bikeways.

Construction of bicycle facilities would result in energy consumption as described below.

Impact E-3: Increased Energy Consumption Associated with Construction of Bicycle Projects

Construction of bicycle projects proposed in the RTP would require energy, primarily diesel fuel and gasoline for construction vehicles. Detailed estimates of construction-related energy use associated with bicycle facility construction are not available. Generally, however, energy used in bicycle facility construction would be relatively minor and short term. Consequently, this impact is considered less than significant. No mitigation is required.

Impact E-4: Increased Energy Consumption Associated with Operation of Bicycle Projects

The operational impacts of bicycle facility projects would result in virtually no energy consumption. To the extent that trips are diverted from motor vehicles to bicycling, per capita energy consumption would be reduced. No mitigation is required, because no adverse impact would occur.

Impacts Related to Transit Projects

This section discusses impacts related to proposed transit facility projects. Several transit facility projects are proposed in the RTP. These include proposals for rail improvements and bus maintenance yards. The following is a discussion of impacts related to proposed transit facilities.

Impact E-5: Increased Energy Consumption Associated with Construction of Rail Improvement Projects

Construction of rail improvement projects proposed in the RTP would require energy, primarily diesel fuel and gasoline for construction vehicles. Detailed estimates of construction-related energy use associated with rail improvements are not available. Generally, however, energy used in construction of rail improvements would be relatively minor and short term. Consequently, this impact is considered less than significant. No mitigation is required.

Impact E-6: Increased Energy Consumption Associated with Operation of Rail Improvement Projects

The operation-related impacts of rail improvement projects would result in consumption of fossil fuels, primarily diesel fuel. Although energy consumption attributable to rail improvements would be dwarfed by on-road vehicle energy consumption, the impacts are similar to those described in Impact E-2. Like Impact E-2, this impact is considered significant and unavoidable.

Impact E-7: Increased Energy Consumption Associated with Construction of Improvements at Bus Maintenance Yards

Construction improvements at bus maintenance yards proposed in the RTP would require energy, primarily diesel fuel and gasoline, for construction vehicles. Detailed estimates of construction-related energy use associated with these construction improvements are not available. Generally, however, energy used in such construction would be relatively minor and short term. Consequently, this impact is considered less than significant. No mitigation is required.

Impact E-8: Increased Energy Consumption Associated with Operation of Improvements at Bus Maintenance Yards

The operational increase in fuel consumption associated with bus maintenance yard improvements is expected to be minimal. There are no energy impacts associated with the operational aspects of the bus maintenance yard improvements. No mitigation is required.

Impacts Related to Aviation Projects

This section discusses impacts related to proposed aviation projects. Several aviation projects are proposed in the RTP. Construction and operation of these projects would result in the consumption of fossil fuels, as described below.

Impact E-9: Increased Energy Consumption Associated with Construction of Improvements for Aviation Facilities

Construction of aviation improvement projects proposed in the RTP would require energy, primarily diesel fuel and gasoline for construction vehicles. Detailed estimates of construction-related energy use associated with aviation projects are not available. Generally, however, energy used in construction of aviation projects would be relatively minor and short term. Consequently, this impact is considered less than significant. No mitigation is required.

Impact E-10: Increased Energy Consumption Associated with Operation of Aviation Facilities

Operation of aviation projects could result in an increase in aviation-related activity. The increase in flights would result in an increase in energy consumption. When combined with the increase in energy consumption from on-road motor vehicles, this impact is considered significant. No mitigation is available to reduce this impact to a less-than-significant level. Therefore, this impact is considered significant and unavoidable.

Combined Impacts and Mitigation Measures of the Proposed RTP Alternatives**Alternative 1: “Unconstrained” Projects**

This alternative contains the most project components, because this alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. Therefore, because of the greater number of projects, it is likely that there could be more energy impacts under this alternative than under other alternatives and subalternatives. The combined impacts and necessary mitigation measures for this alternative are identified below.

Significant Unavoidable Impacts

Implementation of this alternative would result in the following energy-related impacts:

- Impact E-2: Increased Energy Consumption Associated with Operation of Highway Projects
- Impact E-6: Increased Energy Consumption Associated with Operation of Rail Improvement Projects
- Impact E-10: Increased Energy Consumption Associated with Operation of Aviation Facilities

These impacts are described in detail above, for the specific RTP components. There is no mitigation available to reduce these impacts to a less-than-significant level.

Subalternative 1a: Maintenance, Safety, and Community Enhancement Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the energy impacts probably would be less extensive than would occur under Alternative 1.

Subalternative 1b: Congestion Relief Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the energy impacts probably would be less extensive than would occur under Alternative 1.

Subalternative 1c: Economic Opportunities Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the energy impacts probably would be less extensive than would occur under Alternative 1.

Subalternative 1d: Combined Projects Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of

projects would involve fewer projects than Alternative 1, the energy impacts probably would be less extensive than would occur under Alternative 1.

Alternative 2: No Project, or “Current Plan”

There are fewer project components in the No-Project Alternative than in Alternative 1 because the currently adopted RTP, which would remain in place in lieu of the 2001 RTP, does not include the New Candidate projects that have been identified since the last RTP update. Therefore, it is likely that there would be fewer energy impacts under this alternative than under Alternative 1.

Introduction

This chapter describes the visual resources of Stanislaus County and provides a program-level evaluation of the potential impacts of the RTP on aesthetics in the County. A discussion of the measures that would be used to mitigate significant impacts is also presented. The impacts of the RTP alternatives are qualitatively compared to those of the RTP components at the end of this chapter.

Setting

This section provides definitions of the concepts used to characterize and evaluate the existing aesthetic setting and the potential visual impacts of the RTP. Using these concepts, this section describes the regional visual quality and character, visual resources of the county, views from important vantage points, general viewer sensitivity, and existing sources of light and glare. This analysis uses a qualitative, descriptive approach for evaluating the visual resources of the county and the effects of proposed regional transportation improvements on those resources.

Concepts and Terminology for Aesthetics Analysis

The aesthetic value of an area is a measure of its visual *character* and *quality*, combined with the viewer response to the area (Federal Highway Administration 1983). The scenic quality component can best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area (U.S. Bureau of Land Management 1980). Viewer response is a combination of *viewer exposure* and *viewer sensitivity*. Viewer exposure is a function of the number of viewers, the number of views seen, the distance of the viewers, and the viewing duration. Viewer sensitivity relates to the extent of the public's concern for particular viewsheds. These terms and criteria are described in detail below.

Viewshed

A viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (Federal Highway Administration 1983). Because of the scale of the RTP project area, generalized landscape *units*, instead of specific viewsheds, were assessed (see “Regional Visual Quality and Character,” below).

