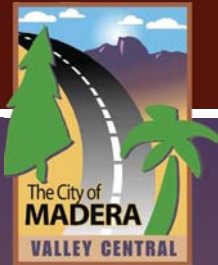


City of Madera

CALIFORNIA



GENERAL PLAN UPDATE DRAFT EIR

APRIL 29, 2009

STATE CLEARINGHOUSE NUMBER
2007121153

PREPARED BY THE CITY OF MADERA AND PMC

CITY OF MADERA
CITY OF MADERA GENERAL PLAN UPDATE
DRAFT ENVIRONMENTAL IMPACT REPORT

Prepared for:

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MAY 2009

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1.0 INTRODUCTION

This Draft Program Environmental Impact Report (DEIR) was prepared in accordance with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines. The City of Madera ("the City") is the lead agency for the environmental review of the proposed City of Madera General Plan Update (the "proposed project") evaluated herein and has the principal responsibility for approving the project. This DEIR assesses the expected environmental impacts resulting from adoption and subsequent implementation of the proposed City of Madera General Plan Update.

1.1 PURPOSE OF THE EIR

The City, acting as the lead agency, has prepared this Draft EIR to provide the public and responsible/trustee agencies with information about the potential environmental effects of the proposed City of Madera General Plan Update. As described in the State CEQA Guidelines Section 15121(a), an EIR is a public informational document that assesses potential environmental effects of the proposed project, and identifies alternatives and mitigation measures to the proposed project that could reduce or avoid its adverse environmental impacts. Public agencies are charged with the duty to consider and minimize environmental impacts of proposed development where feasible, and an obligation to balance a variety of public objectives, including economic, environmental, and social factors.

CEQA requires the preparation of an environmental impact report (EIR) prior to approving any "project" which may have a significant effect on the environment. For the purposes of CEQA, the term "project" refers to the whole of an action, which has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment (State CEQA Guidelines Section 15378[a]). With respect to the proposed City of Madera General Plan Update, the City has determined that the proposed General Plan Update is a "project" as defined by CEQA.

1.2 KNOWN TRUSTEE AND RESPONSIBLE STEE AGENCIES

For the purpose of CEQA, the term "Trustee Agency" means a state agency having jurisdiction by law over natural resources affected by a project, which are held in trust for the people of the State of California. The California Department of Fish and Game is a trustee agency with regard to the fish and wildlife of the state and designated rare or endangered native plants.

In CEQA, the term "Responsible Agency" includes all public agencies other than the Lead Agency that may have discretionary actions associated with the implementation of the General Plan Update or an aspect of the project. The following agencies may have some role in implementing the City of Madera General Plan and have been identified as potential Responsible Agencies:

- California Department of Conservation
- California Department of Forestry and Fire Protection (CAL FIRE)
- California Department of Parks and Recreation
- California Department of Water Resources
- California Integrated Waste Management Board
- California Public Utilities Commission
- California State Lands Commission
- California Transportation Commission
- Caltrans District 6, Environmental Planning and Engineering
- Caltrans, Division of Aeronautics
- Central Valley Regional Water Quality Control Board

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- Madera County Airport Land Use Commission
- Madera County Local Agency Formation Commission (LAFCo)
- Madera County Air Pollution Control District
- Madera Irrigation District
- Madera Unified School District (MUSD)
- Madera County Transportation Commission
- Madera Unified School District
- U.S. Army Corps of Engineers
- U.S. Bureau of Land Management
- U.S. Bureau of Reclamation
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service

1.3 TYPE OF DOCUMENT

The State CEQA Guidelines identify several types of EIRs, each applicable to different project circumstances. This EIR has been prepared as a Program EIR pursuant to CEQA Guidelines Section 15168. According to Section 15168:

A program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either:

- 1) Geographically,*
- 2) As logical parts in the chain of contemplated actions,*
- 3) In connection with issuance of rules, regulations, plans or other general criteria to govern the conduct of a continuing program, or*
- 4) As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.*

The program level analysis in this Environmental Impact Report considers the broad environmental effects of the overall proposed General Plan Update. This EIR will be used to evaluate subsequent projects (public and private) under the proposed City of Madera General Plan Update consistent with CEQA and the State CEQA Guidelines. When individual projects or activities under the General Plan are proposed, the City would be required to examine the projects or activities to determine whether their effects were adequately analyzed in this EIR. If the projects or activities would have no effects beyond those analyzed in this EIR, no further environmental review would be required.

1.4 INTENDED USES OF THE EIR

This EIR is intended to evaluate the environmental impacts of adoption and implementation of the City of Madera General Plan Update. This EIR should be used as the primary environmental document to evaluate all subsequent actions associated with projects in the City. Subsequent projects that may be associated with the project are identified in Section 3.0 (Project Description) of this document as Village Areas and development types and will be evaluated at the time they are considered to determine whether they would result in impacts that fall within those disclosed in this program EIR or whether subsequent environmental review is required as provided for under State CEQA Guidelines Section 15183. In addition, this EIR may be used by

the City to support adoption of CEQA significance thresholds pursuant to State CEQA Guidelines Section 15064.7 (b).

1.5 ORGANIZATION AND SCOPE

Sections 15122 through 15132 of the State CEQA Guidelines identify the content requirements for Draft and Final EIRs. An EIR must include a description of the environmental setting, an environmental impact analysis, mitigation measures, alternatives, significant irreversible environmental changes, growth-inducing impacts, and cumulative impacts.

The environmental issues addressed in the Draft EIR were established through review of the project, environmental documentation for nearby projects, and public and agency responses to the Notice of Preparation (NOP).

This Draft EIR is organized as follows:

SECTION 1.0 – INTRODUCTION

Section 1.0 provides an introduction and overview describing the purpose, type, and intended use of the EIR, responsible agencies, organization and scope of the EIR, the review and certification process, and a summary of comments received on the NOP.

SECTION 2.0 - EXECUTIVE SUMMARY

This section summarizes the characteristics of the proposed project, known areas of controversy and issues to be resolved, and provides a concise summary matrix of the project's environmental impacts, proposed General Plan Update policies, possible mitigation measures, and identification of alternatives that reduce or avoid at least one environmental effect of the proposed General Plan.

SECTION 3.0 - PROJECT DESCRIPTION

This section provides a detailed description of the proposed project, including the location, intended objectives, background information, the physical and technical characteristics including the decisions subject to CEQA and a list of related environmental review and consultation requirements.

SECTION 4.0 - ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

Section 4.0 contains an analysis of environmental topic areas as identified below. Each subsection contains a description of the existing setting of the project area, identifies project-related impacts, and identifies mitigation measures for significant environmental effects.

This section also includes an introduction to the environmental analysis that describes the general assumptions used to evaluate project-specific and cumulative environmental impacts. However, specific analyses are provided in each environmental issue area section.

The following major environmental topics are addressed in this section:

- Land Use
- Agriculture
- Population/Housing/Employment

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- Hazards and Human Health
- Transportation and Circulation
- Noise
- Air Quality
- Geology and Soils
- Hydrology and Water Quality
- Biological Resources
- Cultural and Paleontological Resources
- Public Services and Utilities
- Visual Resources/Light and Glare

SECTION 5.0 - CUMULATIVE IMPACTS SUMMARY

This section summarizes all identified cumulative impacts associated with the proposed project. As required by State CEQA Guidelines Section 15130, an EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable. CEQA Guidelines Section 15065(a) (3). The cumulative impacts section includes analysis of Climate Change impacts at project buildout.

SECTION 6.0 - ALTERNATIVES TO THE PROJECT

State CEQA Guidelines Section 15126.6 requires that an EIR describe a range of reasonable alternatives to the project, which could feasibly attain the basic objectives of the project and avoid and/or lessen any significant environmental effects of the project. This alternatives analysis provides a comparative analysis between the merits of the project and the selected alternatives.

SECTION 7.0 - LONG-TERM IMPLICATIONS OF THE PROJECT

This section contains discussions and analysis of various topical issues mandated by CEQA. These include significant environmental effects that cannot be avoided if the project is implemented, significant irreversible environmental changes and growth-inducing impacts.

SECTION 8.0 - REPORT PREPARERS

This section lists all authors and agencies that assisted in the preparation of the EIR, by name, title, and company or agency affiliation.

APPENDICES

This section includes all notices and other procedural documents pertinent to the EIR, as well as all technical material prepared to support the analysis.

1.6 ENVIRONMENTAL REVIEW PROCESS

The review and certification process for the EIR will involve the following general procedural steps:

NOTICE OF PREPARATION

In accordance with Section 15082 of the CEQA Guidelines, the City prepared a Notice of Preparation (NOP) of an EIR for the project on December 27, 2007. The City was identified as the Lead Agency for the proposed project. This notice was circulated to the public, local, State, and federal agencies, and other interested parties to solicit comments on the proposed project. A scoping meeting was held on January 28, 2008 to receive comments. Concerns raised in response to the NOP were considered during preparation of the Draft EIR. The NOP and responses by interested parties are presented in **Appendix A**.

DRAFT EIR AND PUBLIC NOTICE/PUBLIC REVIEW

This document constitutes the Draft EIR. The Draft EIR contains a description of the project, description of the environmental setting, identification of project impacts, and mitigation measures for impacts found to be significant, as well as an analysis of project alternatives. Upon completion of this Draft EIR, the City filed a Notice of Completion (NOC) with the Governor's Office of Planning and Research to begin the public review period (Public Resources Code, Section 21161).

Concurrent with the NOC, the City will provide public notice of the availability of the DEIR for public review, and invite comment from the general public, agencies, organizations, and other interested parties. The public review and comment period should be no less than forty-five (45) days. Public comment on the DEIR will be accepted both in written form and orally at public hearings. Although no public hearings to accept comments on the EIR are required by CEQA, the City expects to hold one or more public comment meeting(s) during the review period. Notice of the time and location of the hearing will be published prior to the hearing. Information on upcoming meetings associated with the General Plan Update is also available at:

www.maderageneralplan.com

Comments will also be accepted via an online comment form at the website listed below. All comments or questions regarding the Draft EIR should be addressed to:

**Dave Randall
City of Madera
205 West Fourth Street
Madera, CA 93637**

RESPONSE TO COMMENTS/FINAL EIR

Following the public review period, a Final EIR will be prepared. The Final EIR will respond to written comments received during the public review period and to oral comments made at any public hearing(s) as well as contain any minor edits made to the Draft EIR.

CERTIFICATION OF THE EIR/PROJECT CONSIDERATION

As the final decision maker regarding the General Plan Update, the City Council will review and consider the Final EIR. If the Council finds that the Final EIR is "adequate and complete", they will certify the Final EIR.

Following certification of the Final EIR and following a recommendation on the proposed General Plan Update by the Planning Commission, the City Council may take action to adopt,

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revise, or reject the General Plan Update. A decision to approve the project would be accompanied by written findings in accordance with State CEQA Guidelines Section 15091 and Section 15093 and would explain the General Plan Update's relationship to alternatives considered in this EIR. A Mitigation Monitoring and Reporting Program (MMRP), as described below, would also be adopted for mitigation measures that have been incorporated into or imposed upon the project to reduce or avoid significant effects on the environment. This MMRP will be designed to ensure that these measures are carried out during General Plan implementation.

MITIGATION MONITORING

Public Resources Code Section 21081.6(a) requires lead agencies to adopt a reporting and mitigation monitoring program to describe measures that have been adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment. The specific "reporting or monitoring" program required by CEQA is not required to be included in the EIR; however it will be presented to the City Council for adoption. Throughout the EIR, however, mitigation measures have been clearly identified and presented in language that will facilitate establishment of a monitoring and reporting program.

1.7 COMMENTS RECEIVED ON THE NOTICE OF PREPARATION

The City received several comment letters on the Notice of Preparation for the City of Madera General Plan DEIR. A copy of each letter is provided in **Appendix A** of this EIR. The City received letters from the following federal, state, and local agencies, and other interested parties:

- State of California Public Utilities Commission
- Madera County Local Agency Formation Commission (LAFCo)
- Madera County Planning Department
- Madera County Department of Engineering and General Services
- California Department of Fish and Game
- State of California Department of Water Resources
- California Department of Transportation, Division of Aeronautics
- Individuals not affiliated with public agencies

The following summarizes the concerns in these letters:

- Any development adjacent to or near rail corridors should be planned with safety of the rail corridor in mind.
- New development should pay its fair share for rail safety mitigations
- Services should be evaluated on any revisions to the City's Sphere of Influence and annexations. Impacts to the Service Districts should be evaluated.
- Circulation issues should be addressed, especially on the interface between the City and County road systems. Level of Service (current and projected), capital improvements, and the maintenance and operations of the roadways.
- Any potential modifications to consistency with the Airport Land Use Plan should be discussed.

- The source of additional potable water should be discussed. Negative impact to agricultural groundwater supply should be addressed.
- Additional stormwater should be addressed as far as where it will go and how it will meet water quality requirements.
- City Wastewater needs should be analyzed to see if a new tertiary treatment plant is needed. Purple pipe infrastructure for reclaimed water distribution as irrigation water should be considered. Grey water should be considered as a source of supplemental water.
- A new floodwater study is needed to determine floodplain boundaries and based flood elevations.
- An encroachment permit from the Reclamation Board may be needed if the project encroaches on a State Adopted Plan of Flood Control.
- There may be Project-related impacts to endangered, rare, or threatened species such as San Joaquin Valley orcutt grass, hair orcutt grass, San Joaquin kit fox, California tiger salamander, Swainson's hawk, blunt-nose leopard lizard, and burrowing owl. There may be loss of riparian habitat and/or wildlife movement corridors on the Fresno River, Cottonwood Creek, Schmidt Creek, Dry Creek, and other waterbodies. There may be loss of wetlands.
- The Olive Business Park Conceptual Specific Plan proposed development in a historic area with agricultural resources. It would also place residences near industrial uses and pose problems with truck traffic on Avenue 12 to and from Highway 99.
- The California Airport Land Use Planning Handbook should be used as a resource in the preparation of environmental documents for areas in which it is applicable around the Madera Municipal Airport. The General Plan should be consistent with the Madera County Airport Land Use Commission (ALUC) policies and should be referred to the ALUC. The General Plan should be coordinated with Madera Municipal Airport staff. Airport noise impacts should be considered.

2.0 EXECUTIVE SUMMARY

This section provides an overview of the proposed City of Madera General Plan Update and its environmental analysis. For additional detail regarding specific issues, please consult the appropriate chapter of Sections 4.1 through 4.13 (Environmental Setting, Impacts, and Mitigation Measures) of this Draft EIR.

2.1 PURPOSE AND SCOPE OF THE ENVIRONMENTAL IMPACT REPORT

This Environmental Impact Report (EIR) will provide, to the greatest extent possible, an analysis of the potential environmental effects associated with the implementation of the General Plan, pursuant to the California Environmental Quality Act (CEQA).

This EIR analysis focuses upon potential environmental impacts that could arise from implementation of the General Plan Update through development of the land uses within the Planning Area, as regulated and guided by General Plan policies and action items. The EIR adopts this approach in order to provide a credible worst-case scenario of the impacts resulting from project implementation.

2.2 PROJECT CHARACTERISTICS

The proposed project is the adoption and implementation of an updated General Plan for the City of Madera. The updated City of Madera General Plan would replace the existing General Plan, which was last comprehensively updated in 1992. The City of Madera's General Plan Update builds off of the goals and vision developed through the Vision 2025 process embarked on by the community to provide guidance for long-range planning.

The proposed City of Madera General Plan Update is comprised of a Land Use Map (see Section 3.0, Project Description) and policy document that contains ten "policy" elements. Each of the elements identifies goals and associated policies and action items. State law requires that general plans address seven topics: land use, circulation, housing, conservation, open space, noise, and safety. The Madera General Plan Update covers all of these topics plus several additional issues, for a total of ten elements. A brief description and goals for each element are as follows:

COMMUNITY DESIGN (OPTIONAL ELEMENT)

A key outcome of Vision 2025 was a desire on the part of the City and its residents to improve the quality of design for public and private development projects. That commitment to "raise the bar" and continually strive to improve the quality of Madera's built environment is reflected in the goals and policies in this element.

CIRCULATION AND INFRASTRUCTURE ELEMENT (REQUIRED ELEMENT)

This element includes policies and actions addressing a broad range of topics related to infrastructure, the physical systems of roads, walkways, water lines, etc., that allow Madera to function. Issues in this element are:

- Circulation – Roadways, bicycling, walking, airports, and railways
- Water – Domestic water service for homes and businesses
- Sewer – Wastewater treatment
- Solid Waste – Disposal of waste (household garbage, etc.)

2.0 EXECUTIVE SUMMARY

CONSERVATION ELEMENT (REQUIRED ELEMENTS OF CONSERVATION AND OPEN SPACE)

This element addresses several topics which are all related to how resources of various types are used in Madera (or are affected by human activities) and how their use can be managed to ensure a sustainable future. This element addresses:

- Water supply and quality
- Soils and agriculture
- Biology
- Air
- Climate change
- Energy and energy efficiency
- Green building/low impact development/LEED

HEALTH AND SAFETY ELEMENT (REQUIRED ELEMENT OF SAFETY, PLUS ADDITIONAL TOPIC OF HEALTH)

Fostering a healthy and safe Madera was a major outcome of Vision 2025 and is a major goal of the General Plan. This element of the General Plan contains goals, policies, and actions directly related to improving the overall health and safety of the community.

HISTORIC AND CULTURAL RESOURCES (OPTIONAL ELEMENT)

This element seeks to identify and protect areas, sites, and buildings having architectural, historical, or cultural significance. The element provides goals, policies, and actions designed to foster preservation of historic resources in the City and the Planning Area.

HOUSING ELEMENT (REQUIRED ELEMENT)

The Housing Element is a comprehensive statement by the City of Madera of its current and future housing needs at all income levels. This element of the General Plan provides policies related to the provision of housing for all income levels as well as provisions that are state-mandated. Under state law, the Housing Element needs to be updated by June 2009. The City is updating the Housing Element as part of the General Plan update process.

LAND USE ELEMENT (REQUIRED ELEMENT)

The purpose of the Land Use Element is to describe existing and future land use activity in the City. The element identifies the distribution, location, and intensity of all land use types throughout the City and the Planning Area.

NOISE ELEMENT (REQUIRED ELEMENT)

This element of the General Plan defines acceptable noise levels for representative types of land use (residential, office, industrial, etc.) of the City and the Planning Area and how those levels will be achieved.

PARKS AND RECREATION ELEMENT (OPTIONAL ELEMENT)

This element establishes goals and policies that plan for the existing and future parks, recreation, and open space needs of the community. This element establishes and maintains a framework to ensure adequate public parks, trails, and recreation facilities as the City grows and changes.

SUSTAINABILITY ELEMENT (OPTIONAL ELEMENT)

This element establishes policies and action items that promote sustainability for the environment and the local economy and help establish equity for all people. The Sustainability Element also addresses schools and education, good government, economic and workforce development, and social and community systems.

2.3 PROJECT ALTERNATIVES SUMMARY

State CEQA Guidelines Section 15126.6 requires that an EIR describe a range of reasonable alternatives to the project, which could feasibly attain the basic objectives of the project and avoid and/or lessen the environmental effects of the project. Further, the CEQA Guidelines Section 15126.6(e) requires that a “no project” alternative be evaluated in an EIR. This alternatives analysis provides a comparative analysis between the project and the selected alternatives. The Draft EIR qualitatively evaluates the following other land use alternatives, which include:

- **Alternative 1 Existing General Plan Alternative (No Project Alternative):** Under this alternative, the proposed General Plan Update and its associated Land Use Map would not be adopted and the City would continue to operate under its existing 1992 General Plan.
- **Alternative 2 – Reduced Planning Area Alternative:** Under this alternative, the proposed General Plan Update Planning Area would be reduced to the existing City boundaries and existing sphere of influence. The Madera County General Plan would guide development outside of the City and sphere of influence.
- **Alternative 3 – Natural Resources Conservation Alternative:** This alternative would generally consist of the same land use concept associated with the proposed General Plan Update. However, this alternative modifies proposed designated land uses in the Planning Areas to provide further protection of wetland resources and associated habitats. All other aspects of the proposed General Plan Update would remain under this alternative.
- **Alternative 4 – Land Use Modification Requests Alternative:** This alternative evaluates land use designation modification requests for specific properties in the Planning Area that were not included in the current draft of the proposed General Plan Update

2.4 AREAS OF CONTROVERSY

The City of Madera was identified as the Lead Agency for the proposed project. In accordance with Section 15082 of the State CEQA Guidelines, the City of Madera prepared and distributed a Notice of Preparation (NOP) for the City of Madera General Plan Update that was circulated for public review on December 29, 2007. The NOP included a summary of probable effects on the environment from the implementation of the project. Written comments received in response to the NOP were considered in the preparation of the EIR. The issues raised included: rail safety, expansion of services to annexation areas, utilities and public services, flood control, impacts to biological species and habitat, land use compatibility, traffic and circulation impacts, and impacts to and compatibility with the airport. Section 1.0 (Introduction) provides a summary of issues and areas of concern related to the proposed General Plan and the Draft EIR, presented to the City by agencies and the public during the NOP review period. The complete text of the NOP and NOP comments are included as **Appendix A** to this Draft EIR.

2.5 SUMMARY OF ENVIRONMENTAL IMPACTS

Table 2.0-1 displays a summary of impacts for the proposed General Plan Land Use Policy Map, City of Madera General Plan Update policies and action items, and proposed mitigation measures that would avoid or minimize potential impacts. In the table, the level of significance is indicated both before and after the implementation of each mitigation measure.

For detailed discussions of all mitigation measures and of proposed General Plan policies and action items that would provide mitigation for each type of environmental impact addressed in this EIR, refer to the appropriate environmental topic section of this EIR (i.e., Sections 4.1 through 4.13).

Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Land Use				
Impact 4.1.1 Implementation of the General Plan could result in incompatibilities or conflicts between existing and future land uses in the Planning Area, including land located outside of the Madera city limits.	Policy CON-15, Policy N-1, Action Item N-2.1, Action Item N-2.2, Action Item N-2.3, Policy N-3, Policy N-4, Policy N-5, Policy N-6, Policy N-7, Policy N-8, Policy N-9, Policy N-10, Policy N-11, Policy CD-36, Policy CD-43, Policy CD-55, Policy CD-57, Policy CD-58, Policy CD-60, Policy CD-64, Policy HS-10, Policy HS-11, Policy HS-12, Policy HS-13, Policy HS-14, Policy HS-15, Policy HS-17	LS	None required.	LS
Impact 4.1.2 The proposed General Plan is inconsistent with some existing relevant land use planning documents.	Policy LU-3, Action Item LU-3.1, Policy LU-10, Policy LU-11, Policy LU-13, Policy LU-18, Policy LU-32, Policy HS-31, Policy HS-32	SU	None available.	SU
Impact 4.1.3 When considered with existing, proposed, approved, and planned development in the region, implementation of the proposed City of Madera General Plan has the potential to further contribute to cumulative land		CS/SU	None available.	SU

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2.0 EXECUTIVE SUMMARY

Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
use changes among local land use plans in the region, resulting in significant impacts to the physical environment.				
Agricultural Resources				
Impact 4.2.1 Implementation of the proposed General Plan Update would result in the direct loss of important farmlands (Prime Farmland, Unique Farmland, and Farmland of Statewide Importance) as designated by the Farmland Mapping and Monitoring Program.	Policy LU-10, Policy LU-11, Policy LU-12, Policy LU-35	SU	None available.	SU
Impact 4.2.2 Implementation of the proposed General Plan Update could result in the placement of urban uses adjacent to agricultural uses.	Policy LU-10, Policy LU-35, Policy CON-15	SU	None available.	SU
Impact 4.2.3 Implementation of the proposed General Plan Update could result in a conflict with land currently zoned for agriculture as well as with existing Williamson Act contract lands.	Policy LU-10, Policy LU-11, Policy LU-35, Policy CON-15	SU	None available.	SU
Impact 4.2.4 Implementation of the proposed General Plan Update along with regional and statewide growth would result in a substantial contribution to the conversion of important farmland and may increase agriculture/urban interface conflicts.		CS/SU	None available.	CS/SU
Population/Housing/Employment				
Impact 4.3.1 Implementation of the proposed General Plan Update would include	Policy LU-10, Policy LU-11, Policy LU-13	S	None available.	SU

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
land uses that promote an increase in population, housing, and employment to the area, and thus induce substantial growth that would result in physical effects to the environment.				
Impact 4.3.2 Implementation of the proposed General Plan Update is not expected to result in the substantial displacement of housing and/or persons due to the construction of infrastructure necessary to serve new development or revitalization efforts.		LS	None required.	LS
Impact 4.3.3 Subsequent land use activities associated with implementation of the proposed General Plan Update, in addition to existing, approved, proposed, and reasonably foreseeable development, could result in a cumulative increase in population and housing growth in the City of Madera as well as in the surrounding cities and counties, along with associated environmental impacts.		CS	None available.	CS/SU
Hazards and Human Health				
Impact 4.4.1 Implementation of the General Plan could include the transport, use, and/or disposal of hazardous materials on Planning Area roadways, which could result in exposure of such materials to the public either through routine use or due to accidental release.	Policy HS-15, Policy HS-17	LS	None required.	LS
Impact 4.4.2 Implementation of the proposed	Policy HS-10, Policy	PS	MM 4.4.2 The following shall be	LS

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2.0 EXECUTIVE SUMMARY

Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
General Plan Update could result in the release of hazardous materials into the environment under reasonably foreseeable upset or accident conditions.	HS-11, Policy HS-14, Policy HS-16.		<p>added as a policy to the General Plan Safety Element under Goal SA.1:</p> <p>The City shall require written confirmation from applicable local, regional, state, and federal agencies that known contaminated sites have been deemed remediated to a level appropriate for land uses proposed prior to the City approving site development or provide an approved remediation plan that demonstrates how contamination will be remediated prior to site occupancy. This documentation will specify the extent of development allowed on the remediated site as well as any special conditions and/or restrictions on future</p>	

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
			land uses.	
Impact 4.4.3 Implementation of the proposed General Plan could locate development near Madera Airport.	Policy HS-31, Policy HS-32, Policy LU-35	LS	None required.	LS
Impact 4.4.4 Proposed land uses and/or changes in land use patterns that would occur as a result of implementation of the proposed Madera General Plan Update would not interfere with adopted emergency response or evacuation plans.	Action HS-8.1, Policy HS-34	LS	None required.	LS
Impact 4.4.5 Implementation of the proposed General Plan would not contribute to any regional cumulative hazards.		LS	None required.	LS
Transportation and Circulation				
Impact 4.5.1 Implementation of the proposed General Plan Update would result in an increase in traffic volumes that would result in deficient level of service conditions in year 2030.	Policy CI-1, Action Item CI-1.1, Policy CI-5, Policy CI-6, Policy CI-7, Action Item CI-7.1, Policy CI-8, Policy CI-9, Policy CI-11, Policy CI-12, Policy CI-23, Action Item CI-23.1, Action Item CI-23.2	S	None available.	SU
Impact 4.5.2 Implementation of the proposed General Plan Update would exacerbate unacceptable operations on	Policy CI-9, Policy CI-10	S	None available.	SU

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
northbound and southbound SR 99.				
Impact 4.5.3 Implementation of the proposed General Plan Update would result in an increase in traffic volumes, which could increase the potential opportunities for safety conflicts as well as potential conflicts with emergency access.	Policy CI-1, Action Item CI-1.1, Policy CI-5, Policy CI-6, Policy CI-7, Action Item CI-7.1, Policy CI-8, Policy CI-9, Policy CI-11, Policy CI-12, Policy CI-17, Policy CI-18, Policy HS-29, Policy HS-30, Action Item HS-30.1, Action Item HS-30.2	LS	None Required.	LS
Impact 4.5.4 Implementation of the proposed General Plan Update would not conflict with public transit service (e.g., bus service).	Policy CI-24, Policy CI-29, Policy CI-32, Action Item CI-32.1, Policy CI-42	LS	None Required.	LS
Impact 4.5.5 Implementation of the proposed General Plan Update would result in an increase in the demand for pedestrian and bicycle infrastructure.	Policy CI-28, Action Item CI-28.1, Action Item CI-28.2, Policy CI-29, Policy CI-30, Policy CI-32, Action Item CI-32.1, Policy CI-34, Action Item CI-35.1	LS	None Required.	LS
Impact 4.5.6 Implementation of the proposed General Plan Update would result in an increase in traffic volumes that could result in the greater potential for conflicts with at-grade railway crossings.	Policy HS-29, Policy HS-30, Action Item HS-30.1, Action Item HS-30.2	LS	None Required.	LS

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Impact 4.5.7 When considered with existing, proposed, approved and planned development in the region, implementation of the proposed Madera General Plan Update has the potential to contribute to an increase in traffic volumes that would result in deficient level of service conditions under cumulative conditions (including buildout of the Planning Area).		CC/SA	None available.	CC/SA
Air Quality				
Impact 4.6.1 Implementation of the General Plan Update may expose sensitive receptors to short-term particulate matter emissions resulting from construction. However, subsequent development would be subject to SJVAPCD construction standards that address construction emissions.	Policy CON-28, Action Item CON-28.1	LS	None Required.	LS
Impact 4.6.2 Implementation of the General Plan Update may create objectionable odors or expose sensitive receptors to toxic air contaminants.	Policy CON-26, Policy CON-27	LS	None Required.	LS
Impact 4.6.3 The General Plan Update would allow continued growth in population, housing, and jobs in the City of Madera that would increase traffic volumes on local roadways. This would result in elevated CO emissions from motor vehicle congestion that could expose sensitive receptors to elevated CO concentrations. However, based on		LS	None Required.	LS

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City of Madera
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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
the projections of traffic congestion, this is not expected to result in exceedances of CO standards.				
Impact 4.6.4 Implementation of the General Plan Update would allow for population growth that may exceed projections assumed in the 2007 Ozone Plan and potentially conflict with particulate matter reduction measures. This inconsistency could obstruct the SJVAPCD's ozone attainment strategy and particulate matter (PM ₁₀ and PM _{2.5}) attainment efforts.	Policy CON-28, Action Item CON-28.1, Policy CON-29, Action Item CON-29.1, Action Item CON-29.2, Policy CON-30, Action Item CON-30.1, Policy CON-32, Policy LU-10, Policy LU-11, Policy LU-35	SU	None available.	
Impact 4.6.5 Implementation of the proposed General Plan Update, in combination with cumulative development in the San Joaquin Valley Air Basin, would contribute to a cumulative air quality impacts and could conflict with ozone and particulate matter attainment efforts.		CC/SU	None available.	CC/SU
Impact 4.6.6 Implementation of the proposed General Plan update could substantially increase emissions of CO _{2e} over existing (2008) conditions that could result in environmental effects to the Planning Area.	Policy CI-42, Policy CON-33, Policy CON-34, Action Item CON-34.1, Action Item CON-34.2, Policy CON-35, Policy CON-36, Action Item CON-37.3, Action Item CON-37.4, Action Item CON-38.1,	CC/SU	None avoidable.	CC/SU

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
	Action Item CON-38.2, Action Item CON-38.4, Action Item CON-39.1			
Impact 4.6.7 Implementation of the proposed General Plan Update would implement a number of policies and action items that would complement and be consistent with the state's best practices measures for reducing GHG emissions.	Policy CI-42, Policy CON-33, Policy CON-34, Action Item CON-34.1, Action Item CON-34.2, Policy CON-35, Policy CON-36, Action Item CON-37.3, Action Item CON-37.4, Action Item CON-38.1, Action Item CON-38.2, Action Item CON-38.4, Action Item CON-39.1	LCC	None Required.	LCC
Impact 4.6.8 Implementation of the proposed General Plan update could expose planned growth in the City to environmental effects associated with climate change.		CLS	None Required.	LS
Noise				
Impact 4.7.1 Activities associated with construction could result in elevated noise levels at noise-sensitive land uses. Increases in ambient noise levels, particularly during the nighttime hours, could result in increased levels of annoyance and potential sleep disruption. In accordance with the City's Municipal	Policy N-1, Policy N-2, Policy N-5, Policy N-6, Policy N-7, Policy N-9	LS	None required.	LS

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Code, construction activities would be limited to the daytime hours of operation.				
Impact 4.7.2 Implementation of the proposed General Plan would result in increases in traffic noise levels that would be in excess of City of Madera noise standards.	Policy N-1, Policy N-2, Policy N-5, Policy N-7, Policy N-9, Policy N-10, Policy N-11	S	None available.	SU
Impact 4.7.3 Implementation of the proposed General Plan would expose future land uses and residents to train and rail related noise.	Policy N-1, Policy N-2, Policy N-5, Policy N-7, Policy N-9, Policy N-10, Policy N-11	S	None available.	SU
Impact 4.7.4 Implementation of the proposed General Plan Update would expose future land uses and residents to aircraft related noise. However, implementation of performance standards in the proposed Noise Element would mitigate this impact.	Policy N-1, Policy N-2, Policy N-5, Policy N-7, Policy N-9, Policy N-15	LS	None required.	LS
Impact 4.7.5 As additional development occurs throughout the city, the potential exists for new noise-sensitive land uses to encroach upon existing or proposed stationary noise sources.	Policy N-1, Policy N-2, Policy N-5, Policy N-6, Policy N-7, Policy N-9, Policy N-10, Policy N-11	PS	None available.	SU
Impact 4.7.6 Subsequent development under the proposed General Plan Update would not be exposed to significant groundborne vibration impacts		LS	None required.	LS

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Impact 4.7.7 Implementation of the proposed General Plan Update along with potential development of the Planning Area could result in increased noise conflicts.		CS/SU	None available.	CS/SU
Geology and Soils				
Impact 4.8.1 Implementation of the proposed General Plan Update, and the resulting increase in population, employment, and development activity within the Planning Area, would not expose people, structures, and development to substantial ground shaking and seismic hazards as a consequence of earthquakes resulting in the risk of loss, injury, or death.	Policy HS-7, Policy HS-8	LS	None required.	LS
Impact 4.8.2 Implementation of the proposed General Plan Update could include construction and site preparation activities. These activities can increase the potential for soil, wind, and water erosion, due to minor or major grading over large areas of land.	Policy CON-8, Policy CON-9, Policy CON-10, Action Item CON-10.1, Action Item CON-10.2	LS	None required.	LS
Impact 4.8.3 Implementation of the proposed General Plan Update could place development in areas with unstable soils or expose buildings, pavements, and utilities to significant damage as a result of underlying expansive or unstable soils.	Policy HS-8	SM	MM 4.8.3 Require a geotechnical report or other appropriate analysis be conducted that determines the shrink/swell potential and stability of the soil for public and private construction projects and identifies measures necessary to ensure stable soil conditions.	LS
Impact 4.8.4 Implementation of the proposed		LS	None required.	LS

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
General Plan Update could impact areas where soils may be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems.				
Impact 4.8.5 Implementation of the proposed General Plan Update, in combination with existing, planned, proposed, and reasonably foreseeable development, would not contribute to cumulative seismic hazards, expansive soils, and soil erosion impacts given the area-specific nature of the impact.		LCC	None required.	LCC
Hydrology and Water Quality				
Impact 4.9.1 Implementation of the proposed General Plan could result in the discharge of polluted runoff from construction of future urban development, potentially causing harm to the biological integrity of waterways, violating water quality standards, or otherwise substantially degrading surface water quality.	Policy CON-10, Policy CON-10.1, Policy CON-10.2	LS	None required.	LS
Impact 4.9.2 Implementation of the proposed General Plan could result in the discharge of polluted runoff from operation of future urban development, potentially causing harm to the biological integrity of waterways, violating water quality standards, or otherwise substantially degrading surface water quality.	Policy CON-10, Policy CON-10.1, Policy CON-10.2	LS	None required.	LS

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Impact 4.9.3 Implementation of the proposed General Plan could result in the degradation of groundwater quality resulting from construction and operation of future land uses.	Action Item CON-3.1, Policy CON-10, Action Item CON-10.1, Action Item CON-10.2	LS	None required.	LS
Impact 4.9.4 Implementation of the proposed General Plan would increase impervious surfaces and alter drainage conditions and rates in the city, which could result in increased runoff and potential flooding impacts. The proposed General Plan could also potentially provide for development within areas subject to flooding.	Policy HS-19, Policy HS-21, Policy HS-22, Policy HS-23, Policy HS-24, Policy HS-25, Policy HS-26, Policy HS-27, Action Item HS-27.1, Action Item HS-27.2, Action Item HS-27.3, Policy CON-12	LS	None required.	LS
Impact 4.9.5 Implementation of the proposed General Plan could potentially provide for development within areas subject to flooding as a result of dam failure.		LS	None required.	LS
Impact 4.9.6 Implementation of the proposed General Plan would increase demand for water supply to the city, requiring increased groundwater production and potentially worsening the overdraft condition of the Madera Subbasin.	Policy CON-1, Action Item CON-3.1, Policy CON-4, Action Item CON-5.3, Policy CI-51, Action Item CI-51.1, Action Item CI-51.2, Policy CI-53, Policy CI-54	PS	None available.	SU
Impact 4.9.7 Implementation of the proposed General Plan, in combination with cumulative development in the watershed, would contribute to a cumulative degradation of water		LCC	None required.	LCC

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
quality from construction activities and increased urban runoff.				
Impact 4.9.8 Implementation of the proposed General Plan would increase impervious surfaces and alter drainage conditions and rates in the Planning Area, which could contribute to cumulative flood conditions along the Fresno River and local waterways.		LCC	None required.	
Impact 4.9.9 Implementation of the proposed General Plan, in combination with cumulative development in the subbasin, would contribute to an increased demand for water supply, requiring increased groundwater production and potentially worsening the overdraft condition of the basin.		CC	None available.	CC/SU
Biological Resources				
Impact 4.10.1 Implementation of the proposed General Plan Update could result in direct and indirect loss of habitat and individuals of endangered, threatened, rare, proposed, or candidate status or of California fully protected species, as well as plant species identified by the California Native Plant Society as a List 1A or 1B species (i.e., rare, threatened or endangered plants). However, the proposed General Plan Update includes policies and action items that would ensure that impacts to special-status species are adequately mitigated	Policy CON-22, Action Item CON-22.1, Policy CON-2, Action Item CON-24.4, Action Item CON-24.1, Action Item CON-24.2	LS	None required.	LS

S – Significant CC- Cumulatively Considerable LS – Less Than Significant SU – Significant and Unavoidable NI No Impact
 PS-Potentially Significant LCC-Less than Cumulatively Considerable CS – Cumulative Significant SM- Significant but Mitigatable

Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Impact 4.10.2 Implementation of the proposed General Plan Update could result in direct and indirect loss of habitat and individuals of animal and plant species of concern and other non-listed special-status species. However, the proposed General Plan Update includes policies and action items that would ensure that impacts to species of concern are adequately mitigated.		LS	None required.	LS
Impact 4.10.3 Implementation of the proposed General Plan Update would result in disturbance, degradation, and removal of sensitive habitats/biological communities.		S	None available.	S/U
Impact 4.10.4 Implementation of the proposed General Plan Update could interfere substantially with the movement of native resident or migratory fish or wildlife species. However, the proposed General Plan Update includes policies and action items that would ensure that impacts to special-status species are adequately mitigated.		LS	None required.	LS
Impact 4.10.5 Implementation of the proposed General Plan Update would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or any adopted biological resources recovery or conservation plan of any		NI	None Required.	NI

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2.0 EXECUTIVE SUMMARY

Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
federal or state agency.				
Impact 4.10.6 When considered with existing, proposed, approved, and planned development in the region, implementation of the proposed City of Madera General Plan Update has the potential to further contribute to cumulative impacts to special-status species and habitat loss.		CC/SU	None available.	CC/SU
<i>Cultural and Paleontological Resources</i>				
Impact 4.11.1 Implementation of the proposed General Plan Update could result in the potential disturbance of cultural resources (i.e., prehistoric sites, historic sites, and isolated artifacts and features) and human remains. However, policy provisions of the proposed General Plan Update would mitigate potential impacts to these resources.	Policy HC-2, Policy HC-5, Action Item HC-5.1, Policy HC-7, Policy HC-8, Action Item HC-9.1, Action Item HC-9.2	LS	None Required.	LS
Impact 4.11.2 Implementation of the proposed General Plan Update could result in the potential disturbance of paleontological resources (i.e., fossils and fossil formations). However, policy provisions of the proposed General Plan Update would mitigate potential impacts to these resources.	Action Item HC-9.2:	LS	None Required.	LS
Impact 4.11.3 Implementation of the proposed General Plan Update along with foreseeable development in the region could contribute to further disturbance		LCC	None Required.	LCC

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
of cultural resources (i.e., prehistoric sites, historic sites, and isolated artifacts and features) and human remains. However, policy provisions of the proposed General Plan Update would mitigate its contribution to potential impacts to these resources.				
Impact 4.11.4 Implementation of the General Plan Update along with other foreseeable development in the region could result in the disturbance of paleontological resources (i.e., fossils and fossil formations). However, policy provisions of the proposed General Plan Update would mitigate its contribution to potential impacts to these resources.		LCC	None Required.	LCC
Public Services and Utilities				
Impact 4.12.1.1 Implementation of the proposed General Plan Update would increase the demand for fire protection and emergency medical service.	Policy CI-44, Policy CI-47, Policy CI-49, Policy CI-50, Policy HS-33, Policy LU-13, Policy LU-14, Policy LU-15, Policy LU-16	LS	None required.	LS
Impact 4.12.1.2 Implementation of the proposed General Plan Update and associated buildout would contribute to the cumulative demand for fire protection and emergency medical services.	Policy CI-44, Policy CI-47, Policy CI-49, Policy CI-50, Policy HS-33, Policy LU-13, Policy LU-14, Policy LU-15, Policy LU-16	LCC	None required.	LCC
Impact 4.12.2.1 Implementation of the proposed General Plan Update would increase	Policy CI-44, Policy CI-47, Policy CI-49,	LS	None required.	LS

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2.0 EXECUTIVE SUMMARY

Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
the demand for law enforcement services.	Policy CI-50, Policy HS-35, Action Item HS-35.1, Policy HS-36, Policy HS-39.			
Impact 4.12.2.2 Implementation of the proposed General Plan Update and associated buildout would contribute to the cumulative demand for law enforcement services.	Policy HS-39, Policy CI-47, Policy CI-49.	LCC	None required.	LCC
Impact 4.12.3.1 Implementation of the General Plan would require additional treatment capacity, storage capacity, and other conveyance facilities to meet the projected water supply demands.	Policy CI-44, Policy CI-47, Policy CI-49, Policy CI-51, Action Item CI-51.1, Action Item CI-51.2, Policy CI-54	LS	None required.	LS
Impact 4.12.3.2 Implementation of the proposed General Plan Update and associated buildout would contribute to the cumulative demand for water supply infrastructure.	Policy CI-47, Policy CI-49, Policy CI-51, Action Items CI-51.1 and 51.2.	LCC	None required.	LCC
Impact 4.12.4.1 Implementation of the City of Madera General Plan Update would substantially increase wastewater flows and require additional infrastructure and may require additional treatment capacity to accommodate anticipated demands.	Policy CI-44, Policy CI-47, Policy CI-49, Policy CI-55, Action Item CI-55.1, Action Item CI-55.2, Policy CI-56.	LS	None required.	LS

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Impact 4.12.4.2 Implementation of the proposed General Plan Update and associated buildout would contribute to the cumulative demand for wastewater service.	Policy CI-44, Policy CI-47, Policy CI-49, Policy CI-55, Action Item CI-55.1, Action Item CI-55.2, Policy CI-56.	LCC	None required.	LCC
Impact 4.12.5.1 Implementation of the proposed General Plan Update would increase solid waste generation and the demand for related services.	Policy CI-49, Policy CI-59, Action Item CI-59.1	LS	None required.	LS
Impact 4.12.5.2 Implementation of the proposed General Plan, along with potential development of the Planning Area, would result in cumulative increases in solid waste services.	Policy CI-49, Policy CI-59, Action Item CI-59.1	LCC	None required.	LCC
Impact 4.12.6.1 Implementation of the proposed General Plan Update would increase demand for public school facilities and services.	Policy SUS-1, Policy SUS-2, Action Item SUS-2.1.	LS	None required.	LS
Impact 4.12.6.2 Implementation of the proposed General Plan, as well as potential development of the Planning Area, would result in cumulative public school impacts.	Policy SUS-1, Policy SUS-2, Action Item SUS-2.1.	LCC	None required.	LCC
Impact 4.12.6.1 Implementation of the proposed General Plan Update would increase	Policy SUS-1, Policy SUS-2, Action Item	LS	None required.	LS

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2.0 EXECUTIVE SUMMARY

Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
demand for public school facilities and services.	SUS-2.1.			
Impact 4.12.6.2 Implementation of the proposed General Plan, as well as potential development of the Planning Area, would result in cumulative public school impacts.	Policy SUS-1, Policy SUS-2, Action Item SUS-2.1.	LCC	None required.	LCC
Impact 4.12.7.1 Implementation of the General Plan would increase demand for electrical, natural gas, telephone, and related infrastructure.	Policy CI-49, Action Item CON-37.3.	LS	None required.	LS
Impact 4.12.7.2 Implementation of the proposed General Plan Update, as well as potential development in the region, would result in cumulative utility service impacts.	Policy CI-49, Action Item CON-37.3.	LCC	None required.	LCC
Impact 4.12.8.1 Implementation of the proposed General Plan Update would increase the demand for existing facilities and require additional parks and recreational facilities to accommodate the anticipated growth associated with the General Plan Update.	Policy PR-1, Policy PR-4, Policy PR-5, Policy PR-7, Policy PR-10, Action Item PR-10.1, Policy PR-14, Policy PR-15, Policy PR-16, Policy PR-18, Policy PR-20.	LS	None required.	LS
Impact 4.12.8.2 Implementation of the proposed General Plan Update, along with potential development in the region, would result in cumulative park and	Policy PR-1, Policy PR-4, Policy PR-5, Policy PR-7, Policy PR-10, Action Item PR-10.1, Policy PR-	LCC	None required.	LCC

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Impact	General Plan Update Policies and Action Items Numbers	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
recreation impacts.	14, Policy PR-15, Policy PR-16, Policy PR-18, Policy PR-20			
Visual Resources/Light and Glare				
Impact 4.13.1 Implementation of the proposed General Plan would result in the alteration of scenic resources.	Policy CD-1, Action CD-2.1, Policy CD-5, Policy CD-7, Policy CD-8, Policy CD-10, Policy CD-45, Policy LU-10, Action LU-12.1	S	None available.	SU
Impact 4.13.2 Implementation of the proposed General Plan could result in the introduction of a substantial amount of daytime glare sources and nighttime lighting in developed portions of the Planning Area and create new sources in undeveloped areas. These increased daytime glare and nighttime lighting levels could have an adverse effect on adjacent areas and land uses.	Action CD-2.1, Policy CD-5, Policy CD-8, Policy CON-38:	LS	None Required.	LS
Impact 4.13.3 Implementation of the proposed General Plan along with potential development of the Planning Area would result in the further conversion of the region's rural landscape to residential, commercial, and other land uses. This would contribute to the alteration of the visual resources in the region.		CC	None available.	CC/SU

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3.0 PROJECT DESCRIPTION

3.1 INTRODUCTION

The proposed project is the adoption and implementation of an updated General Plan for the City of Madera. The updated City of Madera General Plan would replace the existing General Plan, which was last comprehensively updated in 1992.

The purpose of a City's general plan is to function as a "constitution" for land use planning and to provide a basis for sound decisions regarding long-term physical development. The general plan expresses the City's development goals and establishes public policy relative to the distribution of future land uses, both public and private. The general plan also provides the bridge between community values, visions and objectives, and physical decisions such as housing, public works projects, and growth management. The general plan must cover a local jurisdiction's entire planning area and address the broad range of issues associated with its development.

The City of Madera's General Plan Update builds off of the goals and vision developed through the Vision 2025 process embarked on by the City and community to provide guidance for long-range planning.

This update is intended to address current and projected environmental and socioeconomic conditions of the City, incorporating local concerns and policy direction from the City Council and from Vision 2025. The updated General Plan was developed with the assistance of an Advisory Committee appointed by the City Council. The City of Madera Planning Commission will review the update for consideration by the City Council.

3.2 LOCAL AND REGIONAL SETTING

PROJECT LOCATION

Madera is located near the geographic center of California and in the center of the Central Valley. The City is located in Madera County, approximately halfway between the cities of Fresno and Chowchilla, about 18 miles northwest of Fresno's city limits. Madera's regional location is shown in **Figure 3.0-1**.

The Planning Area for the City of Madera General Plan includes the incorporated City, the City's Sphere of Influence (SOI), and a larger study area, as shown in Figure 3.0-2. The Planning Area covers roughly 67,414 acres of land (about 105 square miles) in southern Madera County. The City of Madera occupies 9,512 acres (about one-seventh of the total Planning Area).

The Planning Area was defined during the initial stages of the 2008/2009 General Plan Update and represents the area which the City envisions may ultimately be included either in its Sphere of Influence or in the incorporated city limits. The Planning Area represents an area for which the City of Madera has an interest in guiding land use and circulation decisions. Currently, the County of Madera has primary land use authority over land outside of the City limits that is within the General Plan Planning Area.

PROJECT SETTING

The land in the Planning Area is relatively flat, with no major hills. Much of the historic native vegetation in the region has been converted to urban and agricultural uses. Nonetheless, riparian and wetland habitats persist within the Planning Area. The Fresno River, Cottonwood Creek, Schmidt Creek, and other minor watercourses bisect the City. In addition, there is annual

3.0 PROJECT DESCRIPTION

grassland habitat within the grazing lands in the eastern portion of the Planning Area that has potential to contain vernal pools and seasonal wetlands. Portions of the Planning Area are within floodplains.

The Planning Area is crossed by two state highways (SR 99 and SR 145). Two rail lines pass through the area; Amtrak provides rail service to and from the City on the easternmost line. Madera Airport, a general aviation airport, is located in the northwest portion of the Planning Area. The closest commercial airline service to Madera is available at Fresno Yosemite International Airport, located approximately 23 miles southeast of Madera.

Summaries of existing land uses in the Planning Area and in the City are provided in **Figures 3.0-3** and **3.0-4**. Agriculture accounts for over 65 percent of the land use in the Planning Area. Madera is located in the San Joaquin Valley, known for its rich soil. Agriculture plays a significant role in the local economy, as does manufacturing. Wine grapes and produce production are among the top agricultural industries.