Visual Character

Both natural and artificial landscape features make up the *character* of a view. Character is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Urban features include those associated with landscape settlement and development, such as roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character can vary significantly seasonally and even hourly as weather, light, shadow, and the elements that compose the viewshed change. Form, line, color, and texture are the basic components used to describe visual character and quality for most visual assessments (U.S. Forest Service 1974, Federal Highway Administration 1983). The appearance of the landscape is described in terms of the dominance of each of these components.

Visual Quality

Visual *quality* is evaluated using the well-established approach to visual analysis adopted by FHWA, employing the concepts of vividness, intactness, and unity (Federal Highway Administration 1983, Jones et al. 1975), as defined below.

- *Vividness* is the visual power or memorability of landscape components as they combine in striking or distinctive visual patterns.
- *Intactness* is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes, as well as in natural settings.
- *Unity* is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the artificial landscape. (Federal Highway Administration 1983.)

Visual quality is evaluated based on the relative degree of vividness, intactness, and unity, as modified by its visual sensitivity. High-quality views are highly vivid, relatively intact, and exhibit a high degree of visual unity. Low-quality views lack vividness, are not visually intact, and possess a low degree of visual unity.

Visual Sensitivity and Viewer Response

The measure of the quality of a view must be tempered by the overall *sensitivity* of the viewer. Viewer sensitivity is based on the visibility of resources in the landscape, the proximity of viewers to the visual resource, the elevation of viewers relative to the visual resource, the frequency and duration of viewing, the number of viewers, and the type and expectations of individuals and viewer groups.

The importance of a view to viewers is related in part to the position of viewers relative to the resource; therefore, visibility and visual dominance of landscape elements are usually described with respect to their placement in the viewshed.

Visual sensitivity is also dependent on the number and type of viewers, the frequency of viewing (e.g., daily or seasonally), and the duration of viewing. Viewer activity, awareness, and visual expectations in relation to the number of viewers and the viewing duration also influence visual sensitivity. For example, visual sensitivity is higher for views seen by people who are driving for pleasure; people engaging in recreational activities such as hiking, biking, or camping; and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (U.S. Forest Service 1974, Federal Highway Administration 1983, U.S. Soil Conservation Service 1978). Commuters and nonrecreational travelers have generally fleeting views and tend to focus on commute traffic and not on surrounding scenery, and therefore are generally considered to have low visual sensitivity. Residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes; therefore, they generally are considered to have high visual sensitivity. Viewers using recreation trails and areas, scenic highways, and scenic overlooks are usually assessed as having high visual sensitivity.

Judgments of visual quality and viewer response must be made based in a regional frame of reference (U.S. Soil Conservation Service 1978). The same type of visual resource in different geographic areas could have a different degree of visual quality and sensitivity in each setting. For example, a small hill may be a significant visual element in a flat landscape but have very little significance in mountainous terrain.

Regional Visual Quality and Character

Stanislaus County is a predominantly agricultural region located in the San Joaquin Valley. The terrain in most of the county is flat. Many towns and communities are small and rural, surrounded by agricultural uses such as row crops, orchards, and dairies. The county is bounded by mountains to the west and east; the flat valley floor continues to the north and south. Several rivers run through the county, many still retaining mature riparian vegetation. The California Aqueduct and several concrete irrigation canals traverse the county. From several locations on major roads and highways throughout the county, electric towers and telephone poles are noticeable. Mature trees, development,

utility structures, and other vertical forms are highly visible in the region because of the flat terrain. Consequently, where such vertical elements are absent, views are expansive. The prevailing colors of the county are greens and browns associated with agricultural land use. Most new structures are small, usually with one story and occasionally with two. Exceptions can be found in the downtown commercial areas of the urban cities and in industrial agricultural complexes.

Visual Resources

Because of the county's size, the entire county was not comprehensively surveyed for this analysis. Instead, a sample cross section of the county was evaluated from major transportation routes (see figure 14-1 for the driving route). The visual resources along the survey route have been mapped, documented with photographs, and categorized into *landscape units*. The landscape units are areas composed of similar visual character (line, color, texture, and form) and quality (vividness, intactness, and unity). The units consist of views from the transportation corridors. The qualitative descriptions provided below define the landscape units found in the county. Refer to figures 14-2 and figures 14-3a-d for the accompanying map and photographs.

Landscape Unit Definitions

Urban

Modesto, Turlock, and Ceres are towns associated with the urban landscape unit. This unit contains residential, commercial, public, and industrial land uses. The dominant forms in this unit are the built structures, which compose most of the landscape. Residential developments include a mix of older single-family homes and large new tracts of one- and two-story homes. Commercial development includes shopping centers and strip malls. Downtown areas contain multistory buildings. Industrial uses include agricultural processing plants. Public uses include schools, parks, churches, and civic buildings. Overall views associated with this landscape unit are of low visual quality because the area lacks vividness, intactness, and unity.

Suburban

Oakdale is representative of the suburban landscape unit. Development in this area is less dense than in the urban landscape unit. Like the urban landscape unit, land uses are mostly residential, commercial, public, and industrial. However, some agricultural and open space uses are also present. Oakdale is bordered by the Stanislaus River, which supports mature riparian vegetation. In addition, there are some historical buildings in Oakdale's downtown area. Overall views associated with landscape unit are of low to moderate visual quality; the unit has

moderate vividness because of the riparian area and historical structures. This landscape unit generally has low visual intactness and unity.

Suburban/Rural

The towns of Riverbank, Hughson, Patterson, Waterford, and Newman are included in the suburban/rural landscape unit category. These areas primarily consist of residential and agricultural uses. Some commercial, public, and agricultural industrial uses are also present. Residential buildings are mostly older single-family homes. Newer tract developments also exist in some regions. Industrial agricultural buildings are usually one- to two-story, corrugated aluminum structures. Tall, white, water towers are visually dominant vertical elements in these communities. Surrounding agriculture, including row crops and orchards, is the dominant landscape component of this unit. Overall views of this landscape unit are of low quality. The unit lacks vividness because it is representative of the surrounding area and does not contain any memorable or striking features. The area also lacks intactness and unity because built elements are scattered among agricultural uses.

Agriculture 1

This landscape unit predominantly contains agricultural land uses. However, occasional residential and agricultural industrial buildings are scattered throughout the landscape. Agricultural uses in this unit consist of row crops and orchards, often in large areas. Row crops afford expansive views, and orchards force a focused line of sight from the roadway to the vanishing point. Dominant colors are the greens and browns associated with the crops and trees. The quality of this landscape unit is low to moderate. The unit is representative of a majority of the county and lacks vividness. The unit has moderate intactness because development and structures generally are lacking. The unity of this landscape is also moderate.

Agriculture 2

This landscape unit also predominantly contains agricultural land uses, with the occasional residential and agricultural industrial buildings scattered throughout. Agricultural uses in this unit are row crops, orchards, dairies, and pastureland. This landscape is more varied than Agriculture 1. The quality of this landscape is low because it lacks vividness, intactness, and unity.

Riparian Corridors

Several rivers and creeks traverse the project area. Five waterways that were viewed on the survey contained mature riparian vegetation: Oristemba Creek, Stanislaus River, Tuolumne River, San Joaquin River, and Dry Creek. An image

of a typical riparian corridor, as well as locations where riparian vegetation was viewed, is indicated in figure 14-4.

Riparian trees found in this landscape unit include valley oaks, sycamores, willows, and cottonwoods. The riverbanks tend to be steep and deeply cut. The dense vegetation dictates the line, form, color, and texture of this landscape unit, which has moderate to high visual quality. This unit is considered moderately vivid because it is one of the most memorable elements of the project area, although it is not striking. The riparian corridors have been well preserved and are have moderate to high visual intactness. They generally demonstrate a high degree of visual unity. Modesto and Waterford have the adjacent Tuolumne River labeled as scenic in their General Plans.

Mountains

The Diablo Range borders the San Joaquin Valley and I-5 on the west. This range is composed of gently rolling hills and is a dominant vertical element in the area, contrasting with the flat valley floor. Land along these mountains generally is used for grazing. Occasional agricultural buildings can be seen in this landscape unit. A landfill (not visible from the interstate) lined with tall chain-link fencing, an associated incinerator, and large electric towers are also found in this landscape unit. Because of the low vividness and low to moderate intactness and unity of this landscape unit, it is considered to be of low to moderate visual quality.

Interstate 5

I-5 is designated as a state scenic highway in Stanislaus County. This landscape unit is a four-lane, north-south freeway running along the western border of the county, adjacent to the Diablo Range. The freeway corridor lacks billboards and lighting. Views from the freeway include the mountains and agricultural land uses, as well as occasional highway commercial developments. A vista point is located on the east, 3 miles south of the Patterson Road exit. (See figure 14-4 for a view from the scenic overlook.) The vista overlooks the California Aqueduct and Stanislaus County; it provides an expansive view of the valley's agricultural land uses. Visual quality of this unit is low to moderate. The freeway has low to moderate vividness because views are common of the area, although the scenic overlook is of moderate quality. The surrounding mountains and agricultural uses have low to moderate intactness and unity.

State Route 99

This landscape unit is a four-lane divided and undivided highway running from north to south through central Stanislaus County. This is the most populated highway corridor in the county, and associated land uses are primarily urban. These uses include commercial, residential, and public land uses. Some

agricultural land uses can also be seen from the highway. Train tracks, multiple billboards, and electric towers border the highway. Highway dividers include metal railing, concrete barriers, and oleander bushes. The visual quality of this landscape unit is low because it has low vividness, intactness, and unity.

Highway Commercial

Commercial complexes at the Howard and Sperry Avenue exits along I-5 represent the highway commercial landscape unit. This unit contains urban commercial uses such as restaurants, gas stations, and hotels. Tall signs can be seen from the roadway, advertising these uses. The visual quality of this landscape unit is low.

Views from Important Vantage Points

Views of existing transportation corridors and proposed RTP improvements would be seen from public and private property along these routes. The quality and character of proposed improvements would be influenced by the project type (roadway, bikeway, airport, or rail), scale, and design, as well as by surrounding land uses. Temporary construction activity likely would degrade the quality and character of the view. Views of the proposed improvements would generally be considered to have low visual quality because of low vividness, intactness, and unity. The grid pattern of the roadways is a common feature of the area and is not memorable. Airports, transit, and bikeway improvements also are not of striking memorability. Project improvements would possess low vividness. The proposed improvements would degrade the unity and intactness of the area, especially in rural locations. Therefore, intactness and unity would be considered low. Because most of the proposed improvements would occur on the valley floor, views could be expansive or limited, depending on surrounding land uses.

Viewer Sensitivity

Viewers Using Transportation Corridors

People who experience views from I-5, SR 99, and the proposed rail transit improvements are likely to be commuters and nonrecreational travelers. Both auto and rail commuters would experience fleeting views, but may be focused on the commute, rather than on the scenery. Commuters therefore are considered to possess low visual sensitivity. However, because I-5 is designated as a state scenic highway, people experiencing views when traveling on this freeway may also be considered to have high visual sensitivity. I-5 provides scenic views of Oristamba Creek and an overlook of the valley.

Viewers using other highways, expressways, and local roadways are likely to be local residents. These routes provide fleeting views of rivers as the roadways

cross them. Often, these rivers are not visible until they are in the foreground. Local residents are accustomed to the views in the area and their sensitivity would be considered low. In general, travelers using these roads, railways, or airports would generally have low to moderate sensitivity because the project area is of low visual quality.

Long-Term Viewers of Transportation Corridors

Viewers of proposed RTP improvements would include people using adjacent land uses. Residents of housing along proposed improvements, as well as employees working nearby, would have long-term views of the project area. Sensitivity for this type of viewer is considered high.

Sources of Light and Glare

The transportation corridors for which improvements are proposed are generally unlit, except for a few locations in the urban landscape units. In summer months, users of roadways running from east to west experience a moderate to high amount of glare from reflected sun. Lights associated with airport structures and transportation facilities (such as rail stations) are a source of nighttime glare.

Relevant Plans, Policies, and Regulations

The following plans, policies, and designations are relevant to the RTP and its potential aesthetic impacts.

Federal

No relevant federal policies related to aesthetics are relevant to the RTP.

State

California Department of Transportation Scenic Highway Program

The segment of I-5 from SR 152 to SR 205, including the county, is an state-designated scenic highway (California Department of Transportation 1999). As such, its scenic corridor (defined as the area of land generally adjacent to and visible from the highway) is subject to protection, including regulation of land use, site planning, advertising, earthmoving, landscaping, and the design and appearance of structures and equipment. Relevant examples of visual intrusions that would degrade scenic corridors and create unsightly land uses, as stipulated

by Caltrans, include highly reflective surfaces, extensive cut and fill, scarred hillsides and landscape, large slope failures, exposed and unvegetated earth, and dominance of exotic vegetation (California Department of Transportation 1996).