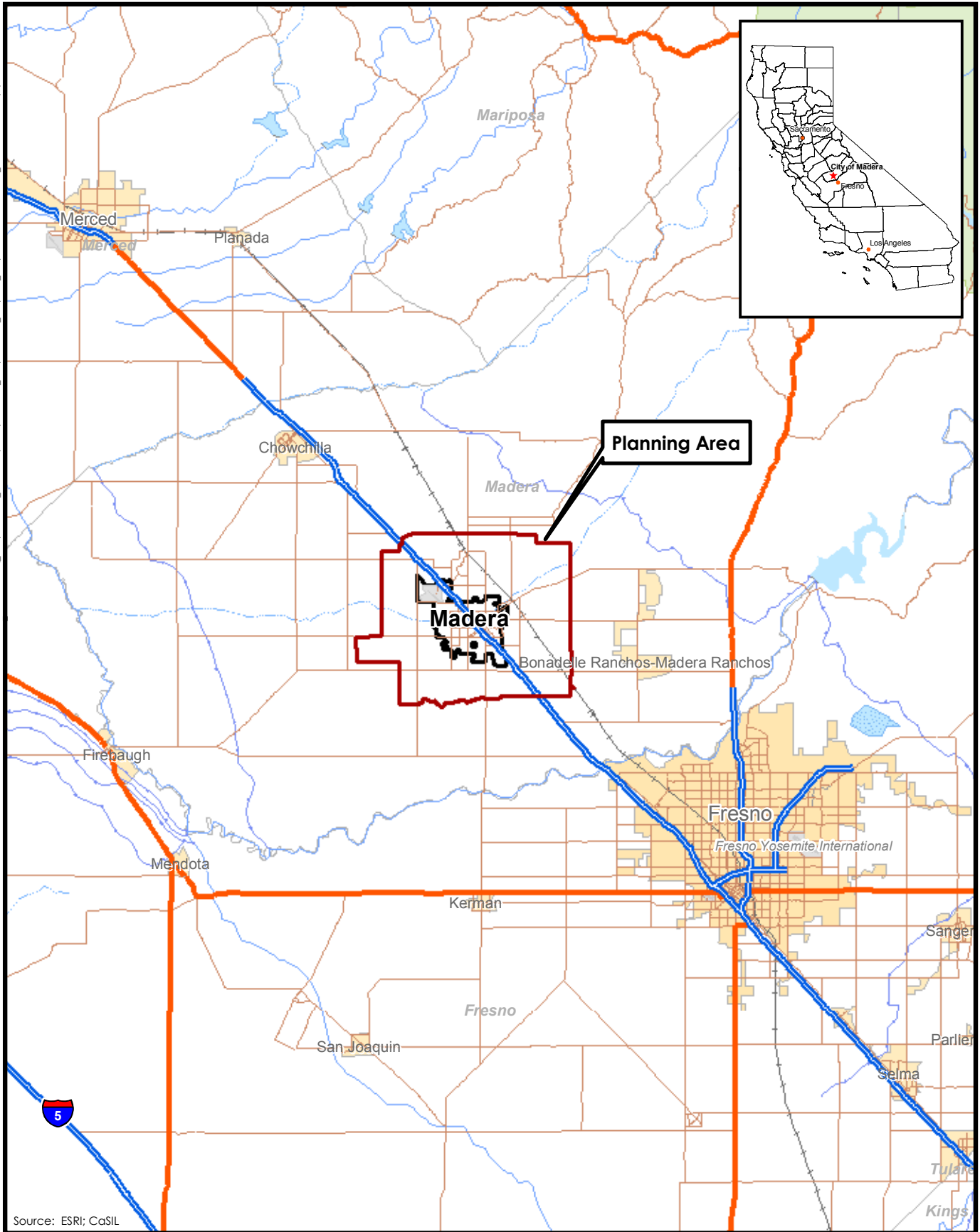


Figure 3.0-1
Regional Vicinity Map

T:\GIS\MADERA_COUNTY\MXD\MADERA_GP\MADERA_ER\GP\FIG.3.0-2 PROJECT_LOCATION.MXD - 4/9/2009 @ 1:14:00 PM

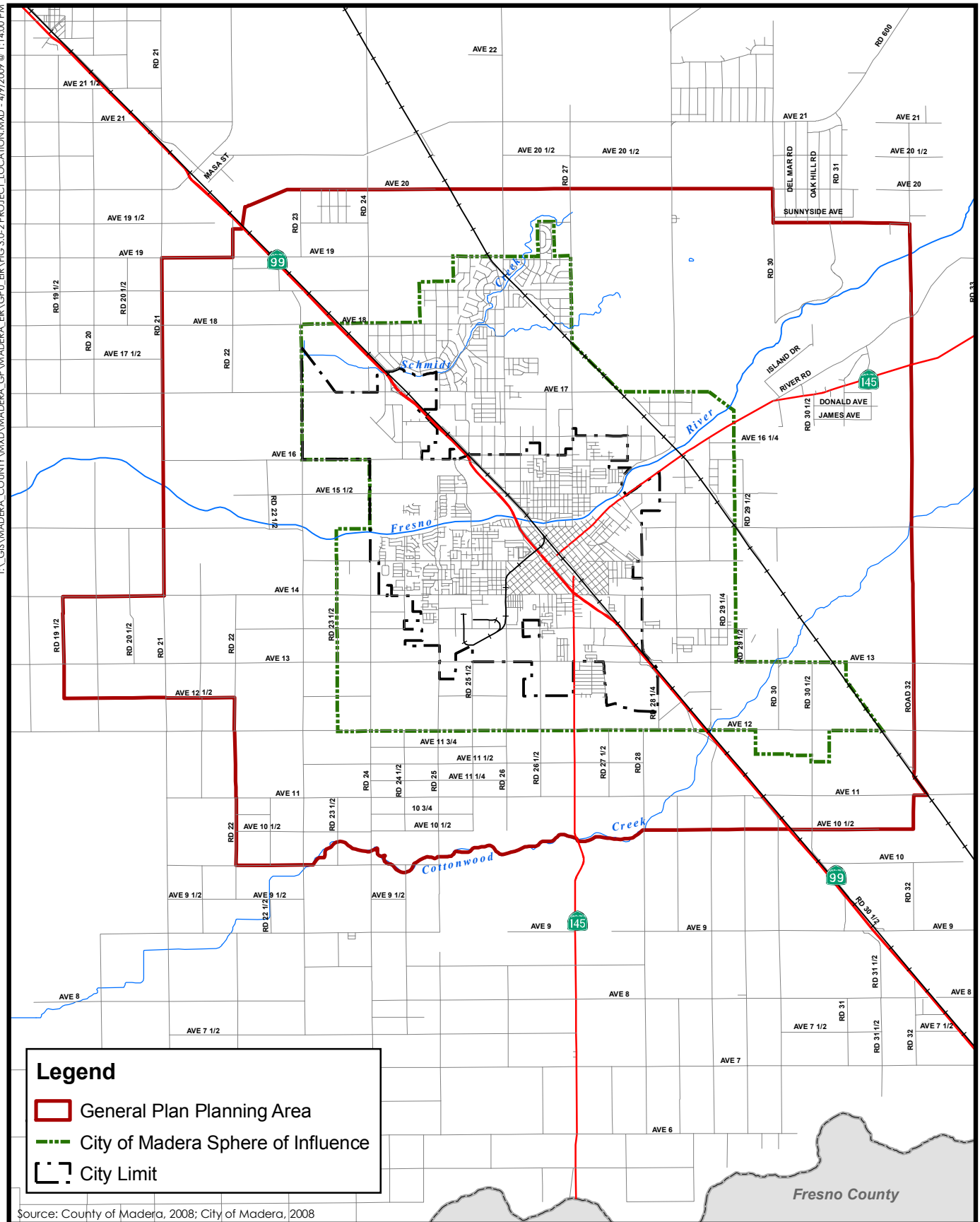
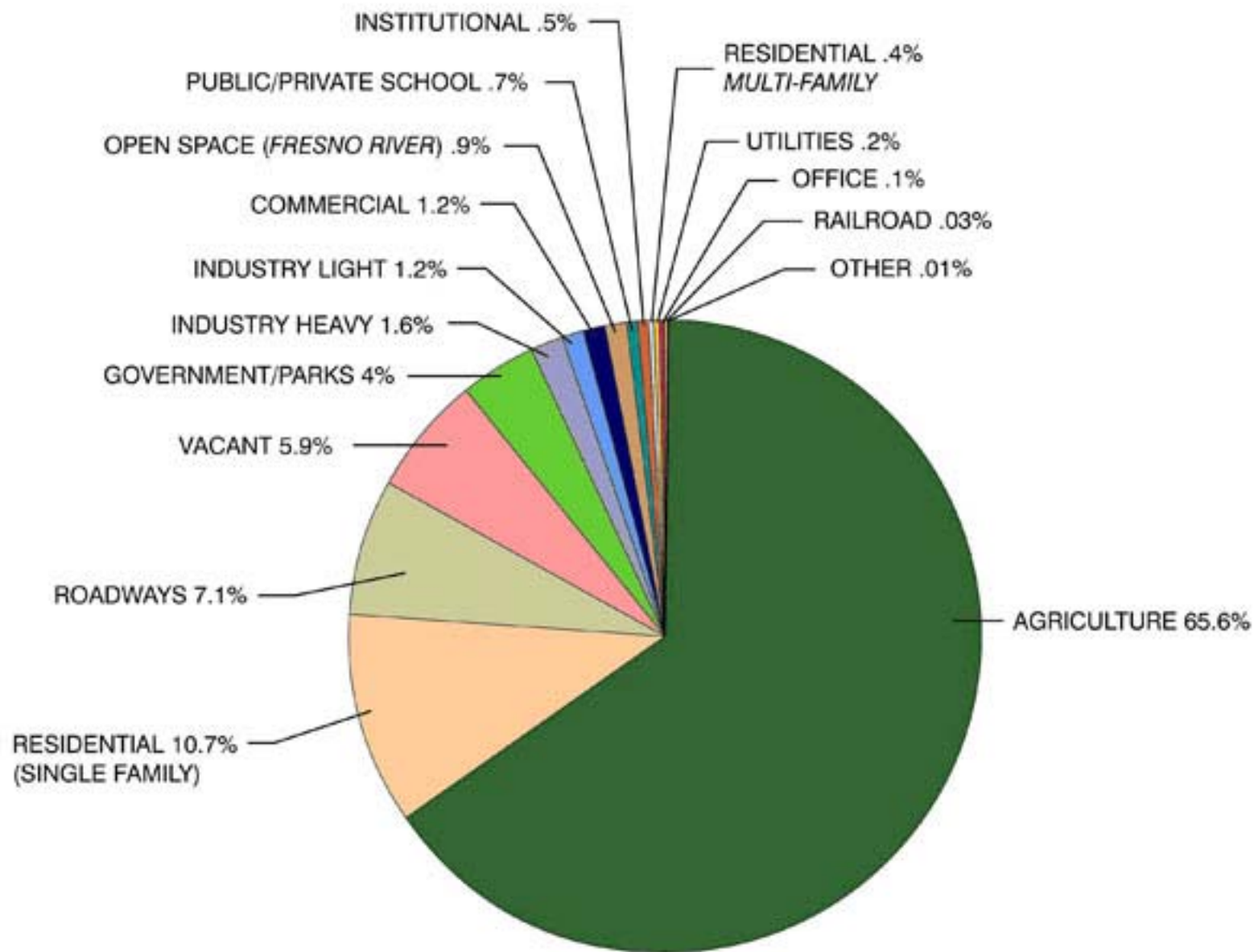
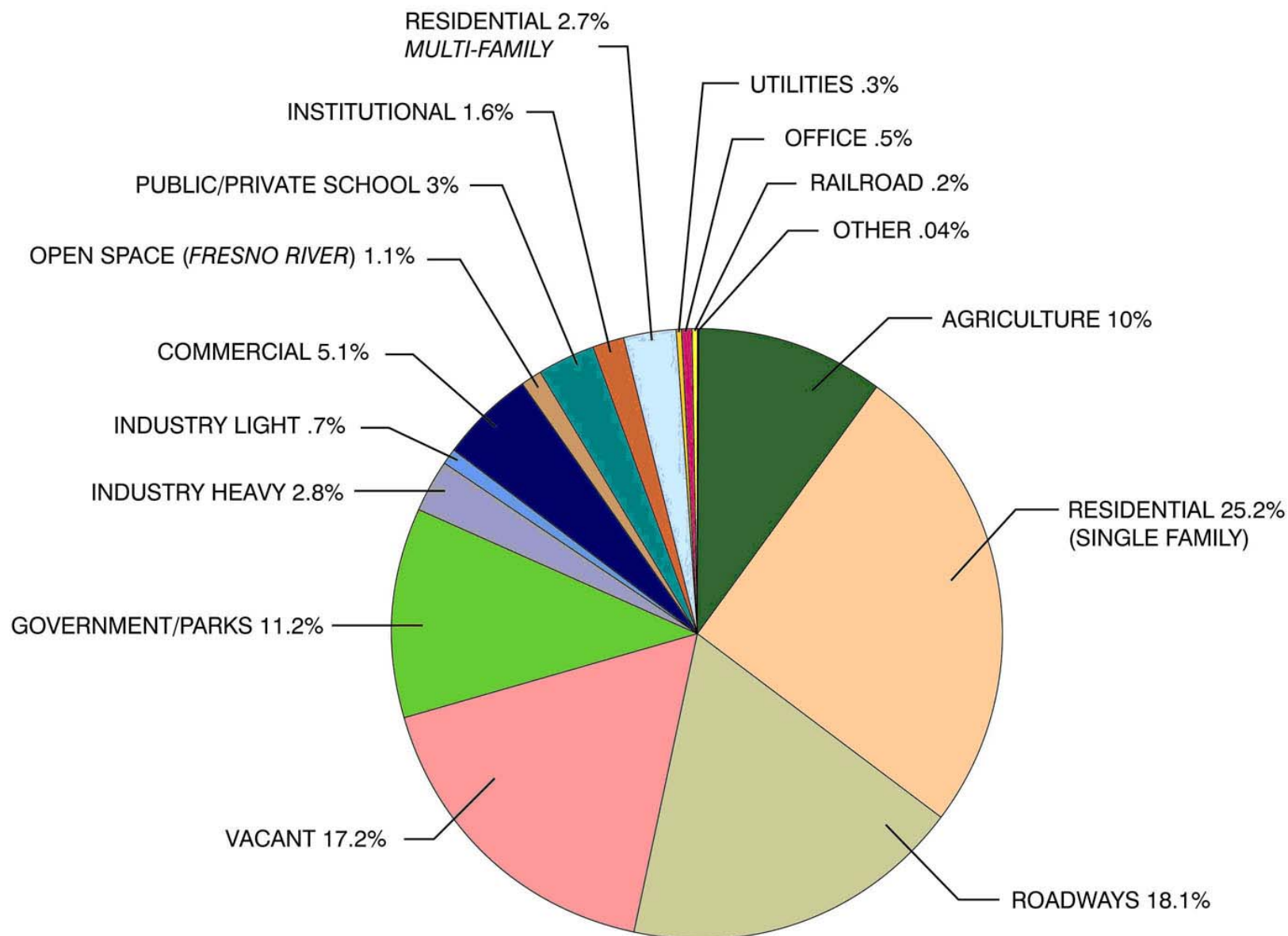


Figure 3.0-2
City, SOI & Planning Area Boundaries



Source: City of Madera, 2009

Figure 3.0-3
Distribution of Existing (2008) Land Uses In the Planning Area



Source: City of Madera, 2009

Figure 3.0-4
Distribution of Existing (2008) Land Uses in the City Limits

The City of Madera's population is estimated to be about 57,000, making it the most populous City in Madera County.

3.3 BACKGROUND AND HISTORY OF THE GENERAL PLAN PROCESS

The City of Madera incorporated in 1907 and operates as a general law City.

The last comprehensive update of the City's General Plan was in 1992, with subsequent amendments occurring since then. A significant amendment to the City's Housing Element was adopted by the City Council in 2003. A comprehensive Bicycle Plan was adopted by the City in 2004.

Like most communities in the Central Valley, Madera has experienced significant growth in recent years, and the City expects future growth that will require the annexation of unincorporated portions of Madera County. At the same time, the City acknowledged that development practices under the current General Plan have not consistently yielded high-quality development, as evidenced by the lack of innovative design features and community amenities incorporated within projects. For these reasons, the City decided to conduct a comprehensive update of its General Plan.

MADERA VISION 2025

In the summer of 2005, the City embarked on a community-wide visioning process to assess the current condition of the community, to define where the community wants to be in the future, and to provide the City of Madera with guidance for long-range planning. A wide range of community volunteers and groups participated in a series of ongoing community discussions, workshops, and large public events. The Madera Vision Partnership (MVP) was the primary committee guiding the visioning process. This group of approximately 20 volunteers represented a cross-section of the community.

The MVP met five times over 13 months to coordinate project events and decide how best to obtain community input from community groups, associations, and the public. A larger group of several hundred community members participated as members of the Madera Action Teams (MAT) to provide support for large community visioning events by contributing to public outreach efforts and helping with set-up and tear-down of events. MAT efforts helped provide information about the visioning process and get community input at a neighborhood level. Multi-cultural, youth, and technical resource groups met throughout the visioning process to provide input in specific areas important to the project.

These efforts resulted in the City's adoption of the Madera Vision 2025 Action Plan in December 2006. The visioning process addressed a wide range of community issues. Land use and development concerns were cited as critical components in shaping the environment and building a sense of community. The preparation of a new General Plan was identified as a specific action in the Madera Vision 2025 Action Plan necessary to achieve many of the goals articulated in the community's vision and to bring about the type of development desired in Madera.

GENERAL PLAN UPDATE PROCESS

The City commenced work on the General Plan Update in August 2007. Public participation was an important part of the General Plan update process. A General Plan Update Advisory

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Committee was formed to help guide the update, and the Advisory Committee held monthly public meetings throughout the update process. Community groups and individuals outside of the Advisory Committee participated in these meetings as well. The Advisory Committee meetings served as a public forum to receive input and guidance on each element of the General Plan. Property owners and the public at large were invited to provide suggestions to the City for land use designation changes as part of the General Plan update process. Each land use change suggestion was reviewed during the Advisory Committee meetings and was considered by the Planning Commission and City Council. Interim updates and presentations were made to the Planning Commission and City Council at public hearings during the update process.

3.4 OBJECTIVES OF THE GENERAL PLAN UPDATE

This General Plan builds on and implements the ideas from Madera's Vision 2025 and makes them formal City policy. Vision 2025 is organized around four key Visions, which are listed below, with supporting ideas bulleted underneath each:

1. A Well-Planned City

- Managed growth
- Effective government
- Diverse accessible transportation
- Well-planned neighborhoods and housing
- Abundant natural resources
- A vibrant downtown

2. Good Jobs and Economic Opportunity

- Abundant commercial opportunities
- Strong workforce
- Conservation of resources

3. A Strong Community and Great Schools

- An involved public
- A rich cultural life
- Education for all ages
- Supported youth
- Valued seniors

4. A Safe, Healthy Environment

- Healthy community
- Quality parks and recreation
- A safe public
- A quality environment

The objective of the General Plan is to implement these four key Visions. Each element of the General Plan addresses more than one of these Visions and establishes goals and policies that build on Vision 2025.

3.5 GENERAL PLAN UPDATE COMPONENTS AND CHARACTERISTICS

The project is adoption and implementation of an updated General Plan for the City. The General Plan is the constitution for the community's future. It provides a vision; goals, policies, and action items; and maps and diagrams (such as the land use and circulation diagrams) to guide the City's decisions regarding land use and growth.

State law requires that general plans address seven topics: land use, circulation, housing, conservation, open space, noise, and safety. This General Plan covers all of these topics plus several additional issues, for a total of ten elements.

COMMUNITY DESIGN (OPTIONAL ELEMENT)

A key outcome of Vision 2025 was a desire on the part of the City and its residents to improve the quality of design for public and private development projects. That commitment to "raise the bar" and continually strive to improve the quality of Madera's built environment is reflected in the goals and policies in this element.

CIRCULATION AND INFRASTRUCTURE ELEMENT (REQUIRED ELEMENT)

This element includes policies and actions addressing a broad range of topics related to infrastructure, the physical systems of roads, walkways, water lines, etc., that allow Madera to function. Issues in this element are:

- Circulation – Roadways, bicycling, walking, airports, and railways
- Water – Domestic water service for homes and businesses
- Sewer – Wastewater treatment
- Solid Waste – Disposal of waste (household garbage, etc.)

Figure 3.0-5 illustrates the General Plan Circulation Map that presents the future roadway pattern in the City of Madera. The roadway system is based on a modified grid of arterials, collectors, and local roadways. The Circulation Map identifies roadways (existing and proposed) by their classification type: state highway, arterial, and collector. The Circulation Element contains specific goals and policies pertaining to the classification system. The Madera Loop is shown on the map, as drivers are encouraged to use it to avoid congestion on other roadways. Also identified are crossings of the Fresno River, existing railroad grade separations, and freeway interchanges.

Major new roadways and improvements include the following:

Arterials

Northeastern Madera – north and east of the Fresno River and SR 99

- Avenue 19 between SR 99 and Road 24
- Avenue 19 between Hanover Drive and Country Club Drive (Road 26); requires PUC crossing
- Ellis Avenue extension and overcrossing of SR 99
- Sharon Avenue connection between Avenue 17 and the proposed Ellis Avenue extension
- Ellis Street between Road 28 and Raymond Road
- Avenue 17 extension east of Raymond Road to proposed Road 29 extension

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- Road 29 extension north of SR 145 to proposed Avenue 17 extension; requires new bridge over Fresno River

Eastern Madera – south and east of the Fresno River and SR 99

- State Campus Parkway between Avenue 13 and Avenue 15½

Southwestern Madera – south and west of the Fresno River and SR 99

- Westberry Boulevard between Avenue 13½ and Road 24

Collectors

Northeastern Madera – north and east of the Fresno River and SR 99

- Avenue 18½ between Road 24 and approximately Burgundy Drive
- Avenue 18 between Fairfield Drive and Lane Drive; requires crossing of canal
- Avenue 18 between Country Club (Road 26) and Raymond Road; requires PUC crossing
- Two new north-south collectors between Lake Street and Raymond Road intersecting with the proposed Avenue 18 extension
- N. D Street between Avenue 17 and the proposed Avenue 18 extension east of Country Club Drive
- Avenue 17½ between the proposed N. D Street Extension and Lake Street
- Owens Street between Adell Street and Ellis Street

Eastern Madera – south and east of the Fresno River and SR 99

- Almond Avenue between Road 29¼ and the proposed State Campus Parkway extension; requires crossing of canal

Southwestern Madera – south and west the Fresno River and of SR 99

- Gary Avenue between Barnett Way and Golden State Drive
- Avenue 12½ between Stadium Drive and SR 145
- Avenue 12½ between SR 145 and Road 28¼
- Avenue 12½ between Stadium Drive and SR 145
- Raymond Thomas Road between the proposed Avenue 12½ extension and Avenue 12

CONSERVATION ELEMENT (REQUIRED ELEMENTS OF CONSERVATION AND OPEN SPACE)

This element addresses several topics which are all related to how resources of various types are used in Madera (or are affected by human activities) and how their use can be managed to ensure a sustainable future. This element addresses:

- Water supply and quality
- Soils and agriculture
- Biology
- Air
- Climate change
- Energy and energy efficiency
- Green building/low impact development/LEED

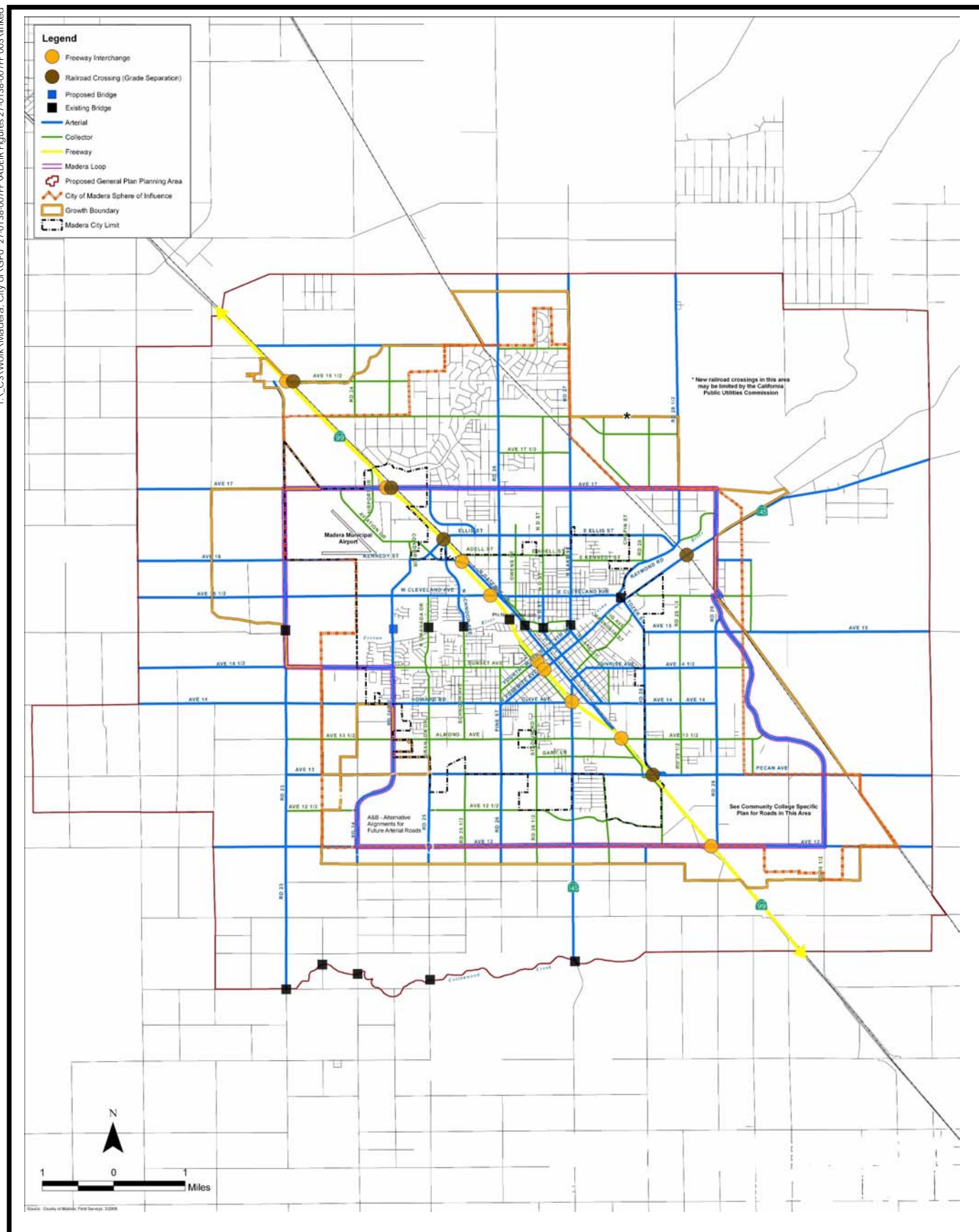


Figure 3.0-5
Proposed Transportation System

HEALTH AND SAFETY ELEMENT (REQUIRED ELEMENT OF SAFETY, PLUS ADDITIONAL TOPIC OF HEALTH)

Fostering a healthy and safe Madera was a major outcome of Vision 2025 and is a major goal of the General Plan. This element of the General Plan contains goals, policies, and actions directly related to improving the overall health and safety of the community.

HISTORIC AND CULTURAL RESOURCES (OPTIONAL ELEMENT)

This element seeks to identify and protect areas, sites, and buildings having architectural, historical, or cultural significance. The element provides goals, policies, and actions designed to foster preservation of historic resources in the City and the Planning Area.

HOUSING ELEMENT (REQUIRED ELEMENT)

The Housing Element is a comprehensive statement by the City of Madera of its current and future housing needs at all income levels. This element of the General Plan provides policies related to the provision of housing for all income levels as well as provisions that are state-mandated. Under state law, the Housing Element needs to be updated by June 2009. The City is updating the Housing Element as part of the General Plan update process.

LAND USE ELEMENT (REQUIRED ELEMENT)

The purpose of the Land Use Element is to describe existing and future land use activity in the City. The element identifies the distribution, location, and intensity of all land use types throughout the City and the Planning Area.

NOISE ELEMENT (REQUIRED ELEMENT)

This element of the General Plan defines acceptable noise levels for representative types of land use (residential, office, industrial, etc.) of the City and the Planning Area and how those levels will be achieved.

PARKS AND RECREATION ELEMENT (OPTIONAL ELEMENT)

This element establishes goals and policies that plan for the existing and future parks, recreation, and open space needs of the community. This element establishes and maintains a framework to ensure adequate public parks, trails, and recreation facilities as the City grows and changes.

Figure 3.0-6 illustrates the General Plan Trail Map that shows opportunities for new recreational trails and improvements within the City and the Planning Area.

Parks and Recreation Master Plan

As part of a separate but related process, the City had drafted the Parks and Recreation Master Plan (Master Plan). The Master Plan provides a framework for the development and management of the City of Madera's parks and recreation and community services system through 2025. The Master Plan implements the policy direction of the proposed General Plan Parks and Recreation Element and outlines classifications, standards, and guidelines for future park and recreation facility development. The Master Plan relied on the public participation process for Vision 2025 and responds to the desires of Madera residents for their park and recreation system. The following steps were taken in the development of the Master Plan:

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- Assessment of the existing conditions of the City's parks and recreation system,
- Identification of key trends and desired outcomes,
- Analysis of existing park classifications, facilities, programs, and policies,
- Preparation of a needs assessment,
- Revisions to classifications, standards, and guidelines,
- Preparation of goals, policies, and actions to achieve desired outcomes,
- Evaluation of costs, including operations and maintenance costs for proposed projects, and
- Development of an implementation plan to guide future park development and capital improvements.

Key recommendations contained in the Master Plan include proposed capital improvement projects to rehabilitate and expand existing parks and recreation facilities. Additionally, actions needed to expand the existing system to meet the future needs of Madera residents are outlined, including the acquisition of additional parkland and construction of new facilities, such as additional sports fields. Cost estimates associated with all proposed improvement projects are included in the Implementation chapter of the Master Plan.

The Master Plan concludes that improving and expanding the City of Madera's park and recreation system will require a significant investment. The Master Plan includes an overview of funding opportunities for all projects and programs proposed in the Master Plan. Key funding opportunities include public-private partnerships and joint use agreements with other local agencies.

SUSTAINABILITY ELEMENT (OPTIONAL ELEMENT)

This element establishes policies and action items that promote sustainability for the environment and the local economy and help establish equity for all people. The Sustainability Element also addresses the emission of greenhouse gases resulting from General Plan implementation and its impacts on climate change.

Drafts of the General Plan Update and Parks and Recreation Master Plan are being circulated for public review concurrent with this Draft EIR and are incorporated herein by reference. Copies are also available online at <http://www.MaderaGeneralPlan.com> and at Madera City Hall, 205 West Fourth Street in Madera.