California State Lands Commission Inventory Regarding Lands Possessing Significant Environmental Values

The Tuolumne River in Stanislaus County is state sovereign land under the jurisdiction of the State Lands Commission. Any activities within the ordinary low-water mark are subject to the commission's leasing jurisdiction.

The State Lands Commission's Significant Lands Inventory (or "Inventory of Unconveyed State School Lands and Tide and Submerged Lands Possessing Significant Environmental Values"), identifies the Tuolumne River as category B, Limited Use, having significant environmental values. Category B is defined as lands "in which one or more closely related dominant, significant environmental values is present. Limited uses that are compatible with, and non-consumptive of, such values may be permitted" (Sanders 2001).

To provide permanent protection of environmentally significant values, the project must be designed to be consistent with the use classifications assigned under the Significant Lands Inventory. If such consistency cannot be accomplished through mitigation or alteration of the project, the project would be denied.

Local

This section presents visual resource and aesthetics policies that could affect or be affected by the RTP. Policies may either support or conflict with proposed project improvements. The policies listed below were excerpted from the Open Space and Conservation Elements of the Stanislaus County General Plan, and from the general plans of incorporated cities in the county.

Stanislaus County General Plan

The Stanislaus County General Plan contains the following applicable goals and policies:

- **Denair Community Plan Goal 1.** Reinforce Denair's small rural town character.
- **Denair Community Plan Goal 2, Policy 2, Implementation Measure 3.** Landscape design should promote a sense of transition from the surrounding agricultural area to urban setting. Utilization of trees to screen urban uses along these entryways is encouraged.

- **Conservation/Open Space Element Goal 1.** Encourage the protection and preservation of natural and scenic areas throughout the County.
- **Conservation/Open Space Element Goal 8.** Preserve areas of national, state, regional, and local historical importance.

City of Modesto Urban Area General Plan

- **Open Space Policy 6a.** Visual corridors of the river will be protected and enhanced.
- **Open Space Policy 6f.** The scenic resources of Public Trust lands and resources shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect scenic views associated with Public Trust lands and resources.
- **Neotraditional Planning Principle h.** Streets, pedestrian paths and bike paths should contribute to a system of fully connected and interesting routes to all destinations. Their design should encourage pedestrian and bicycle use by being small and spatially defined by buildings, trees, and lighting; and by discouraging high speed traffic. Wherever possible, natural terrain, drainage, and vegetation should be preserved with superior examples contained in parks or greenbelts.

City of Modesto Pelandale-Snyder Specific Plan

- **Infrastructure Street Lighting Policy C.5.b.** Street Lighting shall be provided along all streets per Public Works Standards.
- **Community Design and Landscaping Objective H.2.** Provide adequate landscaping and buffer along community edges.
- **Community Design and Landscaping Objective H.3.** Provide consistent and unifying design elements throughout the plan area.

City of Turlock General Plan

- **Land Use Residential Areas Policy 2-3-e.** Preserve the scale and character of existing neighborhoods.
- **Transportation Implementation 5.2-r.** Limit street right-of way dimensions where necessary to maintain desired neighborhood character.
- **City Design Policy 7.4-a.** Continue expansion of the present street network in an orthogonal grid for all arterial and collector streets.
- **City Design Implementation Policy 7.4-h.** Subject all development projects and capital improvement projects within view of a designated Gateway Route to mandatory design-review procedures.

City of Oakdale General Plan

The Oakdale General Plan contains historical preservation, design theme, and community appearance sections in the Open Space and Conservation Element. Proposed improvements would need to be consistent with relevant policies as a requirement of project implementation.

- **Land Use Implementation Policy 13.** Develop land use compatibility and buffer criteria that either ensures compatibility or lessens the conflicts between land uses.
- **Open Space 9.** Preserve unique and valuable natural resource areas.
- **Open Space 10.** Protect and preserve significant archaeological and historical areas sites and heritage trees.
- **Open Space 12.** Maintain established landscaping within the City.
- **Community Appearance 6.** Promote the use of materials and architectural arrangement compatible with the need for ease of maintenance, durability and contemporary transportation requirements.
- **Community Appearance 7.** Identify major arterial streets for landscape treatment.
- **Community Appearance 9.** Encourage the placement of utilities underground.
- **Community Appearance 10.** Viewsheds to the mountains should be preserved in the development of the City.

City of Newman General Plan

- **Community Design Goal VIII.A.** To promote the development of a coherent and distinctive physical form and structure that reflects Newman's small-town qualities and agricultural heritage.
- **Community Design Policy VIII.A.4.** The City shall use the circulation system and the pedestrian and bicycle pathway system as important structural elements to link and define neighborhoods and districts in Newman.

City of Waterford General Plan

- **Circulation and Transportation Element—Special Corridor Projects.** A major proposal of the General Plan is to develop a parkway along 132 from Reinway Avenue to Skyline Boulevard to enhance and unify the appearance of the Highway.
- **Open Space and Conservation Element Goal 7.2.** To improve the visual impression of the City through the construction and maintenance of attractive entrances to the City and the preservation and planting of trees.

- **Open Space and Conservation Element Goal 7.3.** To ensure projects contain landscaping and trees that complement the City's natural character.
- **Open Space and Conservation Element Policy 7.6.3.** The City shall adopt a scenic corridor plan for the identified scenic corridors including but not limited to the Tuolumne River and Dry Creek.

City of Patterson General Plan

- **Goal V.D.** To preserve and enhance Patterson's historical heritage.
- **Goal VIII.A.** To promote the development of a coherent and distinctive physical form and structure that reflects Patterson's small-town qualities and agricultural heritage.
- **Goal VIII.A.3.** The City shall use the circulation system and the pedestrian and bicycle pathway system as important structural elements to link and define neighborhoods and districts in Patterson.
- **Goal VIII.B.** To create a well-defined, pedestrian-oriented downtown which serves as the center of Patterson's commercial, civic, and cultural life.
- **Goal VIID.** To maintain and enhance the quality of Patterson's landscape and streetscapes.

Impacts and Mitigation Measures

Methods and Assumptions for the Impact Analysis

Aesthetics is a branch of philosophy dealing with the nature of beauty and with the creation and appreciation of beauty. The evaluation of aesthetic resources in the landscape requires the application of a process that

- objectively identifies the visual features, or resources, of the landscape;
- assesses the character and quality of those resources relative to overall regional visual character; and
- identifies the importance to people, or sensitivity, of views of visual resources in the landscape.

By establishing these existing, or baseline, conditions, a proposed project or another change to the landscape can be systematically evaluated for its degree of impact. The degree of impact depends both on the magnitude of change in the visual resource (i.e., in visual character and quality) and on viewers' responses to and concern for those changes. This basic method of evaluating visual impacts follows established federal procedures (Smardon et al. 1986) and is suitable for evaluating nonfederal projects and areas.

The approach for this visual assessment is adapted from the FHWA's visual impact assessment system (Federal Highway Administration 1983) in combination with other established visual assessment systems. The visual impact assessment process involves identifying

- relevant policies and concerns for protection of visual resources;
- the visual resources (i.e., visual character and quality) of the region and the immediate project area, and the project site;
- important viewing locations (e.g., roads) and the general visibility of the project area and site from those locations, as documented with descriptions and photographs;
- viewer groups and their sensitivity; and
- potential impacts, mitigation for impacts, and other recommendations.

A driving survey of Stanislaus County was conducted on July 20, 2001. The purpose of the survey was to identify areas of visual sensitivity, scenic resources, the existing character and quality of the project area, and the proximity of visually sensitive resources to transportation corridors likely to be affected by the RTP (figure 14-1). The survey included a sample cross section of the county and areas proposed for major improvements under the RTP. The approach to aesthetics analysis outlined above was used to evaluate the aesthetic resources of the area. Landscapes with similar visual character were mapped and identified as landscape units (figure 14-2). The impact and mitigation measure analysis below assumes that locations not visited on the survey are of a similar visual nature to those viewed during the survey. Not all the proposed RTP project sites were surveyed, but future project-level environmental documentation would evaluate site-specific visual resources and potential impacts.

The Caltrans-designated highways list was reviewed, as well as city and county general plans. Applicable policies and mention of scenic resources found in plan documents are identified under "Relevant Plans and Policies," above.

Criteria for Determining Significance

Appendix G of the State CEQA Guidelines and StanCOG's adopted thresholds of significance were used to determine whether the RTP would have significant environmental impacts related to aesthetics.

State CEQA Guidelines

According to the State CEQA Guidelines, the RTP would have a significant impact on aesthetics if it would

- have a substantial adverse effect on a scenic vista;

- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- substantially degrade the existing visual character or quality of a project site and its surroundings; or
- create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

StanCOG Adopted Thresholds of Significance

According to the thresholds established by StanCOG, the RTP would have a significant impact on aesthetics if it would

- have the cumulative effect of opening a new area for development, thereby causing extensive view blockage for existing residents and from existing roadways;
- severely contrast with existing neighborhood or area character;
- alter the amount of open space developed, degree of contrast between existing character and proposed development with respect to the area's visual image; or
- cause a noticeable change in ambient illumination from the project and extent of lighting spillover onto adjacent properties.

Impacts and Mitigation Measures of the Proposed RTP Components

Impacts Related to Highway Projects

Several types of highway projects are proposed for Stanislaus County. These projects include widening highways, constructing or reconstructing interchanges, and creating expressways on highways. The following evaluation identifies impacts related to these projects.

Impact AES-1: Severe Contrast with Existing Neighborhood or Area Character Caused by Highway Projects

Most of the proposed highway projects would occur in urbanized areas. However, some improvements are proposed (such as the SR 33 widening) that could significantly affect neighborhood area or character in the smaller rural and suburban towns, such as Newman, Patterson, and Oakdale. The Turlock, Oakdale, Newman, and Patterson General Plans discuss the preservation of existing town and/or neighborhood character. Many of the residential neighborhoods in these communities tend to be rural in character, with widely spaced lots intermixed with agricultural uses (figure 14-3c). Adding a widened highway in these locations would impose a larger scale inconsistent with the

surrounding residential character. Viewers most sensitive to changes would be residents adjacent to the proposed improvements, because they would have extended views of the project. This impact is considered significant. Implementation of Mitigation Measure AES-1 would reduce this impact to a less-than-significant level.

Mitigation Measure AES-1: Develop and Implement Design Guidelines to Reduce Improvement Impacts Associated with Contrasts with Existing Neighborhood or Area Character

StanCOG shall require project proponents to consult with relevant city and county planning staff as well as existing design review committees to develop and implement design guidelines. The design guidelines shall contain measures to reduce the visual impacts of the proposed improvements. These measures may include, but are not limited to reduction of road/track widths; addition of buffers; use of colors, construction materials, and architectural styles compatible with surrounding development and landscaping, and avoidance of specific sensitive locations. These guidelines shall not conflict with related city guidelines or policies.

Impact AES-2: Substantial Creation or Change in Light or Glare Caused by Highway Projects

Proposed project improvements along roadways could create substantial light or glare. East-west asphalt transportation routes reflect glare from the sun during summer months. This glare was found to be moderate to high during the survey of the project area. Installation of overhead lighting could introduce a new source of light during nighttime hours, affecting views and casting light on adjacent properties. This impact is considered significant. Implementation of Mitigation Measures AES-2 and AES-3 would reduce this impact to a less-than-significant level.

Mitigation Measure AES-2: Plant Trees along East-West Transportation Corridors to Reduce Sun Glare

StanCOG shall require the project proponent to plant trees along east-west transportation corridors to reduce sun glare. Tree species chosen shall be able to provide significant shade cover when mature. Utilities shall be installed underground along these routes wherever feasible to allow trees to grow and provide shade without need for severe pruning.

Mitigation Measure AES-3: Design Lighting to Meet Minimum Safety and Security Standards

Where lighting is proposed, StanCOG shall require the project proponent to incorporate lighting design specifications to meet minimum safety and security standards. The following measures shall be incorporated into lighting plans to reduce the impact of nighttime light and glare:

- a. Luminaries shall be cutoff-type fixtures that cast low-angle illumination to minimize incidental spillover of light onto adjacent*

private properties and undeveloped open space. Fixtures that project light upward or horizontally shall not be used.

- b. Luminaries shall be directed away from habitat and open space areas adjacent to the project site.*
- c. Luminaries shall provide good color rendering and natural light qualities. Low-pressure sodium and high-pressure sodium fixtures that are not color-corrected shall not be used. Intensity shall be approximately 10 lux for roadway intersections.*
- d. Luminary mountings shall be downcast and the height of the poles minimized to reduce potential for back scatter into the nighttime sky and incidental spillover of light onto adjacent private properties and undeveloped open space. Light poles shall be 20 feet high or shorter. Luminary mountings shall have non-glare finishes.*

Impact AES-3: Substantial Adverse Effect on a Scenic Vista Caused by Highway Projects

The only identified scenic vista in the project area is the overlook east of I-5, about 3 miles south of the Patterson Exit. This overlook is separated from I-5, and likely would not be adversely affected by the proposed I-5 widening. Most proposed improvements would take place in the central part of the county, where resulting changes likely would go unnoticed from the vista point. Improvements closer to the western portion of the county, near the vista point, are not anticipated to have visually significant impacts. This impact is therefore considered less than significant. No mitigation is required.