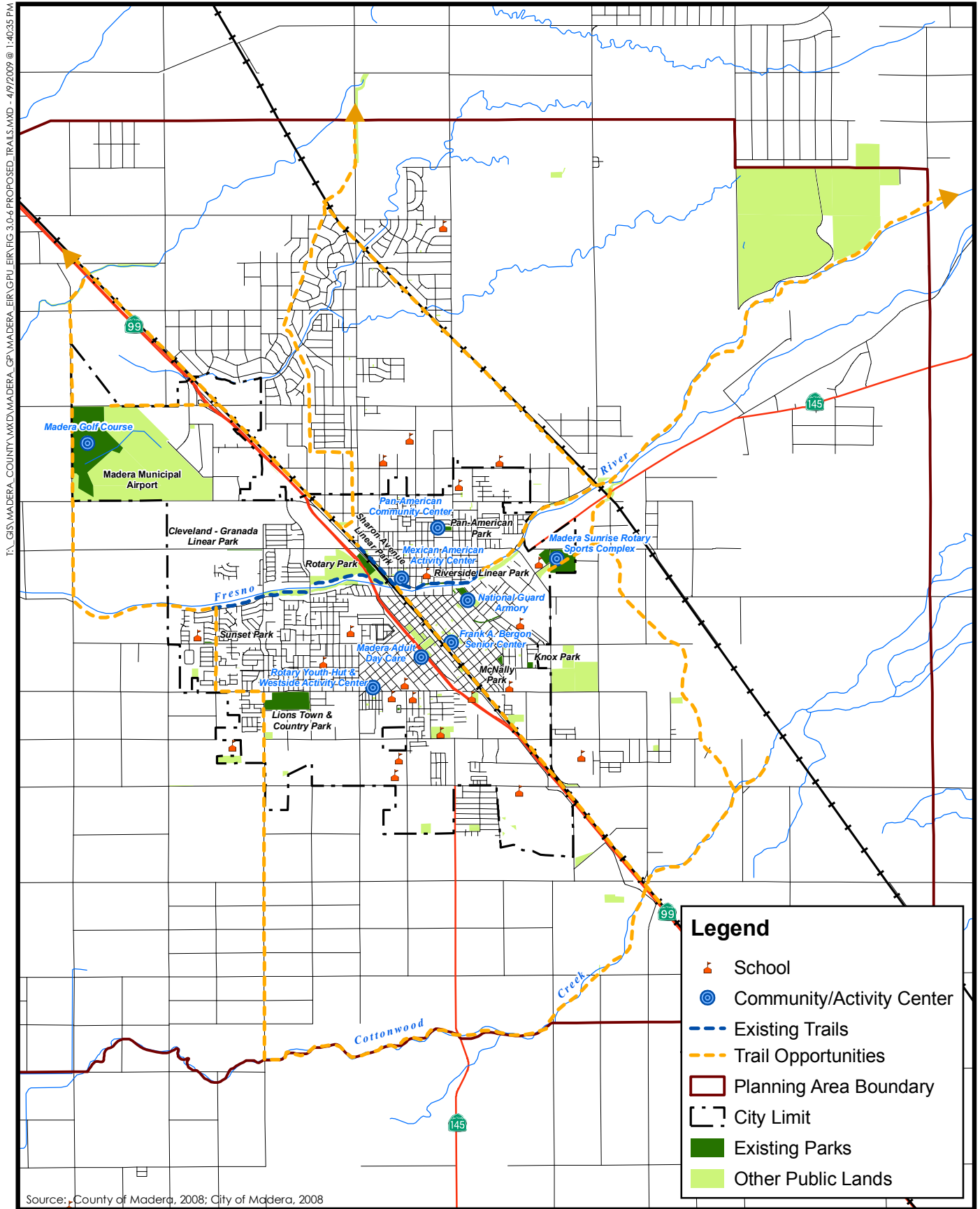


Figure 3.0-6
Parks & Trails Map
PMC

3.6 GENERAL PLAN UPDATE LAND USE CONCEPT

The land use concept in the General Plan has been developed to help implement Vision 2025. The land use concept is based on the principles of smart growth, jobs/housing balance, infill development, and agricultural preservation.

Building off of Vision 2025, the General Plan establishes three key land use goals:

- Goal 1:** Madera is a well-planned City prepared for growth through comprehensive planning which balances growth demands with resources and infrastructure, to facilitate high quality development.
- Goal 2:** In a change from the City's previous practice of rapid outward expansion, Madera is a more sustainable, compact City that uses more compact land use patterns to encourage walking, bicycling, and transit use; preserve agricultural and other open space uses; and reduce infrastructure costs.
- Goal 3:** Madera is a vibrant City that provides its residents with a high quality of life and attracts visitors with quality buildings, attractive streetscapes and public spaces, a wide variety of restaurants, entertainment, cultural venues and shops. Downtown Madera supports diverse commercial and business opportunities, and viable commercial spaces are available throughout the community.

The General Plan's land uses are based on the concept of "Building Blocks": small, compact, walkable community units. The Building Blocks concept will be implemented through land use, circulation, and community design. This concept uses Neighborhoods and Villages as the foundation for growth.

- **Neighborhoods** are the places where residents live and are made up of a diverse range of housing types at varying densities. For the Madera General Plan, Neighborhoods are envisioned to be compact and walkable in design.
- **Neighborhood Centers** serve as a gathering place for residents. A Neighborhood Center might include a school, park, community center, or coffee shop, for example.
- **Villages** are a cluster of Neighborhoods that include a mix of housing types, with higher density residential areas in proximity to the Village Center. Neighborhoods within a Village are connected by a series of trails and pedestrian-friendly streets.
- **Village Centers** typically include neighborhood-serving retail, such as a small to medium sized grocery store or drug store.

The General Plan also recognizes the importance of Madera's downtown, which is retained as an area of commercial, residential, and mixed uses.

LAND USE MAP

Figure 3.0-7 shows the General Plan Land Use Map, which was developed based on the Building Blocks concept described above. The Land Use Map shows the General Plan Planning Area that extends outside the current city limits. The Planning Area represents the area which the City envisions may ultimately be included either in a Sphere of Influence or in the incorporated City limits. The Land Use Map also shows the Growth Boundary. The Growth Boundary reflects the limits of planned urban development. The City will plan and install infrastructure to serve only the area inside this line.

3.0 PROJECT DESCRIPTION

EXISTING GENERAL PLAN AND PROPOSED GENERAL PLAN ACREAGES

Table 3.0-1 summarizes both the 2030 and the buildout projections of the General Plan Planning Area under the General Plan Land Use Map (post 2030). **Table 3.0-2** summarizes Year 2030 land uses by land use type. **Table 3.0-3** summarizes buildout of the proposed General Plan by land use type.

**TABLE 3.0-1
SUMMARY OF EXISTING, GENERAL PLAN 2030, AND BUILDOUT CONDITIONS**

Land Uses	City Limits Only ¹			Entire Planning Area		
	Existing	Year 2030	Buildout	Existing	Year 2030	Buildout
Residential Units	16,418	19,072	24,788	22,071	47,739	73,747
Single-Family	12,288	14,418	15,516	--	29,819	42,373
Multifamily	4,130	4,654	9,272	--	17,920	31,374
Population	56,710	68,088	88,495	78,368	170,431	263,278
Total Employment ²	11,624	18,199	18,593	19,491	50,364	67,648
Commercial	--	5,686	6,009	--	11,796	14,585
Office	--	1,600	1,600	--	4,157	6,246
Industrial	--	6,231	6,304	--	27,610	39,955
Total Square Footage ³	10,140,768	25,026,492	25,745,371	37,013,804	89,313,537	112,714,857
Commercial	4,260,168	9,906,764	10,467,729	6,978,312	17,945,143	20,192,674
Office	533,174	1,548,715	1,548,715	616,810	4,296,905	5,677,074
Industrial	5,347,426	13,571,013	13,728,927	29,418,682	67,071,489	86,845,109

Source: PMC

Note: Buildout projections under the Entire Planning Area include the City.

- 1 The City limits boundaries for the purpose of this table refers to the City limits in 2008 for the "Existing" column. For "2030" and "Buildout" columns, the City limits are as represented on the General Plan Update Land Use Map.
- 2 Total employment also includes jobs that are not included under commercial, office, and industrial, such as public school employment.
- 3 Total Square Footage totals only include commercial, office, and industrial and do not include square footage from other uses, such as public and quasi-public uses (e.g., schools and churches).

**TABLE 3.0-2
PROPOSED GENERAL PLAN YEAR 2030 LAND USES**

Land Use	Acreage			
	City Limits Only ¹	Outside City Limits, within SOI	2030 Growth Area (outside SOI)	Total
Commercial (C)	1,137	390	1	1,528
Industrial (I)	865	2,221	537	3,623
Office (O)	148	45	0	193
Very Low Density Residential (VLD)	42	3,499	157	3,698

3.0 PROJECT DESCRIPTION

Land Use	Acreage			
	City Limits Only ¹	Outside City Limits, within SOI	2030 Growth Area (outside SOI)	Total
Low Density Residential (LD)	3,812	2,396	233	6,441
Medium Density Residential (MDR)	612	1,864	16	2,492
High Density Residential (HD)	222	94	13	329
Open Space (OS)	685	192	30	907
Resource Conservation/Ag (RC/A)	167	443	14	624
Other Public & Semi-Public Uses (OP&SP)	1,021	376	3	1,400
Village Reserve (VR)	0	1,306	1,961	3,267
Village Mixed Use (VMU) ²	0	0	37	37
TOTAL	8,711	12,826	3,002	24,539

Source: PMC

- 1 The City limits boundaries for the purpose of this table refers to the City limits in 2008 for the "Existing" column. For "2030" and "Buildout" columns, the City limits are as represented on the General Plan Update Land Use Map.
- 2 The Village Mixed Use land use designation will be applied in Village Reserve areas as part of the comprehensive master planning process described in the Land Use Element. Village Reserve areas will also be designated for specific land uses (residential, commercial, etc.) as part of the comprehensive master planning process; these designations will replace the Village Reserve designation through a General Plan Amendment.

**TABLE 3.0-3
PROPOSED GENERAL PLAN BUILDOUT LAND USES (POST 2030)**

Land Use	Acreage			
	City Limits Only	Outside City Limits, within SOI	Planning Area (outside SOI)	Total
Commercial (C)	1,202	422	77	1,701
Industrial (I)	875	2,276	1,522	4,673
Office (O)	148	107	0	255
Very Low Density Residential (VLD)	42	3,500	1,303	4,845
Low Density Residential (LD)	3,813	2,668	243	6,724
Medium Density Residential (MDR)	614	2,065	16	2,695
High Density Residential (HD)	222	94	13	329
Open Space (OS)	684	192	1,279	2,155
Resource Conservation/Ag (RC/A)	167	997	35,478	36,642
Other Public & Semi-Public Uses (OP&SP)	1,016	376	420	1,812
Village Reserve (VR)	0	1,514	4,033	5,547
Village Mixed Use (VMU)	0	0	37	37
TOTAL	8,783	14,211	42,116	67,415

Source: PMC

3.0 PROJECT DESCRIPTION

Note: SOI is Sphere of Influence and for purposes of this table includes the area outside of the city limits but within the SOI boundary. Planning Area for purposes of this table includes the area outside of the SOI but within the Planning Area boundary. Urbanized land uses outside of the SOI occur within the Growth Boundary.

The City limits boundaries for the purpose of this table refers to the City limits in 2008 for the “Existing” column. For “2030” and “Buildout” columns, the City limits are as represented on the General Plan Update Land Use Map

GENERAL PLANNING SUB-AREAS

A total of ten individual Villages and Districts are proposed as part of the General Plan (see **Figure 3.0-8 – Villages and Districts**).

Land uses within these Villages and Districts are described in the General Plan, with specific policies and directives established for each Village.

- **Village A: Madera Acres** – 4,343 acres. The General Plan establishes policies to address the unique characteristics of the existing rural residential subdivisions in this Village and policies to integrate the passenger train rail platform planned for this area into neighborhood and village designs.
- **Village B: Northeast Madera** – 1,301 acres. The General Plan establishes policies to address limited access conditions created by a lack of an existing grade rail line crossing at Avenue 17 and policies to take advantage of the Fresno River frontage.
- **Village C: Central Madera** – 2,556 acres. The General Plan establishes policies to encourage the development of Neighborhood Centers to serve this area, and policies calling for coordinated, multi-parcel neighborhood development.
- **Village D: Northwest Madera** – 2,763 acres. The General Plan establishes policies to accommodate safety zones for the Madera Airport and policies to establish a permanent agricultural buffer on the west edge of the village.
- **Village E: West Madera** – 3,041 acres. The General Plan establishes policies to establish a permanent agricultural buffer on the west edge of the village and policies to take advantage of the Fresno River frontage.
- **Village F: Downtown District** – 1,160 acres. The General Plan establishes policies to maintain the historic character of this District, take advantage of the Fresno River frontage, and improve railway safety.
- **Village G: Parksdale** – 2,414 acres. The General Plan establishes policies to encourage the development of Neighborhood Centers to serve this area, a Village Center, planning for a potential new alignment of Highway 145, and industrial uses.
- **Village H: Parkwood** – 3,148 acres. The General Plan establishes policies to encourage the development of Neighborhood Centers to serve this area and policies to address flood plain and freeway noise issues.
- **Village I: Community College** – 2,161 acres. The General Plan establishes policies to encourage the continued implementation of the Specific Plan for this area.
- **Village J: Casino District** – 433 acres. The General Plan establishes policies to encourage coordination of infrastructure issues in this area, particularly roadways, for development of a Native American casino in this District.

T:\GIS\MADERA_COUNTY\MXD\MADERA_ER\FIG 3.0-8 VILLAGES.MXD - 4/9/2009 @ 2:08:44 PM

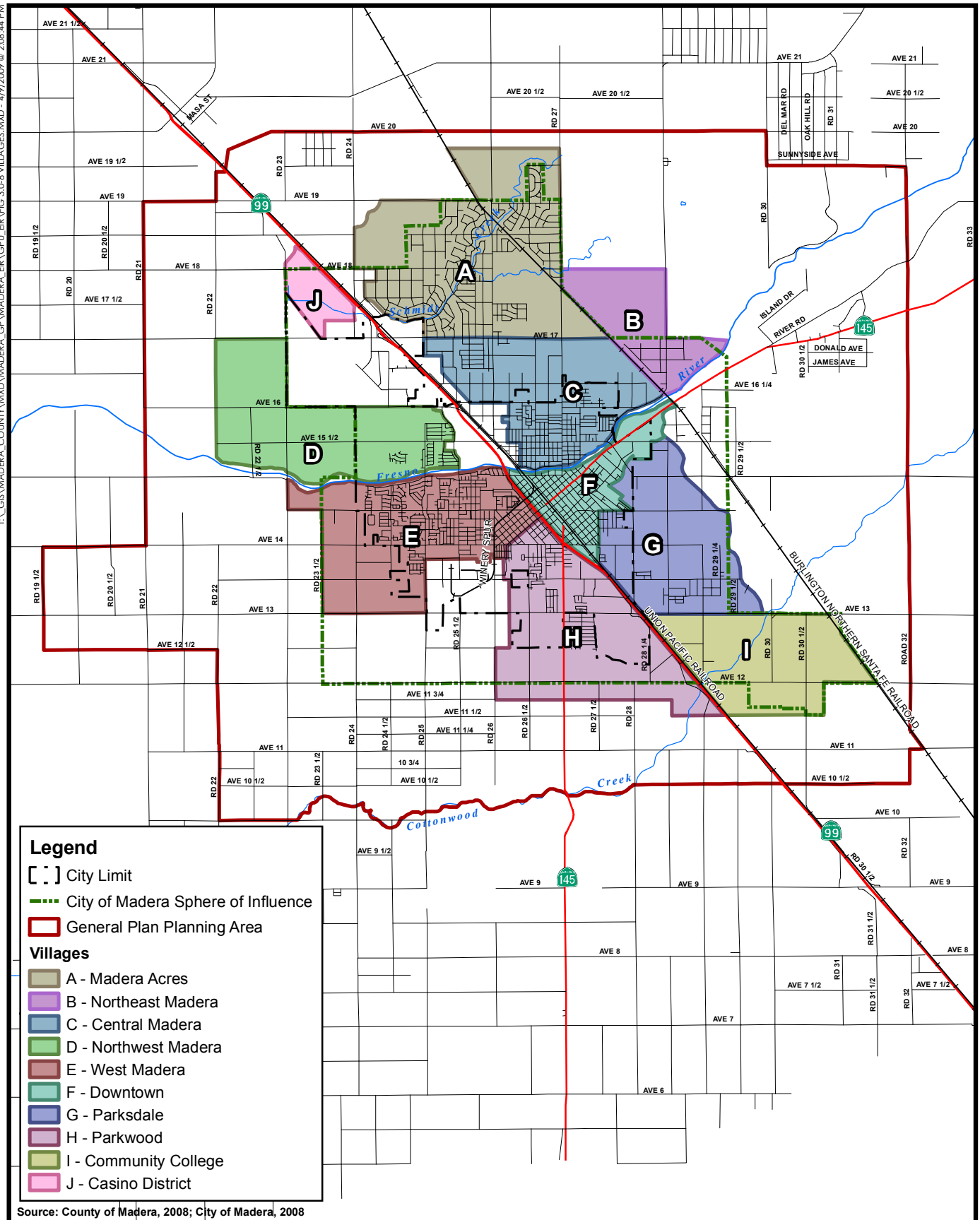


Figure 3.0-8
General Plan Villages

3.7 INTENDED USES OF THE EIR AND APPROVAL PROCESS

This EIR provides a programmatic environmental review of implementation of the General Plan. Subsequent activities falling under the General Plan will use this EIR to focus the environmental review of the subsequent activity and as the basis in determining whether the later activity may have any significant effects, pursuant to State CEQA Guidelines Section 15183.

The City of Madera General Plan will be presented to the City of Madera Planning Commission for review, comment, and recommendations. The City of Madera City Council, as the City's legislative body, is the approving authority for the City of Madera General Plan. In order to approve the General Plan, the City Council would have to take the following actions:

- Certification of the City of Madera General Plan EIR.
- Adoption of required findings for the above actions, including required findings under the State CEQA Guidelines, Sections 15090, 15091, and 15093.
- Adoption of the City of Madera General Plan.

Following certification of the EIR and adoption of the General Plan by the City Council, all subsequent activities and development within the City will be guided by the goals and policies in the updated General Plan. The City Council is anticipated to conduct the following subsequent activities to implement the General Plan:

- The City will adopt a comprehensive Parks and Recreation Master Plan that implements the policies contained in the Parks and Recreation Element of the General Plan.
- The City will initiate a comprehensive amendment of the City of Madera Zoning Ordinance to achieve consistency with the adopted General Plan.
 - The Zoning Ordinance would further define land uses and the development standards applicable to each of the General Plan's land use designations.
 - The Zoning Ordinance would establish the land use entitlement process applicable to the land use designations.
- The City will adopt a Downtown Master Plan.
- The City will consider adopting financing programs or fee programs for public infrastructure and growth management.
- The City will prepare and/or update infrastructure and public service master plans for facilities such as sewer, water, and storm drainage.
- The City will consider further analyzing and planning for public infrastructure such as roadway improvements consistent with the General Plan Roadway System Map, construction of parks, trails, and other capital improvements, and natural resource preservation and/or restoration.
- The City would consider approval of various private development entitlement requests (e.g., specific plans, master plans, tentative subdivision maps, design review, use permits) that are consistent with the General Plan and its Land Use Map.

3.0 PROJECT DESCRIPTION

OTHER GOVERNMENTAL AGENCY APPROVALS

Additional subsequent approvals and permits that may be required from local, regional, state, and federal agencies in the processing of subsequent development permits include, but are not limited to, the following:

- Madera County Local Agency Formation Commission (LAFCo) approval of future requests to annex land into the City. LAFCo must also approve amendments to the Sphere of Influence and Urban Development Boundary for the City of Madera, as well as the formation, reorganization, incorporation, or consolidation of special districts that provide services in the City or the Planning Area.
- San Joaquin Valley Unified Air Pollution Control District approval of dust control plans and other permits for subsequent projects.
- California Department of Transportation (Caltrans) approval of improvements and/or funding for future improvements associated with state highway facilities.
- Extension of service and/or expansion of infrastructure facilities by the City or other providers.
- Madera County Airport Land Use Commission review and/or approval of any activity impacting the airport.
- California Department of Fish and Game approval of potential future streambed alteration agreements, pursuant to the Fish and Game Code. Approval of any future potential take of state-listed wildlife and plant species covered under the California Endangered Species Act.
- Central Valley Regional Water Quality Control Board (RWQCB) and State Water Resources Control Board (SWRCB) review and/or approval of any activity impacting Planning Area water features, pursuant to the Clean Water Act and RWQCB standards.
- U.S. Army Corps of Engineers (USACE) approval of any future wetland fill activities, pursuant to the federal Clean Water Act.
- U.S. Fish and Wildlife Service (USFWS) approvals involving any future potential take of federally listed wildlife and plant species and their habitats covered under the federal Endangered Species Act.
- U.S. Environmental Protection Agency (USEPA) concurrence with Section 404 of the Clean Water Act permit.

4.0 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS AND ASSUMPTIONS USED

4.0 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS AND ASSUMPTIONS USED

The following is an introduction to the environmental analysis of the project-specific and cumulative impacts resulting from implementation of the proposed General Plan. This introduction describes the general assumptions used in the analysis.

Please see the individual technical sections of the Draft EIR (Sections 4.1 to 4.13) for the specific assumptions and methodologies used for each technical subject.

ANALYSIS ASSUMPTIONS USED TO EVALUATE THE IMPACTS OF THE CITY OF MADERA GENERAL PLAN

BASELINE ENVIRONMENTAL CONDITIONS ASSUMED IN THE DRAFT EIR

The environmental setting of the City of Madera and the surrounding area is described in the individual technical sections of this Draft EIR (see Sections 4.1 through 4.13). In general, these sections describe the conditions of the City of Madera and the surrounding area as they existed when the Notice of Preparation (NOP) for the project was released on December 27, 2007.

The Draft EIR also includes setting information that has been updated since release of the NOP, such as the status of large development projects in the General Plan Planning Area and in the vicinity of the Planning Area (see **Table 4.0-1**). With the exception of the North Fork Rancheria Hotel & Casino Resort, all of these large development projects are located in the Southeast Planning Area of Madera County, in Rio Mesa, approximately 15 miles southeast of the City of Madera. The North Fork Rancheria is located just north of the Madera city limits, in Madera County, within the City of Madera's General Plan Planning Area. The General Plan Update establishes policies specific to the North Fork Rancheria site and designates the site for Village Reserve land use designation.

There is one already approved Specific Plan that will increase the acreage of residential, commercial, school, and park uses in the Planning Area. The Madera State Center Community College Specific Plan was approved by the City in 1998. The Specific Plan, which covers approximately 1,867 acres in the southeastern corner of the Planning Area, proposes a variety of residential, commercial, office, and light industrial uses centered on a community college campus. The college campus portion of this project has been completed, but no other significant development has occurred.

This description of the environmental setting is in compliance with Section 15125(a) of the California Environmental Quality Act (CEQA) Guidelines, which requires that an EIR include a description of the physical environmental conditions in the vicinity of a project as they exist at the time the NOP is published. The CEQA Guidelines also specify that this description of the physical environmental conditions should serve as the baseline physical conditions by which a lead agency determines whether the impacts of a project are considered significant.

4.0 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS AND ASSUMPTIONS USED

**TABLE 4.0-1
PROPOSED & APPROVED PROJECTS**

Project	Acres	Land Uses	Status	Location	Units or Building Sq. Ft.
North Fork Rancheria Hotel & Casino Resort	305	Hotel & Casino	CEQA being completed/ awaiting discretionary action	Madera County, just north of Madera city limits, west of SR 99 and north of Ave 17	472,000 sq ft
Liberty Grove	1,473	Residential & commercial	CEQA being completed/ awaiting discretionary action	Southeast Madera County Planning Area	
Silver Dust	60	Industrial	CEQA being completed/ awaiting discretionary action	Southeast Madera County Planning Area	
Tham	1,628	Primarily residential & commercial	CEQA being completed/ awaiting discretionary action	Southeast Madera County Planning Area	
Morgan	152	Primarily residential & commercial	CEQA being completed/ awaiting discretionary action	Southeast Madera County Planning Area	
San Joaquin River Ranch	3,976	Residential & commercial	CEQA being completed/ awaiting discretionary action	Southeast Madera County Planning Area	
Gateway Village	2,062	Residential, commercial & light industrial	Approved; CEQA review complete – 2007	Southeast Madera County Planning Area	5,836 units
Gunner Ranch West Specific Plan	1,032	Residential & Commercial	CEQA being completed/ awaiting discretionary action.	Southeast Madera County Planning Area	2,840 units

Source: County of Madera & City of Madera

GENERAL PLAN BUILDOUT AND YEAR 2030 CONDITION

Future growth in the General Plan Planning Area is guided by the land uses identified in the General Plan Land Use Map (see **Figures 3.0-7** and **3.0-8**). Buildout of the proposed General Plan Update is not expected to occur until roughly 2065, based on a projected residential growth rate of around 2.65 percent per year. This growth rate is a compilation of several sources, including past growth (which includes previous economic downturns) and projections produced as part of an ongoing regional planning effort.

The noise, water supply, and public service sections of this DEIR analyze impacts from growth to the year 2030 only. This differs from the total buildout of all of the growth designated by the General Plan Land Use Map including substantial growth predicted to occur well after 2030.

Section 5.0 of this Draft EIR, Cumulative Impacts Summary, analyzes climate change impacts resulting from greenhouse gas emissions through buildout. The traffic model developed for this EIR quantifies impacts from growth to 2030 only, but qualitatively analyzes impacts beyond 2030 through buildout. The air quality model developed for this EIR calculates mobile source emissions to 2030, in line with the traffic model, but calculates stationary source greenhouse gas emissions beyond 2030 through buildout.

Some sections analyze the Year 2030 Condition only because beyond that time horizon the City's growth patterns are more speculative and subject to change, rendering these analyses less accurate if they are based on growth projected post 2030. Other impact analyses completed as part of this EIR, such as biology, agriculture, portions of air quality as discussed above, and climate change, are based on impacts resulting from General Plan buildout rather than the Year 2030 Condition because their impacts are either based on ground disturbance associated with General Plan Update proposed land use patterns and types or because a buildout analysis is required under state guidelines.

It should be noted that the amount of development expected to actually occur by 2030 will likely be less than the 2030 growth projections used in this EIR. This EIR assumes a residential growth rate of approximately 5.7 percent per year between 2007 and 2030, compared to the 2.65 percent annual growth rate that is expected. The growth rate is assumed to be high for the 2030 analysis to ensure the maximum possible impacts that could occur by 2030 are considered and that the impacts of areas likely to develop and/or annex to the city are considered. Therefore, it is likely that the 2030 impacts in this EIR are overstated; this is consistent with CEQA's direction to provide a worst-case analysis. For more information on the growth projections, please see **Appendix B** (Madera General Plan EIR – Growth Projections for Year 2030, PMC, November 10, 2008).

Table 3.0-1 summarizes both the Year 2030 assumptions and the buildout projections of the General Plan Planning Area under the General Plan Update Land Use Map. **Table 3.0-2** and **Table 3.0-3** summarize the Year 2030 and buildout of the proposed General Plan Update by land use type. This EIR analysis is based on the land use numbers in **Tables 3.01, 3.0-2, and 3.0-3**. Subsequent requests for increases in development potential beyond what is set forth in the General Plan would require approval of an amendment to the General Plan Update and are outside the scope of the analysis of this EIR.

STRUCTURE OF THE ENVIRONMENTAL IMPACT ANALYSIS

Sections 4.1 through 4.13 of this Draft EIR contain a detailed description of current setting conditions (including applicable regulatory setting), an evaluation of the direct and indirect

4.0 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS AND ASSUMPTIONS USED

environmental effects resulting from the implementation of the proposed General Plan, identification of proposed General Plan policies and action items that mitigate the environmental effects, additional feasible mitigation measures, and identification of whether significant environmental effects of the General Plan would remain after application of proposed policies and action items and feasible mitigation measures. The individual technical sections of the Draft EIR follow the following format.