Impact AES-4: Temporary Changes in Views of Project Sites during Construction Activities for Highway Projects

Construction activities associated with proposed improvements would include the use of heavy equipment and associated vehicles, including bulldozers, graders, scrapers, and trucks. Construction activities, equipment, and vehicles would be present in the viewshed of nearby roadways as well as adjacent residences, and commercial and public facilities. Because of the agricultural nature of the county and past construction projects, visible evidence of construction activity, such as heavy equipment, is not a new or uncommon component of the project area. Given the relatively low to moderate overall vividness, intactness, and unity of the project area, and the low sensitivity of residents and commuters to the presence of heavy machinery and construction activities, this impact is considered less than significant. No mitigation is required.

Impacts Related to Local Road Projects

This section discusses impacts related to projects proposed for local roads. Local road projects are the largest category of proposed RTP improvements. These projects include proposals for widening roads, improving intersections, constructing new roads, and implementing operational improvements.

Although local road projects differ from highway projects, the visual impacts related to local road projects would be the same as those described under highway projects. The aesthetic impacts of local road projects may differ in character from highway projects; for example, local road projects include proposed grade separations for intersections and a proposed bridge crossing over Dry Creek. However, the significance of visual impacts and recommended mitigation measures for these projects would be the same as for highway projects.

Impacts Related to Bicycle Projects

This section discusses impacts related to proposed bicycle facility projects. Several bicycle facility projects are proposed in the RTP. These include proposals to widen existing bikeways, install signage and/or stripe bikeways, and implement railroad crossing improvements for bikeways. The following is a discussion of the impacts related to different types of bicycle facility projects.

Construction-related impacts would be similar to those described for highway projects. However, the following impacts of bicycle projects are distinct from those of highway projects.

Impact AES-5: Substantial Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings, Resulting from Bicycle Projects

Some proposed projects in the RTP would extend the edge of existing roadways by a negligible amount to widen some bicycle facilities. Because of the small scale of these projects, degradation of visual character or quality is not anticipated. This impact is considered less than significant. No mitigation is required.

Impact AES-6: Substantial Creation or Change in Existing Light or Glare, Resulting from Bikeway Widening

East-west bikeways that are added to roads or widened could create or contribute to daytime glare. Because the width of the bikeway widenings would be negligible, glare-related impacts would be small. This impact is considered less than significant. No mitigation is required.

Impacts Related to Transit Projects

The RTP includes transit facility projects, such as passenger rail stations for high-speed, inter-city, and commuter rail services, as well as bus maintenance yards. Impacts resulting from transit improvements would be similar to those discussed for highway projects, with the following exceptions.

Impact AES-7: Severe Contrast with Existing Neighborhood Area or Character Resulting from Transit Projects

Passenger rail stations and bus maintenance yards are proposed in the RTP. Most of these would be located in areas of existing commercial development. The location and design of passenger rail stations and bus maintenance yards would be subject to local general plan policies and any associated design review processes. A high-speed railway consisting of four tracks is proposed. This improvement has the potential to severely contrast with existing neighborhood or area character and result in a significant impact. Implementation of Mitigation Measure AES-1 would reduce impacts on sensitive viewers and reduce severe contrast with existing neighborhood or area character, but not necessarily to a less-than-significant level for all locations of the proposed tracks. This impact is therefore considered significant and unavoidable.

Mitigation Measure AES-1: Develop and Implement Design Guidelines to Reduce Improvement Impacts Associated with Contrasts with Existing Neighborhood or Area Character

This mitigation measure is described above, under Impact AES-1.

Impact AES-8: Substantial Creation or Change in Existing Light or Glare, Resulting from Transit Projects

Proposed rail stations and bus maintenance yards would likely have nighttime lighting fixtures associated with the buildings and parking lots. Additional nighttime lighting in an area could result in a substantial change. Potential additions to light and glare are considered significant. Implementation of Mitigation Measures AES-3 and AES-4 would reduce this impact to a less-than-significant level.

Mitigation Measure AES-3: Design Lighting to Meet Minimum Safety and Security Standards

This mitigation measure is described above, under Impact AES-2.

Mitigation Measure AES-4: Design Structures to Avoid or Reduce Impacts Resulting from Glare

StanCOG shall require project proponents to design proposed structures and facilities to reduce or avoid impacts resulting from glare. Measures employed shall include the use of nonreflective materials. If reflective materials, such as metal, are used, glare impacts shall be reduced using nonreflective paint, vegetative screening, or other such materials that would reduce sun glare. The project proponent shall submit project designs to any applicable design review committees and shall implement their recommendations.

Impacts Related to Aviation Projects

Projects related to aviation systems are proposed in the RTP. These projects include improvements to airport facilities such as runways, taxiways, parking

lots, and hangars. Below is a discussion of impacts related to projects proposed for aviation facilities.

Impacts related to the degradation of visual character or quality, as well as construction-related impacts, would be similar to those described for highway projects.

Impacts related to changing or creating light or glare would be similar to those described for transit projects.

The following impacts of aviation projects are distinct from those of highway projects and transit projects.

Impact AES-9: Severe Contrast with Existing Neighborhood or Area Character Resulting from Aviation Projects

The Modesto Airport is located near industrial land uses. Proposed improvements include the addition of 10 hangars and a new building. These structures would not contrast severely with the existing character of the area. The Oakdale and Turlock Airports are both located outside of city limits, in rural areas of Stanislaus County and Merced County, respectively. Proposed improvements for these airports are minor, do not include the addition of structures, and would not severely contrast with existing neighborhood or area character. This impact is considered less than significant. No mitigation is required.

Combined Impacts and Mitigation Measures of the Proposed RTP Alternatives

Alternative 1: “Unconstrained” Projects

This alternative contains the most project components, because this alternative encompasses all proposed projects within the 25-year planning horizon and incorporates projects for all modes of transportation, including aviation, public transit, and bicycles. Therefore, because of the greater number of projects, it is likely that there could be more aesthetic impacts under this alternative than under other alternatives and subalternatives. The combined impacts and necessary mitigation measures for this alternative are identified below.