Existing Setting

This subsection includes a description of the physical setting conditions associated with the technical area of discussion, consistent with State CEQA Guidelines Section 15125. As previously identified above, the existing setting is based on conditions as they existed when the NOP for the project was released on December 27, 2007.

Regulatory Framework

This subsection consists of the identification of applicable federal, state, regional, and local plans, policies, laws, and regulations that apply to the technical area of discussion.

Impacts and Mitigation Measures

The Impacts and Mitigation Measures subsection identifies direct and indirect environmental effects associated with implementation of the proposed General Plan Update and identifies those proposed General Plan Update policies and action items that mitigate the environmental effects. Standards of significance are identified and utilized to determine whether identified environmental effects are considered significant and require the application of mitigation measures. Each environmental impact analysis is identified numerically (e.g., Impact 4.1.1 – Division of Established Communities) and is supported by substantial evidence included in the discussion.

Mitigation measures for the proposed General Plan were developed through a thorough review of the environmental effects of the General Plan Update by consultants with technical expertise as well as by environmental professionals. After identification of proposed General Plan policies and action items that mitigate the environmental impact being discussed, any additional feasible mitigation measures that could minimize significant adverse impacts are discussed, after which the impact discussion notes whether the impact has been mitigated to a less than significant level or remains significant and unavoidable.

Cumulative Setting, Impacts, and Mitigation Measures

This subsection is an analysis of the proposed General Plan's contribution to cumulative impacts to the environment. The analysis focuses on whether the General Plan's contribution is cumulatively considerable (State CEQA Guidelines Section 15130; see also the following subsection: Approach to the Cumulative Impact Analysis, and Section 5.0 Cumulative Impact Summary). A cumulative impact occurs from the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (CEQA Guidelines Section 15355(b)). Accordingly, the cumulative setting includes related past, present, and reasonably foreseeable projects in the region.

APPROACH TO THE CUMULATIVE IMPACT ANALYSIS

Definition of Cumulative Setting

State CEQA Guidelines Section 15130 requires that EIRs include an analysis of the cumulative impacts of a project when the project's effect is considered cumulatively considerable. In general, the cumulative setting conditions considered in this Draft EIR are based on:

- **Local Adopted General Plans.** The existing land use plans in the Madera region consisting of Madera County, Fresno County, and the cities of Chowchilla, Fresno, Clovis, and Merced.
- **Large-Scale Development Projects.** Consideration of large-scale proposed and approved development projects listed in **Table 4.0-1**. This list is intended to describe large-scale projects from the recent past, present, and reasonably foreseeable future development activities in the Madera region that, when considered with the proposed General Plan, have the potential to have cumulatively considerable impacts. It is not intended to be an all-inclusive list of projects in the Madera region.
- **Effect of Regional Conditions.** Consists of consideration of background traffic volumes and patterns on state highways (e.g., SR 99), background air quality conditions, and other associated environmental conditions that occur within the San Joaquin Valley region, both within and outside of the Planning Area.
- **Consideration of Existing Development Patterns.** This consists of consideration of the current environmental conditions of existing development and past land use activities in the region. It includes major land use activities such as the operation of the Madera Municipal Airport, agricultural activities, and conversion of open space and agricultural lands resulting from existing development patterns.
- **The San Joaquin Valley Blueprint.** The San Joaquin Valley Blueprint depicts a way for the region to grow through the year 2050. The blueprint identifies a general density and transportation scenario, as well as a set of principles. While only advisory, the Blueprint will be the most comprehensive policy guidance in the San Joaquin Valley for long-term regional land use and transportation planning. The updated City of Madera General Plan is consistent with these blueprint features.

The Blueprint has adopted an overall vision for growth: Madera County will be composed of unique cities, communities and a diverse population that is supported by a vibrant economy, a healthy and sustainable environment and public safety, accomplished through a land use and transportation system that supports livable communities and interregional coordination and connectivity, while preserving agricultural and natural resources.

Each technical section of the Draft EIR includes a description of the geographic extent of the cumulative setting based on the characteristics of the environmental issue under consideration as set forth in Section 15130(b) of the State CEQA Guidelines.

Consideration of Cumulative Impacts

Each technical section in the Draft EIR considers whether the project's effect on anticipated cumulative setting conditions is cumulatively considerable (i.e., a significant effect).

4.0 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS AND ASSUMPTIONS USED

“Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (CEQA Guidelines, Section 15065(a)(3)). The determination of whether the project's impact on cumulative conditions is considerable is based on a number of factors including consideration of applicable public agency standards, consultation with public agencies, and expert opinion. The environmental effects of potential development of the individual planning areas within the General Plan Planning Area are incorporated in the cumulative impact analysis. Section 5.0, Cumulative Impacts Summary, provides a summary of the cumulative impacts associated with the General Plan.

ENVIRONMENTAL IMPACT REPORTS USED IN THIS EIR

This Draft EIR utilizes technical information and analyses from previously prepared EIRs that are relevant to the consideration of environmental effects of the proposed General Plan, which is supported by the State CEQA Guidelines (see Sections 15148 [Citation] and 15150 [Incorporation by Reference]). In addition to materials cited, the following EIRs have been used in this Draft EIR:

- State Center Community College EIR
- Ventana Specific Plan EIR
- Gateway Galleria EIR
- Madera Town Center EIR
- Commons at Madera Fair EIR
- County of Madera General Plan EIR
- City of Madera General Plan EIR (previous version)

TERMINOLOGY USED IN THE DRAFT EIR

This Draft EIR uses the following terminology:

Cumulatively Considerable: A cumulative significant impact would result when the project would contribute considerably to a significant physical impact on the environment expected under cumulative conditions.

Less Than Significant Impact: A less than significant impact would cause no substantial change in the physical condition of the environment. (No mitigation is required for project effects found to be less than significant.)

Planning Area: The Planning Area for the City of Madera General Plan includes the incorporated city, the City's Sphere of Influence (SOI), and a larger study area, as shown in **Figure 3.0-2** in Section 3.0, Project Description. The Planning Area represents the area which the City envisions may ultimately be included either in its Sphere of Influence or in the incorporated city limits. For the size of the Planning Area and related information, please see Section 3.0, Project Description.

Potentially Significant: A potentially significant impact is one that may or may not occur and where a definite determination cannot be made. Feasible mitigation measures and/or project alternatives are identified to avoid or reduce the project's effects on the environment to a less than significant level.

Significant and Unavoidable Impact: A significant and unavoidable impact would result in a substantial change in the environment that cannot feasibly be avoided or mitigated to a less than significant level if the project is implemented.

Significant Impact: A significant impact would cause (or would potentially cause) a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of project effects using specified standards of significance provided in each technical section of the EIR. Identified significant impacts are those where the project would result in an impact that can be measured or quantified, while identified potentially significant impacts are those impacts where an exact measurement of the project's effect cannot be made but substantial evidence indicates that the impact could exceed standards of significance. A potentially significant impact may also be an impact that may or may not occur and where a definite determination cannot be made. Mitigation measures and/or project alternatives are identified to avoid or reduce to a less than significant level project effects to the environment.

Standards of Significance: A set of significance criteria used by the CEQA lead agency (City of Madera) as well as by other public agencies with regulatory jurisdiction over the project to determine at what level or threshold an impact would be considered significant. Significance criteria used in this EIR are derived from the State CEQA Guidelines, factual or scientific information, regulatory performance standards of local, state, and federal agencies, and goals, objectives, and policies. Specified significance criteria are identified at the beginning of the impact analyses in each technical section of the EIR.

Subsequent Projects/Activities: Anticipated development projects (e.g., residential, commercial, park, recreational) that would occur in the future and would implement the General Plan. This would include public infrastructure and utility extension projects including, but not limited to, roadway widenings and extensions, intersection improvements, and water, stormwater, and wastewater distribution improvements. This would also include second-tier planning efforts, such as master plans, village plans, and specific plans.

4.0 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS AND ASSUMPTIONS USED

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<http://www.maderactc.org/blueprint.htm>. 2008.

4.1 LAND USE

This section describes the existing land uses in the City of Madera General Plan Planning Area and discusses adopted plans and policies pertinent to the area and effects associated with implementation of the proposed General Plan Update. This analysis addresses direct and indirect land use impacts and identifies mitigation measures to lessen those impacts. As mentioned throughout this section, any land use impacts directly related to other technical sections of this EIR (e.g., hydrology and water quality, population and housing, etc.) are discussed in those relevant sections. See Sections 4.2 through 4.13 for more information regarding these impacts.

4.1.1 EXISTING SETTING

REGIONAL SETTING

The Planning Area is located entirely within Madera County, in the San Joaquin Valley in Central California. Madera County is bounded on the north by Merced and Mariposa counties, on the east by Mono County, and on the south and west by Fresno County (see **Figure 3.0-1**). Madera County covers approximately 2,147 square miles (1,374,080 acres) of land, with elevations ranging from 180 feet to over 13,000 feet above mean sea level. Madera County can be divided generally into three regions – the San Joaquin Valley in the west, the foothills between the Madera Canal and the 3,500-foot elevation contour, and the mountains from the 3,500-foot contour to the crest of the Sierra Nevada. Land uses in the surrounding counties vary, with flat agricultural lands in Merced and Fresno counties, foothills in Mariposa and Fresno counties, and mountains in Mariposa and Mono counties (Madera County Transportation Commission, 2007).

LOCAL SETTING

The Planning Area is located primarily within the San Joaquin Valley region of Madera County. The Planning Area covers approximately 67,415 acres, or 4.9 percent of the total land area of Madera County. Approximately 9,520 acres of the Planning Area are within the city limits of Madera while approximately 15,037 acres are located outside the city limits but within the City's existing Sphere of Influence (see **Table 4.1-1**). The Sphere of Influence indicates the ultimate service area of the city, as delineated in the existing General Plan. The remaining land encompasses the portion of the Planning Area outside both the incorporated city limits and the Sphere of Influence.

**TABLE 4.1-1
PORTIONS OF PLANNING AREA**

Portion of Planning Area	Acres	Percentage of Planning Area
Within City Limits	9,520	14.1
Within Sphere of Influence (outside city limits)	15,037	22.3
Outside Sphere of Influence	42,858	63.6
Total Planning Area	67,415	100.0

EXISTING LAND USES

The Planning Area is characterized by a wide range of existing land uses (**Figure 4.1-1**). Land use in the Planning Area outside Madera is primarily agricultural. Most urban development is located in the Madera city limits and the adjacent unincorporated lands. Land outside the

4.1 LAND USE

Sphere of Influence is primarily in agricultural use. **Table 4.1-2** lists the existing land uses and approximate acreage of each use.

TABLE 4.1-2
EXISTING LAND USES IN THE PLANNING AREA

Land Use	Acres Within City Limits	Acres Within Sphere of Influence	Acres Outside Sphere of Influence	Total Acres	Percentage of Planning Area
Agricultural	957	6,641	36,759	44,357	65.8
Commercial	489	211	100	800	1.2
Government/Parks	1,062	145	1,465	2,672	4.0
Industrial – Heavy	270	529	93	892	1.3
Industrial – Light	70	330	279	679	1.0
Institutional	157	38	159	354	0.5
Office	51	8	0	59	0.1
Open Space (Fresno River)	107	109	371	587	0.9
Public/Private School	292	190	19	501	0.7
Railroad	21	1	0	22	0.0
Residential – Single Family	2,401	3,846	944	7,191	10.7
Residential – Multifamily	254	23	0	277	0.4
Roadways	1,721	1,511	1,535	4,767	7.1
Utilities	29	43	26	98	0.2
Vacant	1,636	1,411	1,070	4,117	6.1
Unknown	3	0	0	3	0.0
Total	9,520	15,036	42,820	67,376	100.0

Source: PMC, 2008

Figure 4.1-1
Existing Land Use

Large natural features in the Planning Area include the Fresno River, Cottonwood Creek, Schmidt Creek, and other smaller creeks. Part of Madera Lake, a reservoir, is located in the northeastern corner of the Planning Area. Other prominent land uses in the Planning Area include a wastewater treatment plant and the Madera Airport. The City of Madera Wastewater Treatment Plant is located adjacent to and north of Avenue 13 in the western portion of the Planning Area. The Madera Municipal Airport is in the northwestern portion of the Planning Area, within the Madera city limits. A public golf course is located adjacent to the airport, while a private golf course is located in the northern portion of the Planning Area along Road 26 (Country Club Drive).

There is one approved Specific Plan that will increase the acreage of residential, commercial, school, and park uses in the Planning Area. The Madera State Center Community College Specific Plan was approved by the City in 1998. The Specific Plan, which covers approximately 1,867 acres in the southeastern corner of the Planning Area, proposes a variety of residential, commercial, office, and light industrial uses centered on a community college campus. The college campus portion of this project has been completed, but no other significant development has occurred.

4.1.2 REGULATORY FRAMEWORK

FEDERAL

Federal Aviation Administration

Federal law sets forth standards contained in Federal Aviation Regulations (F.A.R.) Part 77, Objects Affecting Navigable Airspace. This regulation requires FAA notification of any construction or alteration located within a series of imaginary surfaces established in FAR Part 77. The law was established for use by local authorities to control the height of objects near airports. The FAR Part 77, Airport Safety Areas Map and Land Use Compatibility Chart for Aircraft Noise, which is included for Madera Municipal Airport in the 1993 Madera County Airport Land Use Compatibility Plan, is a graphic depiction of this regulatory criterion.

Not all obstructions are a hazard to air navigation. The FAA presumes an obstruction to be a hazard until a FAA aeronautical study determines that it does not have a substantial adverse effect on the safe and efficient use of navigable airspace.

The FAA cannot prohibit the construction of any structure determined to be a hazard. However, state law prohibits the construction of any structure that would penetrate any of a series of imaginary surfaces defined in FAR Part 77 unless the State Division of Aeronautics has issued a permit allowing its construction.

LOCAL

City of Madera General Plan (Current)

The current City of Madera General Plan, adopted in 1992, is used to guide future development in the city limits. The overall purpose of the General Plan is to guide land development in the City of Madera and the Planning Area, and the proposed General Plan update would replace the existing policies and Land Use Map in the current General Plan. Refer to Section 4.0, Introduction to the Environmental Analysis and Assumptions Used, for a discussion of land use designations and buildout projections under the current General Plan.

4.1 LAND USE

City of Madera Zoning Ordinance

The City of Madera Zoning Ordinance implements the goals and policies of the City's General Plan. It establishes zoning districts that guide the development and use of land in Madera by setting allowable land uses within each district. The Zoning Ordinance also provides development standards such as land use limitations, building setbacks, height limits, and sign standards. By state law, the Zoning Ordinance must be consistent with an adopted General Plan. Therefore, should it adopt the proposed General Plan, the City would need to update the Zoning Ordinance accordingly.

Madera County General Plan

Madera County General Plan, last comprehensively updated in 1995, contains policies related to development of lands under County jurisdiction, which include all areas in Madera County outside the two incorporated cities of Madera and Chowchilla. The County General Plan consists of two types of documents: the countywide General Plan and a set of more detailed area plans covering specific areas of the unincorporated county. The City of Madera is not covered by any of the area plans, so they are not discussed here.

The Madera County General Plan Land Use Map designates land uses for the area surrounding the Madera city limits. **Figure 4.1-2** depicts the County General Plan land use designations. Most of the County land within the Planning Area has been designated for agriculture. However, a large portion of land to the north of Madera has been designated for very low- or low-density residential uses. Also, land southeast of Madera has been designated for land uses in accordance with the State Center Community College Specific Plan (see below) and for industrial uses.

State Center Community College Specific Plan

In 1995, Madera County adopted the State Center Community College Specific Plan. The City of Madera adopted the Specific Plan with minor adjustments in 1998. The Specific Plan serves as a guide to development on 1,867 acres of land located southeast of the City of Madera, adjacent to and east of State Highway 99. Development allowed under the Specific Plan centers around a community college campus, which would ultimately accommodate 6,000 students (Madera County, 1995). Both single-family and multifamily residential development is proposed under the Specific Plan, with approximately 4,500 total dwelling units allowed. The Specific Plan also allows neighborhood and community commercial, highway commercial, office, light industrial/business park, park, and other public institutional uses. The circulation network proposed by the Specific Plan includes two transit stations. Pedestrian easements and open space are located throughout the Specific Plan area. Special habitat areas are proposed to be preserved as community amenities, including the Cottonwood Creek corridor (Madera County, 1995). To date, the community college campus has been built, and the first annexation and development project within the Specific Plan is under review, but no other significant development has occurred in the Specific Plan area.

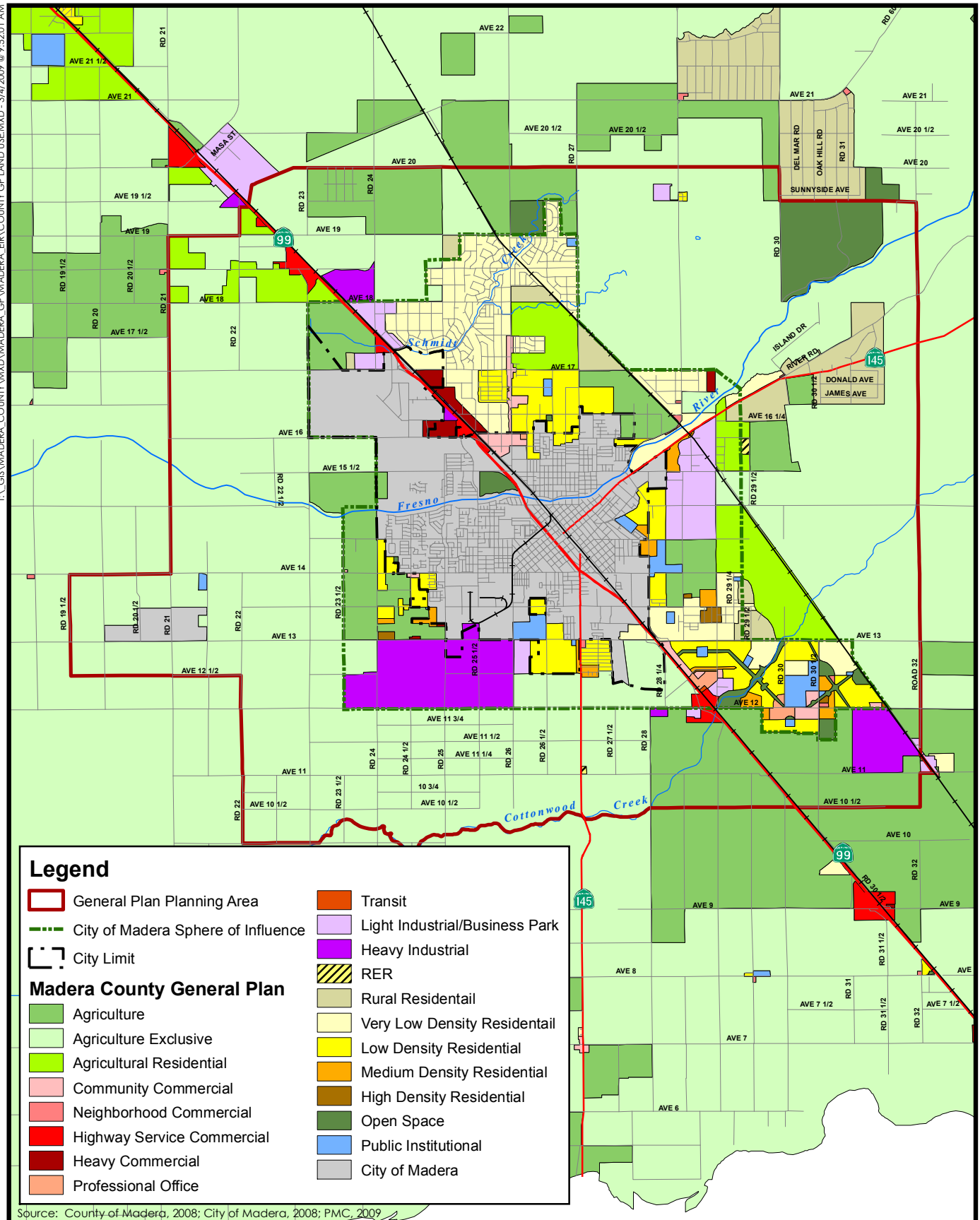


Figure 4.1-2
County General Plan Land Use

Madera County Airport Land Use Compatibility Plan

The Madera Municipal Airport is located along State Highway 99, approximately 1.5 miles northwest of the city core, within the Planning Area. In 1993, the Madera County Airport Land Use Commission adopted an Airport Land Use Compatibility Plan for the airports within the county, including the Madera Airport. The Compatibility Plan regulates land use in three ways: safety zones, noise zones, and height restrictions. It provides land use compatibility criteria for lands near the airport to avert potential safety problems and to ensure unhampered airport operations.

The Airport Land Use Compatibility Plan establishes three safety zones that are linked to land use compatibility: clear, approach/departure, and overflight. The clear zone is near each end of the runway and is the most restrictive in allowing land uses. The approach/departure zone is located under the takeoff and landing slopes, and is less restrictive. The overflight zone is the area under the airport's traffic pattern and is even less restrictive (Madera County ALUC, 1993). **Figure 4.1-3** depicts the Madera Municipal Airport safety zones. The compatibility criteria for each safety and noise zone as well as plan policies relevant to the proposed General Plan are provided in **Appendix C**.

Under California Government Code Section 65302.3(a), general plans must be consistent with any airport land use plan adopted pursuant to Public Utilities Code Section 21675. The Madera County Airport Land Use Commission (ALUC) monitors compliance with Airport Land Use Compatibility Plan provisions.

Madera County Local Agency Formation Commission

In 1963, the State Legislature created a local agency formation commission (LAFCo) for each county, with the authority to regulate local agency boundary changes. Subsequently, the State has expanded the authority of the local agency formation commissions, most recently with the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000. Among the goals of LAFCo, in accordance with State law, are to preserve agricultural and open space land resources and to provide for efficient delivery of public services.

Madera County LAFCo has authority in Madera County affecting local agency boundaries. Its authority extends to the incorporated cities within the county. Specifically, LAFCo has the authority to review and approve or disapprove the following:

- Annexations to or detachments from cities or districts.
- Formation or dissolution of districts.
- Incorporation or disincorporation of cities.
- Consolidation or reorganization of cities or districts.
- Establishment of subsidiary districts.
- Development of, and amendments to, spheres of influence. The sphere of influence is the probable physical boundary and service area of each local government agency. This may extend beyond the current service area of the agency.
- Extensions of service beyond an agency's jurisdictional boundaries.

4.1 LAND USE

- Provision of new or different services by districts.
- Proposals that extend service into previously unserved territory in unincorporated areas.

Future annexations of land to the City of Madera in accordance with the proposed General Plan will require approval from Madera County LAFCo.

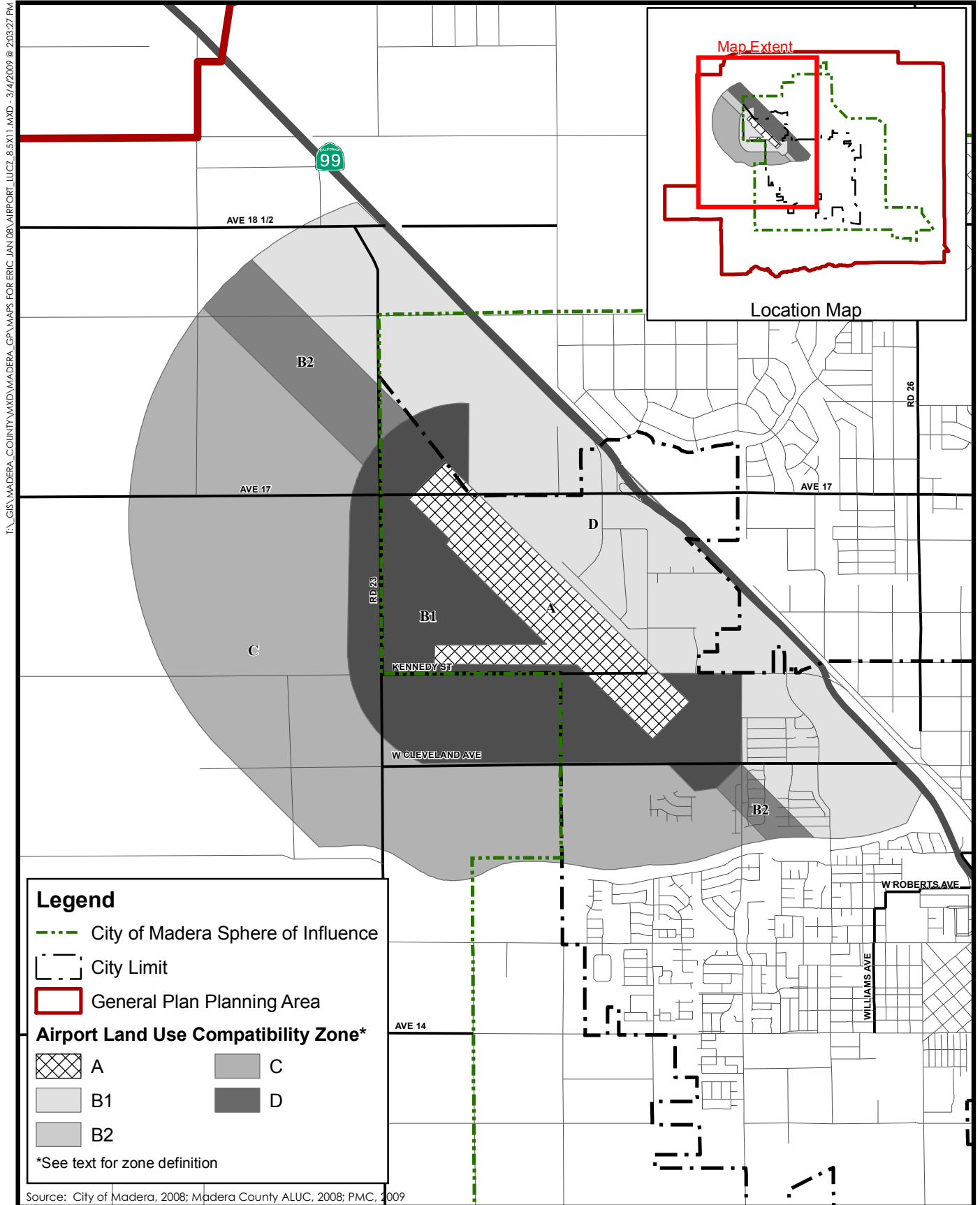


Figure 4.1-3
ALUCZ Map
PMC

4.1.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The land use analysis evaluates the consistency of the proposed General Plan Update according to the following standards, which are based on State California Environmental Quality Act (CEQA) Guidelines Appendix G. A land use impact is considered to be significant if implementation of the project would:

- 1) Physically divide an established community;
- 2) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the General Plan, specific plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or
- 3) Conflict with any applicable habitat conservation plan or natural community conservation plan.

The project's relationship with any applicable habitat conservation plan or natural community conservation plan is addressed in Section 4.10, Biological Resources, of this EIR. Therefore this issue is not discussed further in this Land Use section.