Significant Impacts

Implementation of this alternative would result in the following significant aesthetics- related impacts:

- Impact AES-1: Severe Contrast with Existing Neighborhood or Area Character Caused by Highway Projects

- Impact AES-2: Substantial Creation or Change in Light or Glare Caused by Highway Projects
- Impact AES-3: Substantial Adverse Effect on a Scenic Vista Caused by Highway Projects

Implementation of the following mitigation measures would reduce the impacts identified above to a less-than-significant level:

- Mitigation Measure AES-1: Develop and Implement Design Guidelines to Reduce Improvement Impacts Associated with Contrasts with Existing Neighborhood or Area Character
- Mitigation Measure AES-2: Plant Trees along East-West Transportation Corridors to Reduce Sun Glare
- Mitigation Measure AES-3: Design Lighting to Meet Minimum Safety and Security Standards
- Mitigation Measures AES-4: Design Structures to Avoid or Reduce Impacts Resulting from Glare

These impacts and mitigation measures are described in detail above, for the specific RTP components.

Significant Unavoidable Impacts

There are no significant unavoidable impacts of this alternative on aesthetics. No mitigation measures are proposed.

Subalternative 1a: Maintenance, Safety, and Community Enhancement Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the aesthetic impacts probably would be less extensive than would occur under Alternative 1.

Subalternative 1b: Congestion Relief Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the aesthetic impacts probably would be less extensive than would occur under Alternative 1.

Subalternative 1c: Economic Opportunities Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the aesthetic impacts probably would be less extensive than would occur under Alternative 1.

Subalternative 1d: Combined Projects Strategy

Under this subalternative, a small range of projects geared toward meeting specific RTP goals would be implemented. Because this focused range of projects would involve fewer projects than Alternative 1, the aesthetic impacts probably would be less extensive than would occur under Alternative 1.

Alternative 2: No Project, or “Current Plan”

There are fewer project components in the No-Project Alternative than in Alternative 1 because the currently adopted RTP, which would remain in place in lieu of the 2001 RTP, does not include the New Candidate projects that have been identified since the last RTP update. Therefore, it is likely that there would be fewer aesthetic impacts under this alternative than under Alternative 1.

Cumulative and Growth-Inducing Impacts

Introduction

This chapter discusses the cumulative and growth-inducing impacts of the RTP. A cumulative impact is defined as the overall impact resulting from the incremental impact of a proposed project when combined with the impacts of other past, present, and reasonably foreseeable future projects (State CEQA Guidelines, Section 15355). Growth-inducing impacts are the effects of a project that encourage or facilitate growth or development.

CEQA Requirements

Cumulative Impacts

The State CEQA Guidelines require a reasonable analysis of the significant cumulative impacts of a proposed project (Section 15130). The cumulative impact analysis may be less detailed than the analysis of the project's individual effect.

A cumulative impact is created as a result of the combination of the project evaluated in an EIR with other projects causing related impacts. Cumulative impacts can result from individually minor, but collectively significant, projects occurring over a period of time (State CEQA Guidelines, Section 15355).

An EIR does not need to discuss impacts that do not result in part from the project it evaluates, but it is required discuss the cumulative impacts of a project when the project's incremental effect is cumulatively considerable (State CEQA Guidelines, Section 15130). When a lead agency determines that the incremental effect is not cumulatively considerable, the agency does not need to consider that impact significant, but it must briefly describe its basis for that determination.

Cumulative impacts may be discussed in the form of either:

- a list of past, present, or reasonably foreseeable probable future projects producing related cumulative impacts; or

- a summary of projections contained in an adopted general plan or related planning document, or in a prior adopted or certified environmental document.

Growth-Inducing Impacts

Section 15126.2 of the State CEQA Guidelines provides guidance for analyzing the growth-inducing impacts of a project. The growth inducement analysis should discuss ways in which a proposed project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Projects that would remove obstacles to population growth could lead to increased demand for existing community service facilities, so consideration must be given to this impact. Growth in an area is not necessarily considered beneficial, detrimental, or of little significance to the environment.

Cumulative Impact Assessment

Because the project in this case is the RTP, cumulative impacts are evaluated by the plan approach. The countywide impact analyses contained in chapters 3–14 are effectively the cumulative impact analyses: the analyses examine the cumulative effects of each resource topic through buildout of the RTP. Where feasible, the cumulative impact analysis is quantitative (e.g., traffic, air quality, and noise modeling considers the proposed general plan’s effects together with all past, present, and reasonably foreseeable future projects built into the traffic model; acreage of prime farmlands and sensitive habitats are calculated). Where quantitative analysis is not feasible, analyses are qualitative.

The RTP would make a cumulatively considerable contribution when its impacts are identified as significant and unavoidable. Below are the significant and unavoidable impacts identified in chapters 3-14 of this EIR:

- LUP-3: Potential for Conflicts between Highway Projects and Relevant Land Use Plans
- PH-1: Potential for Growth Inducement or Acceleration of Development, Due to Highway Projects
- PH-2: Potential for Displacement of Substantial Numbers of Existing Housing or People, Due to Highway Projects
- PH-4: Potential for Growth Inducement or Acceleration of Development, Due to Local Road Projects
- PH-5: Potential for Displacement of Substantial Numbers of Existing Housing or People, Due to Local Road Projects
- BIO-4: Disturbance or Loss of Waters of the United States (Including Wetlands)

- BIO-5: Potential Disturbance or Loss of Special-Status Wildlife Species and Their Habitat
- CUL-1: Demolition of Historic Resources
- CUL-3: Relocation of Historic Resources
- TRN-1: Substantial Increase in Traffic in Relation to the Existing Traffic Load and Capacity of the Street System
- TRN-2: Violation, Either Individually or Cumulatively, of an LOS Standard Established By the County Congestion Management Agency for Designated Roads or Highways
- TRN-3: Creation of Need for Capacity-Enhancing Alterations to Existing Facilities
- AQ-2: Increase in Operational NOx and PM10 Emissions
- NOISE-1: Exposure of Noise-Sensitive Land Uses to Construction Noise from Highway Projects
- NOISE-2: Exposure of Noise-Sensitive Land Uses to Operational Noise from Highway Projects
- NOISE-3: Exposure of Noise-Sensitive Land Uses to Operational Noise from Local Road Projects
- NOISE-4: Exposure of Noise Sensitive Land Uses to Construction Noise from Bicycle Projects
- NOISE-6: Exposure of Noise Sensitive Land Uses to Construction Noise from Transit Projects
- NOISE-7: Exposure of Noise-Sensitive Land Uses to Operational Noise from Rail Projects
- NOISE-8: Exposure of Noise-Sensitive Land Uses to Construction Noise from Bus Maintenance Yard Projects
- NOISE-9: Exposure of Noise-Sensitive Land Uses to Operational Noise from Bus Maintenance Yards
- NOISE-10: Exposure of Noise-Sensitive Land Uses to Construction Noise from Aviation Projects
- NOISE-11: Exposure of Noise Sensitive Land Uses to Operational Noise from Aviation Projects
- E-2: Increased Energy Consumption Associated with Operation of Highway Projects
- E-6: Increased Energy Consumption Associated with Operation of Rail Improvement Projects
- E-10: Increased Energy Consumption Associated with Operation of Aviation Facilities
- AES-7: Severe Contrast with Existing Neighborhood Area or Character Resulting from Transit Projects

A discussion of each of these impacts is contained in the respective chapters of this EIR. Where mitigation measures are identified, as under LUP-3, PH-1, and PH-3, for example, those measures do not reduce the impact to a less-than-significant level.