METHODOLOGY

An evaluation of the potential land use impacts associated with the implementation of the proposed City of Madera General Plan Update was based on a review of planning documents. These documents included the various components and policies of the current City General Plan and other City regulations affecting planning and implementation of the proposed General Plan Update. Also included was review of the County of Madera General Plan to the extent that it directly or indirectly applies to the General Plan Planning Area or regional impacts, other applicable community plans and specific plans, field review of the city and entire General Plan Planning Area, and consultation with appropriate agencies. Impacts are discussed in the Project Impacts and Mitigation Measures subsection below. The analysis is based on buildout conditions for the General Plan Planning Area and does not assess impacts associated with the phasing of individual development projects or interim improvements, except when the timing of such projects and/or improvements creates reasonably foreseeable environmental impacts, in which case they are addressed in this EIR.

The focus of the analysis in this section is on land use impacts that would result from the proposed General Plan Update, i.e., the policy document, Land Use Map, and other General Plan elements. Specific impacts and General Plan consistency issues associated with biological resources, visual resources, noise, traffic, public services and utilities, hydrology (including water supply and water quality), cultural resources, agricultural resources, population and housing, and/or geology and soils are address in other technical sections of this EIR (Sections 4.2 through 4.13).

4.1 LAND USE

PROJECT IMPACTS AND MITIGATION MEASURES

Land Use Incompatibilities

Impact 4.1.1 Implementation of the General Plan could result in incompatibilities or conflicts between existing and future land uses in the Planning Area, including land located outside of the Madera city limits. However, implementation of policy provisions of the General Plan would reduce this potential impact to a **less than significant** level.

The proposed General Plan Land Use Map was developed with the intent to designate areas for the most appropriate type of land use based on existing land uses, the existing and planned circulation system, the specific needs of the Madera community, environmental constraints, and other factors. As such, implementation of the proposed Land Use Map would not be expected to result in many significant land use incompatibilities. However, incompatibilities may still occur in some places (i.e., where industrial or commercial uses abut residential uses and where active agricultural operations abut any type of urban development).

Possible environmental effects of land use incompatibilities include excessive noise, the use, storage or transport of hazardous materials, toxic air emissions and odors, and light pollution and undesirable views in close proximity to sensitive receptors such as residences, schools, hospitals, and libraries. Each of these issues is addressed in detail in the appropriate sections of this Draft EIR (see sections 4.2 through 4.13).

The City of Madera Code of Ordinances Chapter 3 (Zoning) contains numerous standards and restrictions to avoid and/or minimize land use incompatibilities. For instance, the Code requires increased building setbacks and in some instances, walls or fencing, on commercial and industrial zoned properties that are adjacent to properties zoned for residential use (see Code Sections 10-3.805, 10-3-9.207, and 10-3-9.310). The Code further requires Site Plan Review (see Code Section 10-3.2.1017), which specifies that site plan issues such as rooftop equipment, trash and storage area screening, noise from rooftop equipment, and other site plan issues will be dealt with as Conditions of Approval at Site Plan Review. In addition, the existing General Plan has provisions (IV-A-14) that specify Development Standards for Commercial Areas, which require features in new development that help minimize land use conflicts.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan contains several goals, policies, and action items that are intended to avoid or minimize land use incompatibilities within the Planning Area. The following list contains those goals, policies, and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards to directly mitigate for potential land use incompatibilities.

Policy CON-15: The City supports the protection of agricultural operations by requiring that buffers be established between urban residential areas and areas planned to remain in agricultural use. The buffers shall be designed to address the physical effects of agricultural practices on urban uses, such as chemical spraying, noise, etc.

Policy N-1: The City will protect residential areas and other noise-sensitive uses from excessive noise by doing the following:

- 1) Requiring that land uses, roadways, and other sources do not create incompatible noise levels on adjacent parcels.
- 2) Allowing homes or noise-sensitive uses to be developed only in places where existing and projected noise levels will meet the exterior noise guidelines and standards shown in Policies N-5 and N-6.
- 3) Requiring that City decisions which would cause or allow an increase in noise created by stationary or mobile sources (such as development of noise-generating land uses or the construction of new or wider roadways) be informed by a noise analysis and accompanied by noise reduction measures to keep noise at acceptable levels.

Action Item N-2.1: Apply the State Noise Insulation Standards, zoning and building controls, buffers, sound barriers, traffic controls, and other effective measures to reduce exposure to noise that exceeds the standards contained in this General Plan.

Action Item N-2.2: Require acoustical studies for:

- 1) Significant new noise generators, or
- 2) New uses which are proposed to be developed in areas which do not meet the "completely compatible" exterior noise guidelines contained in Policy N-5 or Policy N-6.

If information on the noise environment at a project site is not available, a measurement of the noise environment by a qualified acoustical engineer may be needed to make a determination whether a proposed project complies with the guidelines and standards in Policy N-5 or N-6.

Action Item N-2.3: Seek to obtain noise mitigation from other agencies (including the State of California) required to address the noise impacts of decisions made by those agencies (including, but not limited to, roadway widenings and railroad operations).

Policy N-3:

The following definitions shall be used to interpret and implement the policies in this Noise Element.

- "Noise-Sensitive Use" is any use other than residential or commercial for which an acceptable interior or exterior noise level is defined in this General Plan or other uses as determined by the City. Generally, noise-sensitive uses will be those which require a reasonable level of quiet as part of their ordinary functioning.
- Noise standards in residential areas shall be applied to outdoor activity areas. Where the outdoor activity areas are not known, the exterior noise standard shall be applied to all areas within 50 feet of the residential dwelling.

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- “Outdoor Activity Areas” for residential uses include rear yard areas, including patios located in a rear yard; private ground-floor patios; and community play areas, pools, etc.
- “Projected Noise Levels” shall be those projected to exist at a time 20 (twenty) years in the future, based on projected future development, traffic, and other factors.
- “Residential Area” is any area designated for residential uses on the Land Use Map of this General Plan.
- “Transportation Noise” consists of noise generated by motor vehicles, trains, and aircraft takeoffs and landings.

Policy N-4: The following compatibility standards shall be used to determine whether a proposed use is appropriate for its location, given the projected ambient noise level.

- “Completely Compatible” means that the specified land use is satisfactory and both the indoor and outdoor environments are pleasant.
- “Tentatively Compatible” means that noise exposure may be of concern, but common building construction practices will make the indoor living environment acceptable, even for sleeping quarters, and outdoor activities will not be unduly disturbed by noise.
- “Normally Incompatible” means that noise exposure warrants special attention, and new construction or development should generally be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features are included in the design. Careful site planning or exterior barriers may be needed to make the outdoor environment tolerable.
- “Completely Incompatible” means that the noise exposure is so severe that new construction or development should generally not be undertaken.

Policy N-5: The following are the maximum 24-hour exterior noise levels for land designated by this General Plan for residential, commercial/retail, and public parks.

- See Policy N-2 for the definitions of these levels of compatibility.
- These guidelines apply to land designated by this General Plan for these uses. Residential, retail, or public parks which have been developed on land designated for other uses shall be subject to the exterior noise guidelines for the land on which they are located.
- Non-residential uses located on residentially designated land shall be subject to the exterior noise guidelines for residential lands.

- All uses on Commercial lands, including non-commercial uses, shall be subject to the standards for Commercial land.
- Land use designations not listed above do not have exterior noise compatibility standards. Land use designations with no exterior noise compatibility standard include office and industrial.
- Standards for public schools are set and enforced by the State of California and are not regulated by the City of Madera. Therefore, no standards for public schools are shown in **Table N-B**.

TABLE N-B
EXTERIOR NOISE COMPATIBILITY GUIDELINES FOR NOISE FROM ALL SOURCES INCLUDING TRANSPORTATION NOISE
(24-HOUR DAY-NIGHT AVERAGE [CNEL/LDN])

Lad Use Designations	Completely Compatible	Tentatively Compatible	Normally Compatible	Completely Compatible
All Residential (Single-and Multi-Family)	Less than 60 dBA	60-70 dBA	70-75 dba	Greater than 75 dBA
All Commercial	Less than 70 dBA	70-75 dBA	Greater than 75 dBA	(1)
Public Parks (Land designated as Open Space on which public parks are located or planned)	Less than 65 dBA	65-70 dBA	70-75 dBA	Greater than 75 dBA

(1) No "Completely Incompatible" category is shown for commercial uses because not all commercial uses are incompatible with noisy environments. The City may determine as part of the review of individual development proposals that some types of commercial uses are incompatible with noise environments in excess of 75 dBA CNEL.

Policy N-6: The following are the City's standards for maximum exterior non-transportation noise levels to which land designated for residential land uses may be exposed for any 30-minute period on any day.⁶

- Where existing ambient noise levels exceed these standards, the ambient noise level shall be highest allowable noise level as measured in dBA Leq (30 minutes).
- The noise levels specified above shall be lowered by 5 dB for simple tonal noises (such as humming sounds), noises consisting primarily of speech or music, or for recurring impulsive noises (such as pile drivers, punch presses, and similar machinery). Example: the Single-Family/Duplex standard from 10 p.m. to 7 a.m. for these types of noises is 45 dBA.
- The City may impose exterior noise standards which are less restrictive than those specified above, provided that:
 - 1) The noise impact on the residential or other noise-sensitive use is addressed in an environmental analysis,
 - 2) A finding is made by the approving body stating the reasons for accepting a higher exterior noise standard, and

4.1 LAND USE

3) Interior noise standards will comply with those identified in Policy N-7.

TABLE N-C
EXTERIOR NOISE LEVEL STANDARDS FOR NON-TRANSPORTATION NOISE, MEASURED AS DBA LEQ (30 MINUTES)⁷

Land Use Type	Time Period	Maximum Noise Level (dBA)
Single-Family Homes and Duplexes	10 p.m. to 7 a.m.	50
	7 a.m. to 10 p.m.	60
Multiple Residential 3 or More Units Per Building (Triplex +)	10 p.m. to 7 a.m.	55
	7 a.m. to 10 p.m.	60

Policy N-7: The following are the City's standards for acceptable indoor noise levels for various types of land uses. These standards should receive special attention when projects are considered in "Tentatively Compatible" or "Normally Incompatible" areas.

- *Noise created inside a use listed above shall not count toward the acceptable noise levels to be maintained in accordance with this policy.*

TABLE N-D
MAXIMUM ACCEPTABLE INTERIOR NOISE LEVELS CREATED BY EXTERIOR NOISE SOURCES

Land Use Type	Acceptable Noise Level (dBA Ldn or CNEL)
Residential Living and Sleeping Areas	45 dBA
Residential Living and Sleeping Areas where the dwelling unit is subject to noise from railroad tracks, aircraft overflights, or similar sources which produce clearly identifiable, discrete noise events (such as the passing of a train as opposed to relatively steady or constant noise sources such as roadways.)	40 dBA
Private & Semi Private School Classrooms	55 dBA
All Places of Work Other than School Classrooms	Conform with applicable and federal workplace safety standards.

Policy N-8: Multi-family residential uses constructed in a mixed-use setting with commercial or office uses may be exempted from exterior noise standards at the City's discretion but must meet interior noise standards as defined in Policy N-7.

Policy N-9: The City's preferences for providing noise mitigation are, in order (#1 is the most preferred, #5 the least):

- 1) Reduce noise at the source.*
- 2) If #1 is not practical, seek to designate land uses which are compatible with projected noise levels.*
- 3) If #1 or #2 is not practical, use distance from the source to reduce noise to acceptable levels.*

4) If #1, #2, or #3 are not practical, use buildings, berms, or landscaping or a combination of these to reduce exterior noise to acceptable levels. Use construction techniques (sound-reducing windows, etc.) to reduce interior noise to acceptable levels.

5) The last measure which should be considered is the use of a sound wall to reduce noise to acceptable levels.

Policy N-10: Where they are constructed, sound walls should be:

- 1) Considered only if proven effective by accompanying noise studies.
- 2) Be visually attractive, complement the surroundings, and require a minimum of maintenance. (See Community Design Element references to sound wall designs).
- 3) As small/low as possible consistent with the need to reduce noise to acceptable levels.

Policy N-11: The City shall generally not require the installation of sound walls in front yard areas to reduce noise to acceptable levels in residential areas which were originally constructed without sound walls. The City shall emphasize other methods to reduce noise levels in these situations, and may accept exterior noise levels higher than those shown in Policy N-5 in order to minimize the construction of sound walls. Examples of "other methods" include:

- Installation of double- or triple-paned windows
- Installation of weather stripping or seals to keep noise out
- Replacing wooden fencing with walls or other materials with better sound reducing properties.
- Use of rubberized asphalt to reduce roadway noise

Policy CD-36: Where multi-story housing units are proposed adjacent to existing or planned Low Density areas, building elevations and the location of windows, balconies and air conditioning units above the first story shall be designed to ensure visual compatibility and residential privacy.

Policy CD-43: The following policies shall apply to all commercial development, and particularly in the Downtown:

- Loading facilities shall be screened from public view and located away from residential uses.
- Locate parking lots behind or on the side of buildings where possible to reduce their visual impact.

Policy CD-55: Loading facilities for uses requiring delivery from large trucks shall be screened from public view and located away from residential uses.

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- Policy CD-57: Where possible, parking lots shall be located behind or on the side of buildings to reduce their visual impact.
- Policy CD-58: Parking lots shall be screened and separated into smaller units with landscaping or low walls.
- Policy CD-60: Commercial site boundaries adjacent to residential areas shall be visually screened with ornamental masonry walls and landscaping. Wall height is to be determined and approved as part of the site plan review process.
- Policy CD-64: Where industrial development abuts non-industrial uses, appropriate buffering techniques shall be employed such as, enhanced architecture, increased setbacks, screening landscaping, or some combination of these features.
- Policy HS-10: The City will regulate the storage of hazardous and waste materials consistent with state and federal law. The City shall not permit above ground tanks without considering the potential hazards that would result from the release of stored liquids caused by possible rupture or collapse, and may request applicants to have an emergency response plan.
- Policy HS-11: The City will work with responsible agencies to ensure that all industrial facilities are constructed and operated in accordance with the most current safety and environmental protection standards.
- Policy HS-12: The City will consider the potential impacts of facilities which propose to store and/or process significant quantities of hazardous or toxic materials on the public and nearby properties. The City shall require such projects to prepare a site specific hazard and threat assessment when determined necessary by the City's emergency services department(s) or appropriate consulting agencies. The hazard and threat assessment shall consider the likelihood of reasonably foreseeable events and their potential to create physical effects at off-site locations resulting in death, significant injury, or significant property damage.
- Policy HS-13: For the purpose of implementing Policy HS-12, the City considers an event to be "reasonably foreseeable" when the probability of the event occurring is greater than of one in one million per year.
- Policy HS-14: Industries which store and process hazardous or toxic materials shall provide a buffer zone between the installation that houses such substances and the property boundaries of the facility sufficient to protect the public in the event of the release or leak of the materials.
- Policy HS-15: The City will coordinate with the California Highway Patrol, the Madera County Department of Environmental Health Services, the Madera County Sheriff's Department, and all other appropriate local, state and federal agencies in hazardous materials route planning, notifications, and incident response to ensure appropriate first response to hazardous material incidents.
- Policy HS-17: The City shall seek to avoid and minimize exposure of sensitive land uses to potentially hazardous emissions along truck routes and rail lines which may be used by surface vehicles and rail cars carrying hazardous or toxic substances.

These truck routes include Avenue 12 and Highways 99 and 145. Rail corridors include the two primary lines running north-south through Madera, as well as the spur line which serves the industrial area in the southwest portion of the City.

The proposed General Plan policies listed above would reduce the potential for land use incompatibilities and associated environmental effects to occur within the Planning Area by concentrating future development within a defined Growth Boundary surrounded by an agricultural buffer and by strongly encouraging all development within the Planning Area to be annexed to the City prior to development. This will allow all development within the Planning Area to be guided by one land use authority, the City, which will lead to more cohesive planning and avoid potential incompatibilities.

The above-listed policies will also reduce conflicts related to noise by establishing noise standards for areas near sensitive receptors, by requiring proper design and construction of new development to minimize noise, and by requiring acoustical studies prior to development of new noise generators and new sensitive receptors. The proposed General Plan policies also address conflicts related to light pollution and undesirable views by requiring buffers and screening at property boundaries, where appropriate. In addition, the proposed General Plan policies reduce risks associated with the use, transport, and storage of hazardous materials by actively enforcing existing regulations and coordinating with other agencies to ensure that such materials are handled properly within the Planning Area.

The proposed General Plan also contains policies to protect active agricultural operations from potential incompatibilities with new or intensified urban development. Such incompatibilities could include normal agricultural practices such as pesticide spraying and keeping of livestock. The reader is referred to Section 4.2, Agricultural Resources, and Impact 4.2.2 for further discussion of the potential incompatibilities of agricultural operations and urban development. The reader is also referred to Impact 4.1.3 below and Section 4.4, Hazards and Human Health, for a discussion of land use incompatibilities related to the Madera Airport. This impact is considered to be **less than significant**.

Mitigation Measures

None required.

Consistency with Relevant Land Use Planning Documents

Impact 4.1.2 The proposed General Plan is inconsistent with some existing relevant land use planning documents. This is considered a **significant and unavoidable** impact associated with the environmental effects of inconsistency with the Madera County General Plan.

A detailed analysis of the consistency of the proposed General Plan with relevant land use plans, policies, and regulations is provided below.

Madera County General Plan

As previously discussed, the existing Madera County General Plan land use designations and policies apply to those areas of the Planning Area currently located outside the Madera city limits. The Madera County General Plan land use designations within the Planning Area are shown on **Figure 4.1-2**. A comparison of this figure with the proposed City of Madera General

4.1 LAND USE

Plan land use designations shown on **Figure 3.0-7** indicates that the proposed General Plan would be inconsistent with the County General Plan in numerous areas. The proposed General Plan contains policies strongly encouraging annexation of these areas to the City prior to their development as well as policies that encourage coordination with the County on future annexations and development projects. Upon annexation, these areas would be under the jurisdiction of the City and the City's General Plan, thereby eliminating any inconsistencies with the County General Plan. However, all annexations would require approval by LAFCo and cannot be guaranteed; therefore, inconsistencies between these two land use plans may remain regardless of the City's desire for, and encouragement of, annexation of the Planning Area.

TABLE 4.1-4
COMPARISON OF COUNTY/CITY GENERAL PLAN LAND USE DESIGNATIONS (ACRES)

Land Use Designation Category	Madera County General Plan	Proposed City of Madera General Plan	Difference
Agricultural	43,351	34,094	-9,257
Commercial	813	513	-300
Industrial	3,322	3,920	+ 598
Residential	6,450	10,256	+ 3,806
Public	2,377	1,094	-1,283
Open Space	1,552	2,202	+ 650

Source: PMC, 2008

A comparison of **Figures 4.2-2** and **3.0-5** also indicates that the proposed General Plan would result in greater development of the Planning Area than the existing County General Plan. For example, the proposed General Plan would designate significantly more land for residential, industrial, and mixed-use development and significantly less land for agriculture compared to the County General Plan (see **Table 4.1-1**). More intensive development over a larger portion of the Planning Area could result in significantly greater environmental effects to air quality, agricultural and biological resources, soils, existing visual characteristics, water quality and supplies, ambient noise levels, public services and utilities, and traffic. These potential impacts are addressed throughout this Draft EIR. The reader is referred to Sections 4.2 through 4.13 for further discussion of these environmental topics.

Potential inconsistencies with the Madera County General Plan are considered to be a **significant** impact.

State Center Community College Specific Plan

The City adopted the State Center Community College Specific Plan in 1998 to guide development of 1,867 acres located immediately south of Avenue 13 and east of State Highway 99, within the Madera Planning Area. Development allowed under the Specific Plan includes both single-family and multifamily residential uses surrounding the community college campus which has already been constructed. The Specific Plan land use plan was incorporated, unchanged, into the proposed Madera Land Use Policy Map. Therefore, implementation of the proposed General Plan would be consistent with the State Center Community College Specific Plan and there would be **no impact**.

City of Madera Zoning Code

The City's Zoning Code implements the General Plan. The Zoning Code can help ensure land use compatibility by clearly defining the specific uses permitted in an area based on the anticipated type of use, level of activity, hours of operation, and other factors. The Zoning Code also contains development standards that help to avoid or minimize incompatibilities related to noise and aesthetics. All redevelopment and future development is subject to the provisions of the Zoning Code, which is used in conjunction with the current General Plan to ensure redevelopment activities and future development is suitable and compatible with adjacent and nearby land uses, and is protective of the human health, safety, and welfare. While the proposed General Plan and the current Madera Zoning Code may not be consistent due to the proposed changes in land use designations, the City will update its Zoning Code upon approval of the proposed General Plan, as required by state law. Consequently, the inconsistencies between the proposed General Plan and the current Madera Zoning Code would be temporary. The two documents ultimately will be consistent and no environmental impacts are anticipated from the update of either document beyond what is addressed in this EIR. This impact would be **less than significant**.

Madera County Airport Land Use Compatibility Plan

As described earlier in this section, the Madera County ALUC has adopted an Airport Land Use Compatibility Plan for the Madera Municipal Airport which establishes safety, noise, and height restrictions for areas near the airport. These airport zones were taken into consideration during development of the proposed General Plan Land Use Map. Appropriate land use types and densities were chosen for the portions of the Planning Area that are located within the airport zones to ensure consistency with the ALUC plan. As noted earlier, future development within the airport zones will be required to comply with the restrictions of the ALUC plan prior to approval both by law and per proposed General Plan policy. Impacts to the Compatibility Plan are considered **less than significant**.

The reader is referred to Sections 4.7, Noise, and 4.4, Hazards and Human Health, of this Draft EIR for a discussion related to the noise and safety impacts associated with the Madera Municipal Airport.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan contains several goals, policies, and action items that would assist in reducing this consistency impact. The following list contains those goals, policies, and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that assist in reducing this impact.

Policy LU-3: Zoning in the city limits shall be consistent with the General Plan Land Use Map. Where multiple zoning districts may be compatible, the City shall apply the most-compatible district which best achieves the goals and policies of all elements of this General Plan.

Action Item LU-3.1: Initiate an amendment to the Zoning Map to rezone all lands within the City to conform with the Land Use Map. Properties outside the city limits will be rezoned to conform with the Land Use Map when deemed necessary and appropriate by the City to facilitate annexation and/or the consideration of development projects by the City.

4.1 LAND USE

Policy LU-10: The Growth Boundary is considered by the City to define the physical limits of development in Madera. The City shall direct all future growth in Madera and in the unincorporated area outside the city limits to occur inside the Growth Boundary shown on the Land Use Map in this General Plan. Within the City's Planning Area, the City encourages the County to assist the City in maintaining an agricultural green belt around the Growth Boundary by only allowing agricultural uses where land is designated for such use on the City's General Plan Land Use Map.

The following apply to the Growth Boundary:

- The Growth Boundary may only be revised as part of a comprehensive update of the General Plan involving, at a minimum, the Land Use and Circulation elements.
- Any revision to the Growth Boundary shall be accompanied by a statement of findings which demonstrate the following:
 - 1) That the revision is consistent with the intent of the Growth Boundary and all other applicable policies in this General Plan
 - 2) That the revision is necessary to accommodate planned growth in Madera

Policy LU-11: The City specifically envisions the establishment and maintenance of a greenbelt of agricultural and other open space lands around the urbanized portion of the Planning Area, outside the Growth Boundary, as shown on the Land Use Map. In addition to the maintenance of appropriate agricultural land use designations, the City encourages the use of Williamson Act contracts and similar mechanisms to ensure the maintenance of the greenbelt. Along the west edge of the Planning Area, the Greenbelt is intended to be permanent, and the implementing mechanisms on the west edge should reflect that intent, including transfer of development rights, permanent conservation easements, etc. (See specific policies for Villages D & E for requirements to establish a permanent edge/buffer on the western boundary of these Villages.)

Policy LU-13: The City shall support the annexation of property to its boundaries for the purpose of new development only when it determines that the following conditions exist:

- 1) Sufficient public infrastructure, facilities, and services are available or will be provided in conjunction with new development; and
- 2) Demands on public infrastructure, facilities and services created by the new development will not result in reductions in capacity that is necessary to serve the existing city limits (including demand created by infill development), reductions in existing service levels within the city limits, or the creation of detrimental fiscal impacts on the City.

Policy LU-18: The City may, as it deems necessary, annex rural or agricultural areas into the City to facilitate the development of the City and/or protect agricultural and

open spaces and allow for their operation at different service standards than urbanized areas.

Policy LU-32: Zoning shall be consistent with General Plan land use designations. In areas where the zoning and the land use designation are not identical, Table LU-B shall be used to determine consistency for rezoning applications.

TABLE LU-B: GENERAL PLAN/ZONING CONSISTENCY

General Plan Land Use Category	Consistent Zoning Districts
Residential Categories	
Very Low Density Residential	UR, U
Low Density Residential	RA, R-1, PD-6000, PD-8000, PD-12000
Medium Density Residential	R-2, PD-4500, PD-3000
High Density Residential	R-3, PD-2—, PD-1500
Village Categories	
Village Reserve	All Districts
Village Mixed Use	C-R, C-N, C-1, C-2, C-H, PO, PD Zones
Commercial Categories	
Commercial	C-R, C-N, C-1, C-2, C-H
Office	PO
Industrial Categories	
Industrial	I, IP
Agriculture, Open Space, and Public	
Resource Conservation/Agriculture	RCO, UR
Open Space	RCO
Other Public and Semi-Public	PF

Policy HS-31: The City shall consider the recommendations in the Airport Land Use Compatibility Plan for Madera Airport in the review of potential land uses or projects.

Policy HS-32: The City shall ensure that new development near Madera Airport is designed to protect public safety from airport operations consistent with recommendations and requirements of the Airport Land Use Commission, the Federal Aviation Administration, and other responsible agencies.

The potential inconsistencies between the proposed General Plan and current Zoning Ordinance would be resolved through compliance with state law and implementation of the above-listed policies, both of which require the City to update its Zoning Map to comply with the General Plan, once it is adopted. Policy HS-32 would specifically ensure that development near the airport does not result in conflicts with airport safety provisions. Therefore, potential inconsistencies between the proposed General Plan Update and the City's Zoning Code are considered a **less than significant** impact.

4.1 LAND USE

The potential inconsistencies identified between the County General Plan and the proposed City General Plan would be resolved upon annexation of those areas currently under County jurisdiction as required and encouraged by the proposed policies listed above. However, as discussed above, the environmental effects would still be greater under the proposed City General Plan Update. This is because the City General Plan designates some lands for urban uses that are currently designated for agriculture under the County General Plan. Therefore, this impact is considered **significant and unavoidable**.

Mitigation Measures

No feasible mitigation is available to offset the project's conflict with the Madera County General Plan. This impact would be **significant and unavoidable**.

4.1.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

As previously described, the City of Madera Planning Area is located in the southern portion of Madera County. The land use policies in the proposed City of Madera General Plan Update would provide direction for growth within the city limits, while the Madera County General Plan policies provides direction for growth outside the city limits, but within the Planning Area boundaries (until land areas are annexed into the City). Thus, the setting for this cumulative analysis includes existing, proposed, approved, and planned projects in the City of Madera General Plan Planning Area and surrounding portions of unincorporated Madera County. The cumulative setting for land use impacts includes buildout conditions, which is expected to occur after the year 2030. Buildout of the proposed General Plan Update is not expected to occur until roughly 2065, based on a projected residential growth rate of around 2.65 percent per year. Development in the region identified in Section 4.0 would change the intensity of land uses in the region. In particular, the cumulative development scenario would increase development in the southern portion of Madera County and would provide additional housing, employment, shopping, and recreational opportunities.

Environmental effects associated with cumulative land use conditions for the region are considered in Sections 4.2 through 4.13 of this Draft EIR and generally consist of the following:

- Aesthetics – Further conversion of rural, agricultural, and natural open space landscape characteristics to urban conditions.
- Agricultural Resources – Continued loss of farmland to urban uses as well as increased conflicts with agricultural operations and urban uses.
- Air Quality – Increases in air pollutant emissions potentially conflicting with air quality attainment efforts under state and federal Clean Air Acts. Also increased potential for the exposure to toxic air contaminants.
- Biological Resources – Loss of special-status plant and animal species habitats, degradation of habitats, and loss of special-status species.
- Cultural Resources – Impacts to known and unknown archaeological and historic resources in the region.
- Geology and Soils – Loss of access to known valuable mineral resources.

- Hydrology and Water Quality – Additional sources of point and non-point sources of surface water quality pollutants to region waterways. Further demand on groundwater resources and potential overdraft issues.
- Noise – Increased transportation noise levels from increased traffic volumes.
- Public Services and Utilities – Increased demand for the development and expansion of public services and facilities and associated environmental issues.
- Traffic – Increased traffic volumes on the region's highways and regional roadways resulting in deficient levels of service of operation.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Land Use Impacts

Impact 4.1.3 When considered with existing, proposed, approved, and planned development in the region, implementation of the proposed City of Madera General Plan has the potential to further contribute to cumulative land use changes among local land use plans in the region, resulting in significant impacts to the physical environment. This is considered a **cumulatively considerable** and **significant and unavoidable** impact as a result of the increased environmental effects of growth beyond current adopted land use plans.

The more intensive land use patterns within the Planning Area under the proposed General Plan Update would contribute to the environmental effects of growth anticipated to occur in the region over the next 30 years as described above under Cumulative Setting. The proposed General Plan provides environmental benefits by accommodating a larger population and employment base within the Planning Area through the intensification of development and provision of transit and opportunities for alternative transportation. The proposed General Plan Update would also designate more land for open space as compared to the existing County General Plan and would establish a permanent agricultural buffer surrounding the city (see **Table 4.1-4**). This would assist in reducing the conversion of additional land area under lower development intensities and preserve natural and agricultural land. However, the proposed General Plan land use pattern and development intensity would still substantially contribute to the conversion of land in the region to more urban uses through the designation of currently vacant lands for residential, mixed use, commercial, and industrial development. The significant environmental effects of such conversions are discussed and analyzed in greater detail in the various sections of this Draft EIR that relate specifically to those particular issue areas (see Section 4.2 through 4.13).

Implementation of the proposed General Plan Update could also contribute to cumulative land use incompatibilities in the region. As described under Impact 4.1.1 above, continued enforcement of the City of Madera Code of Ordinances and implementation of the proposed General Plan policies would adequately minimize potential land use incompatibilities within the Planning Area. Therefore, the proposed project's contribution to land use incompatibilities in the region would be considered less than cumulatively considerable.

4.1 LAND USE

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan contains several goals, policies, and action items that would assist in reducing this cumulative impact regarding cumulative land use impacts. The reader is referred to Impact 4.4.3 for the list of policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards to assist in reducing this impact.

Mitigation Measures

The potential inconsistencies identified between the County General Plan and the proposed City General Plan would be resolved upon annexation of those areas currently under County jurisdiction as required and encouraged by the proposed policies listed above. However, as discussed above, the environmental effects would still be greater under the proposed City of Madera General Plan Update and would result in a cumulatively considerable contribution to these impacts (see **Table 4.1-4**). Therefore, this impact is considered **significant and unavoidable**. There are no mitigation measures available to completely offset the environmental effects of the proposed General Plan Update.

REFERENCES

Madera County. July 1995. *Madera State Center Community College Specific Plan*. Prepared by Vail Engineering Corp. and Michael Brandman Associates.

Madera County. 1995. *Madera County General Plan Policy Document*.

Madera County Airport Land Use Commission (ALUC). 1993. *Airport Land Use Compatibility Plan: Madera County Airports*. Prepared by Hodges & Shutt.

Madera County Transportation Commission. 2007. *Madera County 2007 Regional Transportation Plan*.

4.2 AGRICULTURAL RESOURCES

This section describes the agricultural resources that exist within the City of Madera Planning Area, characterizes agricultural land uses, and discusses adopted plans and policies pertinent to the area. The analysis then addresses potential impacts associated with the General Plan Update, either directly or indirectly, and identifies mitigation measures to lessen those impacts. Please refer to Section 4.1, Land Use, for discussions regarding other types of land use.

4.2.1 EXISTING SETTING

EXISTING MADERA COUNTY AGRICULTURAL OPERATIONS

Agriculture plays a significant role in the economy of Madera County and the City of Madera. According to the County's 2007 Crop and Livestock Report, Madera County ranked 13th out of the state's 58 counties in agricultural production and 23rd out of all counties in the United States (Madera County Department of Agriculture, 2007). The total value of agricultural production in 2007 was approximately \$1.22 billion. **Table 4.2-1** lists the ten leading farm commodities in Madera County.

TABLE 4.2-1
MADERA COUNTY LEADING FARM COMMODITIES, 2007

Commodity	Value
Milk	\$302 million
Almonds, Nuts and Hulls	\$248 million
Grapes	\$225 million
Pistachios	\$83 million
Replacement Heifers	\$54 million
Alfalfa	\$43 million
Cattle and Calves	\$40 million
Nursery Stock	\$35 million
Poultry	\$26 million
Corn	\$21 million

Source: Crop and Livestock Report 2007, Madera County Department of Agriculture, 2007

Total farm employment in Madera County in 2007 was 10,300 employees, accounting for almost 23 percent of all jobs in the county (Madera County Department of Agriculture, 2007). Total employment in the county in 2007 was approximately 45,300.

Planning Area

As mentioned in Section 4.1, Land Use, agricultural uses account for approximately 44,357 acres in the Madera Planning Area, 957 acres of which fall within the current city limits. Of the remaining amount, approximately 6,641 acres are located within Sphere of Influence and approximately 36,759 acres are located in the planning area, but, outside of the Sphere of Influence. The agricultural land in the Planning Area includes grazing land, row crops, field crops, orchards, vineyards, and dairies.

4.2 AGRICULTURAL RESOURCES

FARMLAND CLASSIFICATIONS AND RATING SYSTEM

Two classification programs are generally used to determine a soil's potential agricultural productivity.

- The USDA Soil and Conservation Service (USDA-SCS) Land Capability Classification System takes into consideration soil limitations, the risk of damage when the soils are used, and the way in which soils respond to treatment.
- The Storie Index Rating system ranks soils based on their suitability for agriculture.

The Farmland Mapping and Monitoring Program (FMMP) administered by the California Department of Conservation maps out agricultural areas based on soil quality and land use, with categories such as "Prime Farmland," "Farmland of Statewide Importance," and "Grazing Lands." More information about each of these classification systems is provided in the following sections of this chapter.

Land Capability Classification System

The Land Capability Classification System designed by the U.S. Department of Agriculture includes eight classes of land designated by Roman numerals I thru VIII. The first four classes are arable land – suitable for cropland – in which the limitations on their use and necessity of conservation measures and careful management increase from I thru IV. The criteria for placing a given area in a particular class involve the landscape location, slope of the field, and depth and texture of the soil. The remaining four classes, V thru VIII, are not to be used for cropland but may have uses for pasture, range, woodland, grazing, wildlife, recreation, and aesthetic purposes. Within the broad classes are subclasses which signify special limitations such as (e) erosion, (w) excess wetness, (s) problems in the rooting zone, and (c) climatic limitations. A general description of soil classification, used by the National Resource Conservation Service (NRCS), is provided in **Table 4.2-2**.

TABLE 4.2-2
SOIL CAPABILITY CLASSIFICATION

Class	Definition
I	Soils have few limitations that restrict their use.
II	Soils have moderate limitations that reduce the choice of plants or that require special conservation practices.
III	Soils have severe limitations that reduce the choice of plants, require conservation practices, or both.
IV	Soils have very severe limitations that reduce the choice of plants, require very careful management, or both.
V	Soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture or range, woodland, or wildlife habitat.
VI	Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife habitat.
VII	Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife habitat.
VIII	Soils and landforms have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife habitat, or water supply, or to aesthetic purposes.

U.S. Department of Agriculture, 2008

Storie Index Rating System

The Storie Index Rating System ranks soil characteristics according to their suitability for agriculture. Ratings range from Grade 1 soils (80 to 100 rating), which have few or no limitations for agricultural production, to Grade 6 soils (less than 10), which are not suitable for agriculture. Under this system, soils deemed less than prime can function as prime soils when limitations such as poor drainage, slopes, or soil nutrient deficiencies are partially or entirely removed. The six grades, ranges in index rating, and definition of grades defined by the NRCS are provided below in **Table 4.2-3**.

TABLE 4.2-3
STORIE INDEX RATING SYSTEM

Grade	Index Rating	Definition
1 – Excellent	80 –100	Soils are well suited to intensive use for growing irrigated crops that are climatically suited to the region.
2 – Good	60 –79	Soils are good agricultural soils, although they may not be so desirable as Grade 1 because of moderately coarse, coarse, or gravelly surface soil texture; somewhat less permeable subsoil; lower plant available water holding capacity, fair fertility; less well drained conditions, or slight to moderate flood hazards, all acting separately or in combination.
3 – Fair	40 –59	Soils are only fairly well suited to general agricultural use and are limited in their use because of moderate slopes; moderate soil depths; less permeable subsoil; fine, moderately fine or gravelly surface soil textures; poor drainage; moderate flood hazards; or fair to poor fertility levels, all acting alone or in combination.
4 – Poor	20 –39	Soils are poorly suited. They are severely limited in their agricultural potential because of shallow soil depths; less permeable subsoil; steeper slope; or more clayey or gravelly surface soil textures than Grade 3 soils, as well as poor drainage; greater flood hazards; hummocky micro-relief; salinity; or fair to poor fertility levels, all acting alone or in combination.
5 – Very Poor	10 –19	Soils are very poorly suited for agriculture, are seldom cultivated and are more commonly used for range, pasture, or woodland.
6 – Nonagricultural	Less than 10	Soils are not suited for agriculture at all due to very severe to extreme physical limitations, or because of urbanization.

Source: U.S. Department of Agriculture, 2008

The “prime” soil classifications of both systems indicate the absence of soil limitations which if present would require the application of management techniques (e.g., drainage, leveling, special fertilizing practices) in order to enhance production.

Farmland Mapping and Monitoring Program

The Farmland Mapping and Monitoring Program (FMMP) was established in 1982 to continue the important farmland mapping efforts begun in 1975 by the U.S. Department of Agriculture, Soil Conservation Service (USDA-SCS). The intent of the USDA-SCS was to produce agricultural resource maps based on soil quality and land use across the nation. As part of the nationwide agricultural land use mapping effort, the USDA-SCS developed a series of definitions known as Land Inventory and Monitoring (LIM) criteria. The LIM criteria classified land’s suitability for agricultural production. Suitability included both the physical and chemical characteristics of soils and the actual land use. Important Farmland Maps are derived from the USDA-SCS soil survey maps using the LIM criteria.

4.2 AGRICULTURAL RESOURCES

Since 1980, the State of California has assisted the USDA-SCS with completing its mapping in the state. The FMMP was created within the California Department of Conservation (DOC) to carry on the mapping activity on a continuing basis and with a greater level of detail. The DOC applied a greater level of detail by modifying the LIM criteria for use in California. The LIM criteria in California utilize the SCS and Storie Index Rating Systems but also consider physical conditions such as a dependable water supply for agricultural production, soil temperature range, depth of the groundwater table, flooding potential, rock fragment content, and rooting depth.

Important Farmland Maps for California are compiled using the modified LIM criteria. The minimum mapping unit is 10 acres unless otherwise specified. Units of land smaller than 10 acres are incorporated into the surrounding classification. The Important Farmland Maps identify five agriculture-related categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land. Each is summarized below, based on A Guide to the Farmland Mapping and Monitoring Program (1994) prepared by the Department of Conservation. **Figure 4.2-1** shows the mapped categories. The FMMP data is updated and released every two years. The most current information available from the FMMP is from 2008.

Prime Farmland

Prime farmland is land with the best combination of physical and chemical features able to sustain the long-term production of agricultural crops. These lands have the soil quality, growing season, and moisture supply needed to produce sustained high yields. Lands defined as Prime Farmland must have been used for production of irrigated crops at some time during the four years prior to the Important Farmland Map date.

Farmland of Statewide Importance

Farmland of Statewide Importance is land similar to Prime Farmland but with minor shortcomings such as greater slopes or with less ability to hold and store moisture. The land must have been used for the production of irrigated crops at some time during the four years prior to the Important Farmland Map date.

Unique Farmland

Unique Farmland is land of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards, as found in some climatic zones in California. The land must have been cultivated at some time during the four years prior to the Important Farmland Map date.

Farmland of Local Importance

Farmland of Local Importance is land of importance to the local agricultural economy, as determined by each county's Board of Supervisors and a local advisory committee. Farmland of Local Importance in Madera County includes lands which do not qualify as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland, but are currently used for irrigated crops, pasture, or non-irrigated crops; lands that would meet the Prime or Statewide designation and have been improved for irrigation but are now idle; and lands that currently support confined livestock, poultry operations, and aquaculture.

Grazing Land

Grazing Land is land on which the existing vegetation, whether grown naturally or through management, is suited to the grazing of livestock. The minimum mapping unit for this category is 40 acres.

IMPORTANT FARMLAND MAP

Figure 4.2-1 depicts Important Farmland in the Planning Area, as identified by the FMMP. **Table 4.2-5** provides a breakdown of Important Farmland acreage based on the FMMP categories. There are approximately 20,161 acres of Prime Farmland in the entire Planning Area, along with approximately 6,893 acres of Farmland of Statewide Importance. These two categories account for approximately 40 percent of the total number of acres in the Planning Area. There are also approximately 11,751 acres of Unique Farmland and 2,581 acres of Farmland of Local Importance. These categories account for another 21.3 percent of land in the Planning Area. **Table 4.2-5** and **Figure 4.2-1** do not take into account any development in the Planning Area after 2006, when the most recent Important Farmland Map was published.

Planning Area Characteristics

As described in Section 4.6, Geology and Soils, soils in the Planning Area are categorized into 23 classes. The most predominant soil classes are San Joaquin, Cometa, and Hanford, which account for almost half of the total Planning Area acreage. Each soil class has various soil types with their own characteristics related to agricultural productivity. **Table 4.2-4** lists the soil types in the Planning Area, along with their soil capability classifications, Storie Index ratings, and grades as well as any designation as Prime Farmland, Farmland of Statewide Importance, or Not Prime Farmland. Of the 68 soil types listed (excluding Gravel Pit, Riverwash, and Water categories), 41 are classified as being Prime Farmland if irrigated or Farmland of Statewide Importance.

4.2 AGRICULTURAL RESOURCES

TABLE 4.2-4
ONSITE LAND CAPABILITY CLASSIFICATION AND STORIE INDEX RATING

Map Unit Symbol and Name	Land Capability Classification ¹	Storie Index Grade	Prime or Statewide Importance Farmlands
AsA – Alamo clay, 0-1% slopes	4w/3w	Nonagricultural	Not Prime Farmland
AtA – Atwater loamy sand, 0-3% slopes	3e/2e	Good	Prime Farmland if irrigated
AtB – Atwater loamy sand, 3-8% slopes	3e/2e	Good	Prime Farmland if irrigated
AwA – Atwater loamy sand, moderately deep and deep over hardpan, 0-3% slopes	4e/3e	Fair	Prime Farmland if irrigated
AwB – Atwater loamy sand, moderately deep and deep over hardpan, 3-8% slopes	4e/3e	Poor	Prime Farmland if irrigated
BfA – Borden fine sandy loam, 0-1% slopes	4s/2s	Excellent	Prime Farmland if irrigated
BkA – Borden fine sandy loam, slightly saline-alkali, 0-1% slopes	4s/3s	Good	Prime Farmland if irrigated
BmA – Borden loam, 0-1% slopes	4s/2s	Excellent	Prime Farmland if irrigated
CaA – Cajon loamy sand, 0-1% slopes	4e/3e	Fair	Farmland of Statewide Importance
CfA – Chino fine sandy loam, 0-1% slopes	4w/2w	Good	Prime Farmland if irrigated
CfA - Chino fine sandy loam, slightly saline-alkali, 0-1% slopes	4s/2s	Fair	Prime Farmland if irrigated
CgA – Chino loam, 0-1% slopes	4w/2w	Good	Prime Farmland if irrigated
CsB – Cometa gravelly sandy loam, 3-8% slopes	4e/4e	Excellent	Not Prime Farmland
CuA – Cometa sandy loams, 0-3% slopes	4s/4s	Excellent	Not Prime Farmland
CuB – Cometa sandy loams, 3-8% slopes	4e/4e	Excellent	Not Prime Farmland
CuC – Cometa sandy loams, 8-15% slopes	4e/4e	Excellent	Not Prime Farmland
CwB – Cometa-Whitney sandy loams, 3-8% slopes	Com: 4e/4e Whit: 4e/3e	Poor	Not Prime Farmland
CwC – Cometa-Whitney sandy loams, 8-15% slopes	4e/4e	Poor	Not Prime Farmland
DeA – Delhi sand, 0-3% slopes	4e/3e	Fair	Farmland of Statewide Importance
DeB – Delhi sand, 3-8% slopes	4e/3e	Fair	Farmland of Statewide Importance
DfA – Delhi sand, moderately deep and deep over hardpan, 0-3% slopes	4e/3e	Fair	Not Prime Farmland

Map Unit Symbol and Name	Land Capability Classification ¹	Storie Index Grade	Prime or Statewide Importance Farmlands
FecA – Fresno and El Peco fine sandy loams. Strongly saline-alkali, 0-1% slopes	Fres: 6s/4s EP: 6s/6s	Very Poor	Not Prime Farmland
GaA – Grangeville fine sandy loam, 0-1% slopes	4c/1	Good	Prime Farmland if irrigated
GbA – Grangeville fine sandy loam, slightly saline-alkali, 0-1% slopes	4s/2s	Fair	Prime Farmland if irrigated
GmA – Grangeville sandy loam, 0-1% slopes	4c/1	Good	Prime Farmland if irrigated
Gp – Gravel pits	8/--	Not rated	Not Prime Farmland
GrA – Greenfield coarse sandy loam, 0-3% slopes	4c/1	Good	Prime Farmland if irrigated
GsA – Greenfield fine sandy loam, 0-3% slopes	4c/1	Excellent	Prime Farmland if irrigated
GuA – Greenfield sandy loam, 0-3% slopes	4c/1	Good	Prime Farmland if irrigated
GuB – Greenfield sandy loam, 3-8% slopes	4e/2e	Excellent	Prime Farmland if irrigated
GvA – Greenfield sandy loam, moderately deep and deep over hardpan, 0-3% slopes	4s/2s	Poor	Prime Farmland if irrigated
GvB – Greenfield sandy loam, moderately deep and deep over hardpan, 3-8% slopes	4e/2e	Fair	Prime Farmland if irrigated
HaA – Hanford fine sandy loam, 0-1% slopes	4c/1	Excellent	Prime Farmland if irrigated
HbA – Hanford fine sandy loam, moderately deep and deep over hardpan, 0-1% slopes	4s/3s	Excellent	Farmland of Statewide Importance
HdA – Hanford (ripperdan) fine sandy loam, moderately deep and deep over silt, 0-3% slopes	4s/3s	Good	Farmland of Statewide Importance
HfA – Hanford sandy loam, 0-3% slopes	4c/1	Good	Prime Farmland if irrigated
HgA – Hanford sandy loam, moderately deep and deep over hardpan, 0-3% slopes	4s/3s	Good	Farmland of Statewide Importance
HhA – Hanford sandy loam, moderately deep over sand, 0-3% slopes	3e/3e	Good	Farmland of Statewide Importance
LeA – Lewis loam, slightly saline-alkali, 0-1% slopes	4s/3s	Poor	Not Prime Farmland
LwA – Lewis loam, moderately saline-alkali, 0-1% slopes	4s/4s	Very Poor	Not Prime Farmland
MaA – Madera fine sandy loam, 0-3% slopes	4s/4s	Poor	Not Prime Farmland
MbA – Madera loam, 0-3% slopes	4s/4s	Poor	Not Prime Farmland

4.2 AGRICULTURAL RESOURCES

Map Unit Symbol and Name	Land Capability Classification ¹	Storie Index Grade	Prime or Statewide Importance Farmlands
McA – Madera-Alamo complex, 0-1% slopes	Mad: 4s/4s Ala: 4w/3w	Poor	Not Prime Farmland
MdA – Madera-Lewis complex, slightly saline-alkali, 0-1% slopes	Mad: 4s/4s Lew: 4s/3s	Poor	Not Prime Farmland
MtB – Montpelier coarse sandy loam, 3-8% slopes	4e/–	Excellent	Not Prime Farmland
MtC – Montpelier coarse sandy loam, 8-15% slopes	4e/–	Good	Not Prime Farmland
PaA – Pachappa fine sandy loam, 0-1% slopes	4c/1	Excellent	Prime Farmland if irrigated
PbA – Pachappa fine sandy loam, slightly saline-alkali, 0-1% slopes	4s/2s	Good	Prime Farmland if irrigated
PcA – Pachappa sandy loam, 0-1% slopes	4c/1	Excellent	Prime Farmland if irrigated
PdA – Pachappa sandy loam, slightly saline-alkali, 0-1% slopes	4s/2s	Good	Prime Farmland if irrigated
RaA – Ramona sandy loam, 0-3% slopes	4s/2s	Excellent	Prime Farmland if irrigated
Rh – Riverwash	8/–	Not rated	Not Prime Farmland
SaA – San Joaquin sandy loams, 0-3% slopes	4s/4s	Poor	Not Prime Farmland
SbA – San Joaquin-Alamo complex, 0-3% slopes	SJ: 4s/4s Alamo: 4w/3w	Poor	Not Prime Farmland
ScB – San Joaquin-Whitney sandy loams, 0-8% slopes	SJ: 4s/4s Whit: 4e/3e	Poor	Not Prime Farmland
TmA – Traver loam, slightly saline-alkali, 0-1% slopes	6s/2s	Fair	Farmland of Statewide Importance
TnA – Traver loam, moderately saline-alkali, 0-1% slopes	6s/3s	Fair	Farmland of Statewide Importance
ToA – Traver loam, strongly saline-alkali, 0-1% slopes	6s/4s	Very Poor	Not Prime Farmland
TuB – Trigo fine sandy loam, 3-8% slopes	4e/4e	Fair	Not Prime Farmland
TuC – Trigo fine sandy loam, 8-15% slopes	4e/4e	Fair	Not classified
TwA – Tujunga loamy sand, 0-3% slopes	6e/3e	Fair	Farmland of Statewide Importance
TxA – Tujunga loamy sand, moderately deep and deep over hardpan, 0-3% slopes	6e/3e	Not rated – missing data	Not Prime Farmland

Map Unit Symbol and Name	Land Capability Classification ¹	Storie Index Grade	Prime or Statewide Importance Farmlands
TzB – Tujunga and Hanford soils, channeled, 0-8% slopes	Tuj: 6e/3e Han: 4e/2e	Good	Not Prime Farmland
VaA – Visalia fine sandy loam, 0-1% slopes	4c/1	Excellent	Not Prime Farmland
VdA – Visalia sandy loam, 0-3% slopes	4c/1	Good	Prime Farmland if irrigated
VnA – Visalia sandy loam, moderately deep over sand, 0-3% slopes	4e/3e	Good	Farmland of Statewide Importance
W – Water	--/--	Not rated	Not Prime Farmland
WfB – Whitney fine sandy loam, 3-8% slopes	4e/3e	Poor	Farmland of Statewide Importance
WfC – Whitney fine sandy loam, 8-15% slopes	4e/3e	Poor	Farmland of Statewide Importance
WrB – Whitney and Rocklin sandy loams, 3-8% slopes	Whit: 4e/3e Rock: 4e/3e	Poor	Not Prime Farmland
WxA – Wunje very fine sandy loam, strongly saline-alkali, 0-1% slopes	4s/4s	Very Poor	Not Prime Farmland

Source: U.S. Department of Agriculture, 2008

Notes: 1) First classification is for non-irrigated land; second classification is for irrigated land.