CEQA also requires that the cumulative impact analysis consider whether impacts that are individually less-than-significant may make a cumulatively considerable contribution to a significant effect. In this case, several of the impacts of the RTP that are considered less-than-significant by themselves would nonetheless make a cumulatively considerable contribution to regional cumulative effects. These impacts are:

- **LUP-2: Conversion of Open Space to More Intensive Uses by Highway Projects.** DOC's FMMP cataloged the conversion of more than 4,400 acres of Important Farmland in Stanislaus County during the period of 1996–1998. The mitigation measures identified for this impact would reduce its significance, but the proposed linear transportation projects proposed would still contribute to the loss of open space that is occurring throughout the San Joaquin Valley.
- **AG-1: Direct Conversion of Important Farmland, as defined by the DOC's FMMP, to Nonagricultural Use.** DOC's FMMP cataloged the conversion of more than 4,400 acres of Important Farmland in Stanislaus County during the period of 1996–1998. Most of the highways that would be affected by the proposed projects are located in portions of Stanislaus County where most of the adjoining land is classified as Important Farmland. The linear transportation projects proposed would cause Important Farmland to be converted to nonagricultural uses. This would make a considerable contribution to the cumulative loss of agricultural lands that is occurring throughout the San Joaquin Valley.
- **AG-2: Conversion of Important Farmland, as defined by DOC's FMMP, to Nonagricultural Use through Unplanned, Urban Growth.** DOC's FMMP cataloged the conversion of more than 4,400 acres of Important Farmland in Stanislaus County during the period of 1996–1998. The importance of this impact depends in part on the growth decisions made by other jurisdictions in the county. However, given projected population increases in the San Joaquin Valley, unplanned urban growth (i.e., projects requiring a general plan amendment) would occur often enough to make the RTP's contribution to this impact cumulatively considerable.
- **AG-3: Conflict with Existing Williamson Act Contracts.** Most of the highways that would be affected by the proposed projects are located in portions of Stanislaus County where most of the adjoining land is classified as Important Farmland. The linear transportation projects proposed would cause Important Farmland to be converted to nonagricultural uses. The proposed linear transportation projects would contribute to the loss of agricultural land that is occurring in Stanislaus County and throughout the San Joaquin Valley, as described above. Roads are not a compatible use under Williamson Act contracts.

- **AG-5: Conflict with Agricultural Land Use Policies.** The proposed linear transportation projects would contribute to the loss of agricultural land that is occurring in Stanislaus County and throughout the San Joaquin Valley.
- **AG-6: Impairment of Farmland Productivity.** The proposed linear transportation projects would contribute to the loss of agricultural land that is occurring throughout in Stanislaus County and the San Joaquin Valley, as described above. Roads are not conducive to farmland productivity because of direct impacts on air quality and interference with farming operations.
- **PH-4: Potential for Growth Inducement or Acceleration of Development, Due to Local Road Projects.** Although individually less than significant, taken together, the RTP components would make a considerable contribution to growth inducement. By definition, the purpose of the RTP is to plan for needed transportation improvements and services. Implementation of the plan would induce growth by removing obstacles to smooth traffic flow and by providing better access.
- **BIO-3: Loss or Disturbance of Riparian Habitats.** Riparian habitat has been reduced by up to 90% of its range statewide since European settlement. The RTP would contribute to the loss or disturbance of riparian habitats. Because of the sensitivity of those habitats to additional loss, this contribution is cumulatively considerable.
- **AES-1: Severe Contrast with Existing Neighborhood or Area Character Caused by Highway Projects.** Although individually less than significant, the contribution of numerous highway widenings and related structures to visual impacts on rural areas would be cumulatively considerable.

Conclusion

The RTP would contribute to cumulative impacts on land use, agriculture and open space, housing, wetlands, special-status species, riparian habitat, historic resources, traffic, air quality, noise, energy consumption, and aesthetics. Although mitigation measures identified for a number of these impacts would reduce the RTP's contribution, the measures would not make the contributions to the cumulative impacts less than considerable.

Growth-Inducing Impact Assessment

The RTP is intended to be a plan identifying needed improvements to transportation facilities and services in Stanislaus County over the next 20 years. As such, it is expected to accommodate future growth. The goals of the RTP include improving mobility for people and freight and supporting the economic and community vitality of the region. Policies encourage the reduction of traffic congestion and enhancement of goods movement. Individual projects in the RTP would expand roads and undertake other actions to enhance traffic flow under current and projected conditions. The proposed improvements to the

transportation system would help accommodate the county population increase of approximately 250,000 residents expected by 2020 (California Department of Finance 1998).

In adopting the RTP, StanCOG would be setting the ground rules for financing future transportation projects in the county. To the extent that improved roads and transit systems encourage development by removing obstacles to mobility or improving access to the county, the RTP would foster economic and population growth and additional housing construction. The precise locations of the additional growth and the intensity of that growth in a given location are unknown.

Adoption of the RTP would have significant growth-inducing impacts in the following areas:

- **Land Use and Planning.** The RTP would help identify improvements necessary to support and promote planned development and establish a basis for funding those improvements. The improvements, in turn, are expected to remove obstacles to mobility and improve access. This will encourage residential and other growth.
- **Population and Housing.** The improvements fostered by the RTP would facilitate increased population and housing in Stanislaus County (including growth in its cities) by increasing the capacity of highways and roads to carry traffic and enhancing services provided by other modes of transportation, such as trains and buses.
- **Transportation, Traffic, and Access.** The express purpose of an RTP is to identify and plan for future transportation improvements and services that will be constructed with federal, state, and local financing. By definition, the plan would result in a growth-inducing impact on transportation facilities by reducing or eliminating access and mobility related obstacles.

Conclusion

Based on the accepted assumption that, all things being equal, growth is dependent on good road access, the RTP would have significant growth-inducing impacts. Because a primary objective of the RTP is to improve access and transportation services to accommodate planned growth, there are no feasible mitigation measures that would reduce this impact to a less-than-significant level.

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Chapter 17

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