4.2 AGRICULTURAL RESOURCES

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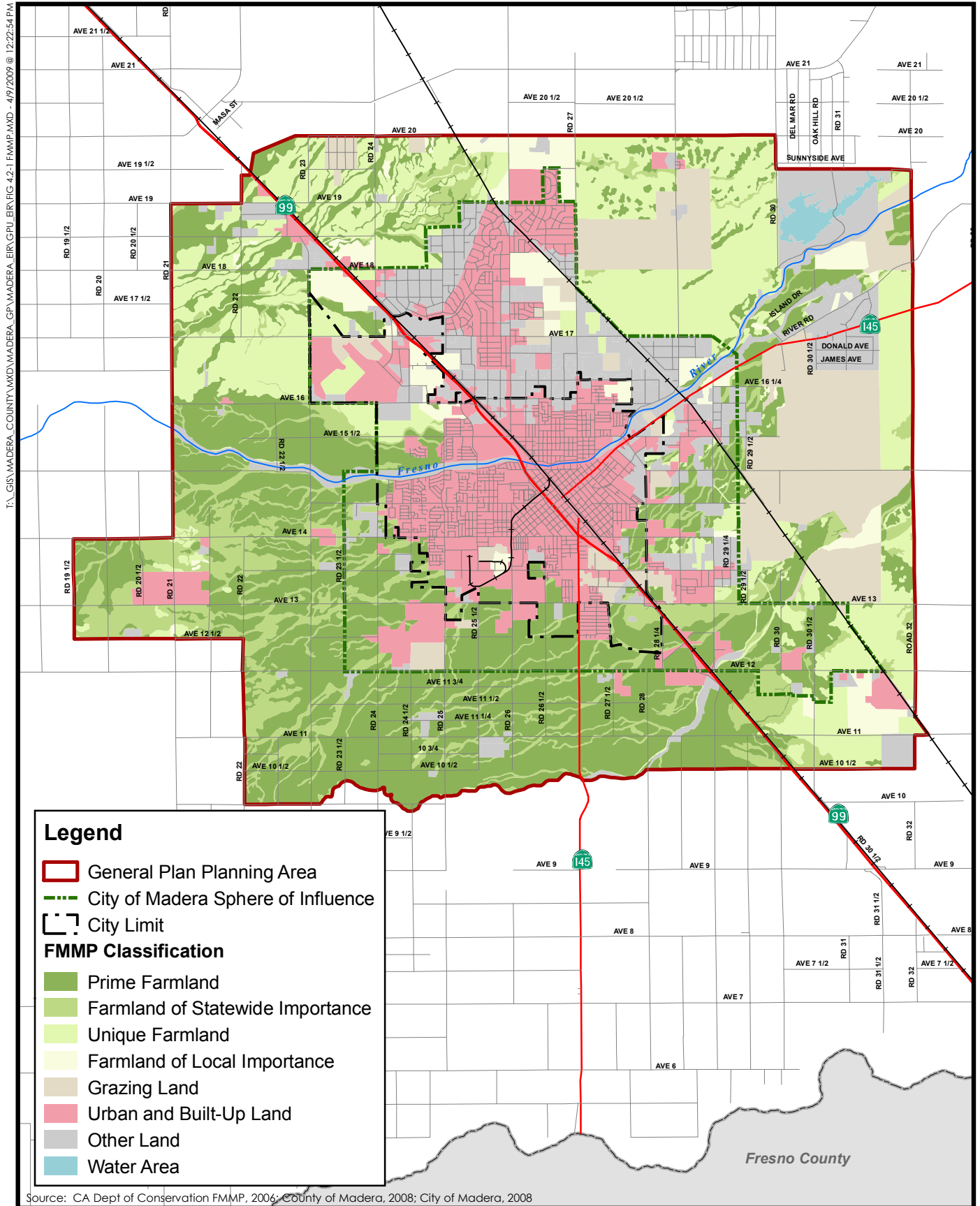


Figure 4.2-1
Important Farmland Classification (FMMP)

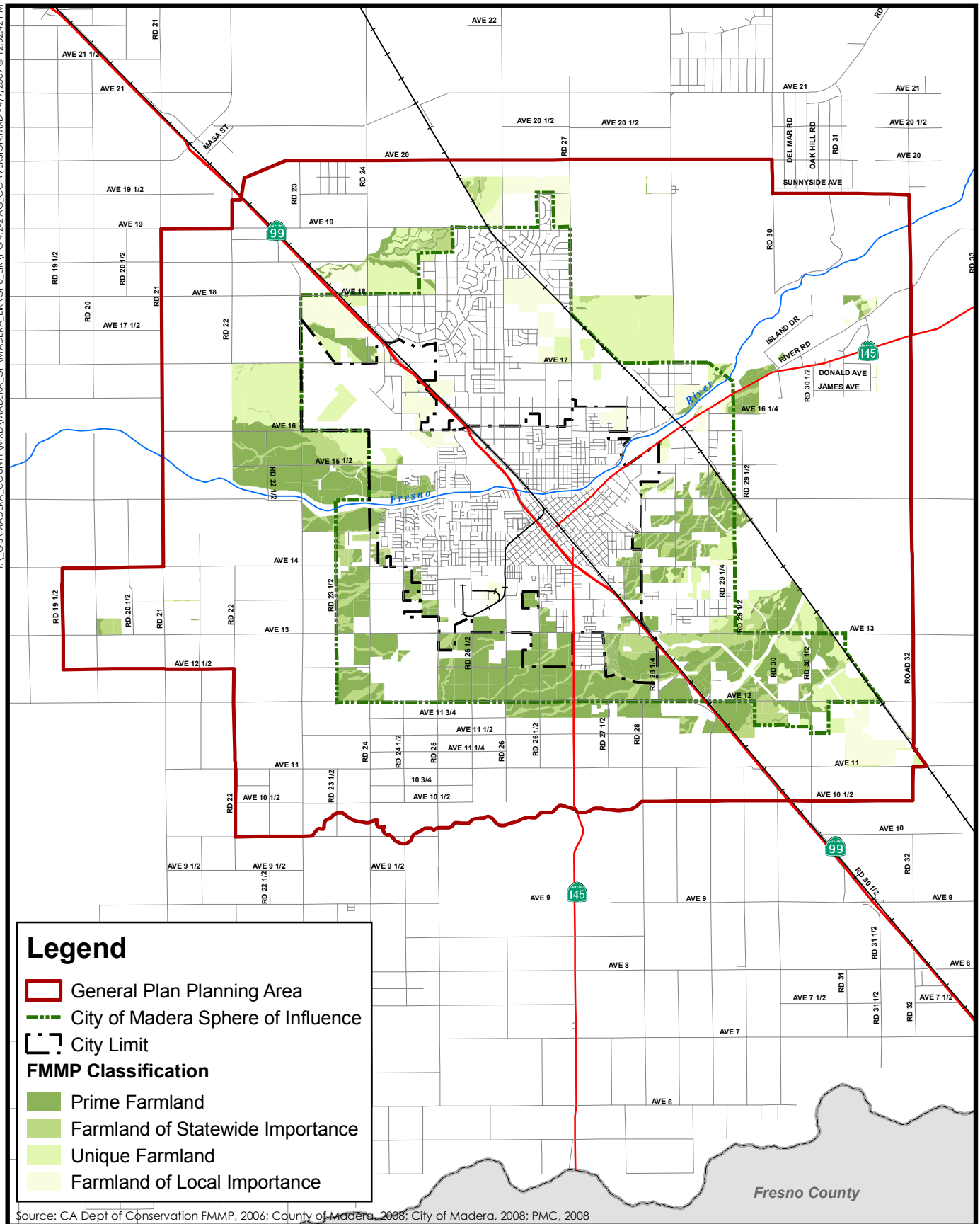


Figure 4.2-2
Agricultural Conversion

TABLE 4.2-5
IMPORTANT FARMLAND IN MADERA PLANNING AREA

Farmland Type	Important Farmland (acres)			Total Acres
	City Limits (2008) Only	SOI outside City	Planning Area outside SOI	
Prime Farmland	958	3,916	15,186	20,060
Farmland of Statewide Importance	318	1,187	5,387	6,892
Unique Farmland	393	956	10,402	11,751
Farmland of Local Importance	363	793	1,425	2,581
Grazing Land	383	559	5,616	6,558
Urban and Built-up Land	6,043	3,505	1,117	10,665
Other Land*	1,053	4,120	3,419	8,592
Water	0	0	306	306
Total	9,511	15,036	42,858	67,405

Source: Department of Conservation, Farmland Mapping and Monitoring Program, 1994a

Note: The total acreage in this table does not equal the total acres for the Planning Area as given in **Table 4.1-1** in Section 4.1, Land Use. This is due to rounding and to slight differences in the information bases used to calculate the tables.

*Other Uses indicate those not otherwise placed in a FMMP category. For the Madera Planning Area, this includes natural vegetation, rural residential or rural commercial, confined animal agricultural, and vacant lands.

FARMLAND CONVERSION

The conversion of lands suitable for agricultural to urban development and other uses is an issue of concern in California. **Table 4.2-6** summarizes the conversion of agricultural lands that occurred between 1984 and 2006 in Madera County. While Important Farmlands have decreased in acreage in Madera County between 1984 and 2006, Unique Farmland has increased. This increase can be explained in part by the FMMP's redistribution of categories in 1994 and 1998.

Nevertheless, as shown in **Table 4.2-6**, the total amount of agricultural land within the county decreased by approximately 3.6 percent from 1984 to 2006 – an average annual loss of 1,315 acres, or an annual loss of about two-tenths of 1 percent. The percentage decrease in Important Farmland was greater – approximately 5.8 percent over the 22-year period. This decrease equates to an average loss of approximately 1,026 acres of Important Farmland annually, which includes land both in and out of production. **Figure 4.2-2** shows Important Farmland that will be converted to urban land uses as a result of the City of Madera General Plan buildout.

4.2 AGRICULTURAL RESOURCES

TABLE 4.2-6
ACRES OF IMPORTANT FARMLANDS AND GRAZING LANDS – MADERA COUNTY (1984–2006)

Year	Important Farmland Acres				Total Important Farmlands	Grazing Land	Total Agricultural Lands
	Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance			
1984	103,630	86,456	154,903	43,013	388,002	406,090	794,092
1986	103,655	86,477	155,266	40,330	385,728	408,604	794,332
1988	103,859	86,433	156,149	40,266	386,707	404,260	790,967
1990	103,728	86,333	156,186	39,509	385,756	403,939	789,695
1992	103,428	85,955	156,441	37,978	383,802	404,070	787,872
1994	103,083	85,792	156,271	36,600	381,746	402,963	784,709
1996	102,531	85,709	156,434	37,002	381,676	401,701	783,377
1998	102,125	85,397	160,891	30,576	378,989	399,229	778,218
2000	102,051	85,078	163,591	24,042	374,762	401,592	776,354
2002	100,676	84,661	164,587	21,062	370,986	401,227	772,213
2004	99,562	86,041	163,887	18,797	368,287	399,291	767,578
2006	98,681	85,362	163,977	17,415	365,435	399,724	765,159
Net Acreage Changes	-4,949	-1,094	9,074	-25,598	-22,567	-6,366	-26,933
Annual Average Difference	-225	-50	+412	-1,164	-1,026	-289	-1,315

Source: California Department of Conservation, Madera County 1984-2006 Land Use Summary, 2006

Note that **Table 4.2-6** provides data related to farmland conversion countywide and is not limited to property within the Planning Area. Additionally, it is important to note that only a portion of this farmland is being lost due to conversion to urban uses. Approximately 6,307 acres of land in Madera County were converted from agricultural land to urban uses from 1984 to 2006, an average of 287 acres per year. However, most of the converted agricultural land in Madera County converted to "other land," a broad category that includes lands not otherwise classified by the FMMP. As part of a pilot program begun in 2002, the FMMP has kept records of the changes in acreage of "other lands" in four San Joaquin Valley counties, including Madera County. **Table 4.2-7** provides an inventory of Madera County "other lands," referred to in the pilot program as Rural Land Uses, from 2002 to 2006.

TABLE 4.2-7
FMMP RURAL LAND USES IN MADERA COUNTY, 2002–2006

Land Use Category	Acreage Inventoried			Total Acreage Change	Annual Average Change
	2002	2004	2006		
Rural Residential and Commercial	24,250	27,108	28,188	+ 3,938	+ 985
Confined Animal Agriculture	3,321	3,708	3,990	+ 669	+ 167
Vacant or Disturbed Land	10,202	10,596	10,766	+ 564	+ 141
Nonagricultural and Natural Vegetation	20,941	21,011	20,867	-74	-19
Total	58,714	62,423	63,811	+ 5,097	+ 1,274

Source: Department of Conservation, Farmland Mapping and Monitoring Program, 2006

AGRICULTURAL LAND CONSERVATION

Southwest Madera Agricultural Buffer

In 2002, Madera County farmers joined with County agricultural officials and state and federal conservation agencies to create an area of protected agriculture land in the southwest area of Madera. The 440-acre area was established to help direct growth away from the west edge of Madera in recognition of the agricultural value the land in this area represents. While the protected area creates an irregular and noncontiguous barrier, its presence clearly reflects the intent to keep these and other lands further to the west in agricultural production.

Williamson Act Contract Lands

Madera County participates in the Williamson Act program (described further below). As of 2007, there are 539,290 acres of land inside the county under Williamson Act contracts and in Farmland Security Zones (Department of Conservation, 2007). **Figure 4.2-3** shows lands in the Planning Area under Williamson Act and Farmland Security Zone contracts. Approximately 26,975 acres of land in the Planning Area are under agricultural preservation contracts. Most of this land is located around the edges of the Planning Area. Thirty-nine acres fall within the existing city limits. These 39 acres are in non-renewal status.

The amount of land currently under Williamson Act contract in Madera County has decreased since 1991, the earliest year for which statistics are available. A total of 554,536 acres were under Williamson Act contract in 1991. This means 15,246 fewer net acres are under Williamson Act contracts (539,290 acres) than in 1991, a 2.7 percent decrease. Most of this decrease has occurred through the nonrenewal of Williamson Act contracts. From 2000 to 2005, contracts expired on approximately 8,400 acres of agricultural land (Department of Conservation, 2002, 2004, 2006).

4.2 AGRICULTURAL RESOURCES

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T:\GIS\MADERA_COUNTY\WCD\MADERA_GFW\MADERA_EIR\GPU_EIR\FIG 4.2-3 WILLIAMSON ACT.MXD - 4/9/2009 @ 12:41:14 PM

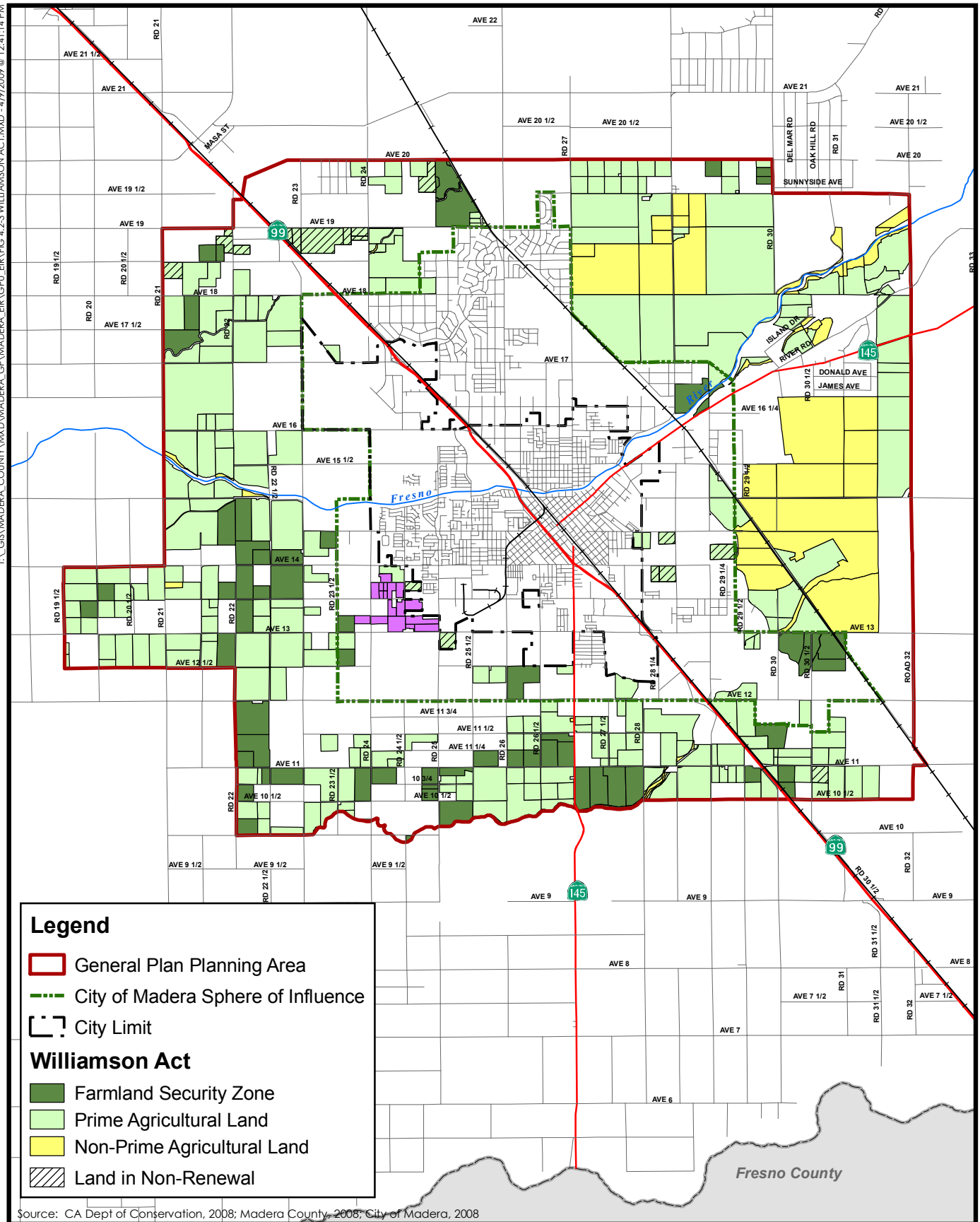


Figure 4.2-3
Williamson Act Lands

4.2.2 REGULATORY FRAMEWORK

FEDERAL

Farmland Protection Policy Act

The Natural Resources Conservation Service (NRCS), a federal agency within the U.S. Department of Agriculture, is the agency primarily responsible for implementation of the Farmland Protection Policy Act (FPPA). The purpose of the FPPA is to minimize federal programs' contribution to the conversion of farmland to nonagricultural uses by ensuring that federal programs are administered in a manner that is compatible with state, local, and private programs designed to protect farmland. NRCS provides technical assistance to federal agencies, state and local governments, tribes, or nonprofit organizations that desire to develop farmland protection programs and policies.

NRCS summarizes FPPA implementation in an annual report to Congress. The FPPA also established the Farmland Protection Program and the Land Evaluation and Site Assessment (LESA), which are discussed below.

Farmland Protection Program

The NRCS administers the Farmland Protection Program, a voluntary program aimed at keeping productive farmland in agricultural uses. Under the Farmland Protection Program, NRCS provides matching funds to state, local or tribal government entities and nonprofit organizations with existing farmland protection programs to purchase conservation easements. The goal of the program is to protect between 170,000 and 340,000 acres of farmland per year (Natural Resources Conservation Service, 2002). Participating landowners agree not to convert the land to nonagricultural use and retain all rights to use the property for agriculture. A minimum of 30 years is required for conservation easements and priority is given to applications with perpetual easements. NRCS provides up to 50 percent of the fair market value of the easement being conserved (Natural Resources Conservation Service, 2002).

To qualify for a conservation easement, farmland must meet several criteria. The land must be:

- Prime, Unique, or other productive soil, as defined by NRCS based on factors such as water moisture regimes, available water capacity, developed irrigation water supply, soil temperature range, acid-alkali balance, water table, soil sodium content, potential for flooding, erodibility, permeability rate, rock fragment content, and soil rooting depth;
- Included in a pending offer to be managed by a nonprofit organization, state, tribal, or local farmland protection program;
- Privately owned;
- Placed under a conservation plan;
- Large enough to sustain agricultural production;
- Accessible to markets for the crop that the land produces; and
- Surrounded by parcels of land that can support long-term agricultural production.

4.2 AGRICULTURAL RESOURCES

In Madera County, the Farmland Protection Program is supplemented by the California Department of Conservation's Important Farmland Inventory System and Farmland Mapping and Monitoring Program, which is discussed in further detail under state regulatory programs below.

Land Evaluation and Site Assessment

Under the California Environmental Quality Act (CEQA), lead agencies may refer to the LESA model in their environmental analysis but are not required to do so. The LESA system ranks lands for suitability and inclusion in the Farmland Protection Program. LESA evaluates several factors, including soil potential for agricultural use, location, market access, and adjacent land use. These factors are used to numerically rank the suitability of parcels based on local resource evaluation and site considerations (Natural Resources Conservation Service, 2002). The LESA system has spawned many variations, including the California LESA model, described below.

STATE

California Environmental Quality Act Definition of Agricultural Lands

Public Resources Code Section 21060.1 defines "agricultural land" as follows:

Agricultural land means prime farmland, farmland of statewide importance or unique farmland, as defined by the United States Department of Agriculture land inventory and monitoring criteria, as modified for California.

This DEIR utilizes this definition for evaluating impacts associated with the loss of agricultural lands as a result of the proposed General Plan Update.

California Department of Conservation

The Department of Conservation administers and supports a number of programs, including the Williamson Act, the California Farmland Conservancy Program, the Williamson Act Easement Exchange Program, and the Farmland Mapping and Monitoring Program (FMMP). These programs are designed to preserve agricultural land and provide data on conversion of agricultural land to urban use. The Department of Conservation is responsible for approving Williamson Act Easement Exchange Program agreements.

Important Farmland Inventory System and Farmland Mapping and Monitoring Program

As discussed above, the Important Farmland Inventory System initiated in 1975 by the U.S. Soil Conservation Service (now NRCS) classifies land based on ten soil and climatic characteristics. The Department of Conservation started a similar system of mapping and monitoring for California in 1980, known as the FMMP.

Under CEQA, the lead agency is required to evaluate agricultural resources in environmental assessments at least in part based on the FMMP. The state's system was designed to document how much agricultural land in California was being converted to nonagricultural land or transferred into Williamson Act contracts. The definitions of Important Farmland types are provided in the Farmland Mapping and Monitoring Program discussion in the Existing Setting section above.

California Land Evaluation and Site Assessment Model

The California LESA model was developed in 1997 based on the federal LESA system. It can be used to rank the relative importance of farmland and the potential significance of its conversion on a site-by-site basis. The California LESA model considers the following factors: land capability, Storie index, water availability (drought and non-drought conditions), land uses within one-quarter mile, and "protected resource lands" (e.g., Williamson Act lands) surrounding the property. A score can be derived and used to determine if the conversion of a property would be significant under CEQA.

Williamson Act

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, is a non-mandated state program, administered by counties and cities to preserve agricultural land and discourage the premature conversion of agricultural land to urban uses. The act authorizes local governments and property owners to (voluntarily) enter into contracts to commit agricultural land to specified uses for ten or more years. Once enforceably restricted, the land is valued for taxation based on its agricultural income rather than unrestricted market value. This results in a lower tax rate for owners. In return, the owners guarantee that these properties remain under agricultural production for an initial ten-year period. The contract is renewed automatically unless the owner files a notice of non-renewal, thereby maintaining a constant ten-year contract. Currently, approximately 70 percent of the state's prime agricultural land is protected under this act. Prime farmland under the Williamson Act includes land that qualifies as Class I and II in the Soil Conservation Service (SCS) classification of land or that qualifies for rating 80 to 100 in the Storie index rating. Participation is on a voluntary basis by both landowners and local governments and is implemented through the establishment of agricultural preserves and the execution of Williamson Act contracts.

Termination of a Williamson Act contract through the nonrenewal process is the preferred method to remove the enforceable restriction of the contract. Cancellation is not appropriate when objectives served by cancellation could be served by nonrenewal. Cancellation is reserved for unusual, "emergency" situations. In order to approve tentative cancellation, a board or council must make specific findings based on substantial evidence that a cancellation is consistent with the purposes of the act or in the public interest. Contracts can specify that both findings must be made in order to approve tentative cancellation.

Farmland Security Zones

Farmland Security Zones (FSZs) were established by the legislature in 1998. FSZs are meant to protect participating Important Farmland from development pressure. An FSZ must be located within an agricultural preserve (area designated as eligible for a Williamson Act contract) and designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. The agricultural and open space lands enrolled in the program are protected for a minimum of a 20-year term under an FSZ and are offered an even greater property tax reduction than land under a Williamson Act contract.

Land protected in an FSZ cannot be annexed by a city or county government or school district, which would result in cancellation of a Williamson Act contract (California Department of Conservation, 2001). Nonrenewal and cancellation procedures are similar to those for Williamson Act contracts.

4.2 AGRICULTURAL RESOURCES

LOCAL

City of Madera's Right-to-Farm Ordinance

The City of Madera adopted a right-to-farm ordinance in 1998 (Chapter 10-3.418 of the Madera Municipal Code). This ordinance seeks to protect and encourage agricultural operations in the city, as long as proper and accepted customs and standards are met. The policy states that residents of property in or near agricultural districts should be prepared to accept the inconveniences and discomfort associated with normal farm activities. The policy establishes that no agricultural operation conducted in a manner consistent with proper and accepted customs and standards shall be or become a nuisance due to any changed condition after the operation has been in operation for more than one year, if it was not a nuisance at the time it began. The ordinance also includes a provision to record a right-to-farm notice in conjunction with rezoning and subdivision applications for all such applications within 300 feet of agricultural lands.

Madera County's Right-to-Farm Ordinance

Madera County adopted a right-to-farm ordinance in 1989 (Chapter 6.28 of the Madera County Code). This ordinance seeks to protect and encourage agricultural operations in the county, as long as proper and accepted customs and standards are met. The policy states that residents of property in or near agricultural districts should be prepared to accept the inconveniences and discomfort associated with normal farm activities. The policy establishes that no agricultural operation conducted in a manner consistent with proper and accepted customs and standards shall be or become a nuisance due to any changed condition after the operation has been in operation for more than one year, if it was not a nuisance at the time it began.

County of Madera General Plan

The Madera County General Plan is used as the "blueprint" to guide future development in unincorporated areas of the county, including portions of the City's Planning Area that are outside the Madera city limits. The County General Plan is currently applicable to the Planning Area outside the existing city limits of Madera and will remain so until annexed by the City. The County's General Plan contains the following goals and policies related to agriculture in the proposed Madera Planning Area:

Land Use Element

Goal 1.A. To promote the wise, efficient, and environmentally sensitive use of Madera County land to meet the present and future needs of Madera County residents and businesses.

Policy 1.A.4 The County shall encourage infill development and development contiguous to existing cities and unincorporated communities to minimize premature conversion of agricultural land and other open space lands.

Goal 1.J. To foster cooperative planning and to address regional concerns on a regional basis.

Policy 1.J.3 The County shall coordinate its policies regarding conversion of agricultural lands with the County Local Agency Formation Commission (LAFCO) and the cities of Madera and Chowchilla.

Agricultural and Natural Resources Element

Goal 5.A. To designate adequate agricultural land and promote development of agricultural uses to support the continued viability of Madera County's agricultural economy.

Policy 5.A.1 The County shall maintain agriculturally-designated areas for agricultural uses and direct urban uses to designated new growth areas, existing communities, and/or cities.

Policy 5.A.2 The County shall discourage the conversion of prime agricultural land to urban uses unless an immediate and clear need can be demonstrated that indicates a lack of land for non-agricultural use.

Policy 5.A.3 The County shall seek to ensure that new development and public works projects do not encourage further expansion of urban uses into designated agricultural areas.

Policy 5.A.5 The County shall allow the conversion of existing agricultural land to urban uses only within designated urban and rural residential areas, new growth areas, and within city spheres of influence where designated for urban development on the General Plan Land Use Diagram.

Policy 5.A.6 The County shall encourage continued and, where possible, increased agricultural activities on land designated for agricultural uses.

Policy 5.A.9 The County shall encourage infill development in urban areas as an alternative to expanding urban boundaries into agriculturally-designated areas.

Policy 5.A.11 The County shall facilitate agricultural production by allowing agricultural service uses (i.e., commercial and industrial uses) to locate in agriculturally-designated areas if they relate to the primary agricultural activity in the area. The County shall use the following guidelines to analyze the suitability of a proposed agricultural service use:

- a. The use will not adversely affect agricultural production in the area;*
- b. The use supports local agricultural production; and*
- c. It is compatible with existing agricultural activities and residential uses in the area.*

Policy 5.A.12 The County shall actively encourage enrollments of agricultural lands in its Williamson Act program, particularly on the edges of new growth areas.

4.1.3 IMPACTS AND MITIGATION MEASURES**STANDARDS OF SIGNIFICANCE**

This agricultural resources analysis evaluates the consistency of the proposed General Plan Update according to the following standards, which are based on State CEQA Guidelines

4.2 AGRICULTURAL RESOURCES

Appendix G. An agricultural impact is considered to be significant if implementation of the project would:

- 1) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program (FMMP) of the California Resources Agency, to non-agricultural use;
- 2) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural uses; or
- 3) Conflict with existing zoning for agricultural use or a Williamson Act contract.

METHODOLOGY

Evaluation of potential agricultural impacts of the proposed City of Madera General Plan Update was based on review of the Madera County General Plan and Zoning Code and a field review of the city to better understand the current agricultural/land use interface with the city. The agricultural analysis is based on information gathered from the Madera County General Plan, the Madera County General Plan Update EIR, the California Department of Conservation Farmland Conversion Report, the California Department of Conservation Important Farmlands Map, the Soil Survey of Madera County, California, and the Madera County Agricultural Commissioner's Report. This analysis addresses direct impacts and losses of farmland as well as indirect impacts on agricultural uses (e.g., growth pressure to convert farmlands, conflicts between agricultural operations and urban land uses) as a result of the development of land use designations proposed under the General Plan Update as well as any roadway improvements and implementation of policy provisions.

An attempt was made to use the California LESA model to determine the relative importance of farmland and the potential significance of its conversion. However, after further investigation into the use of this modeling tool, it was determined that the LESA model is not designed for projects the size and scale of the General Plan. While the identification of acreage of Important Farmland within the Planning Area was available, determining the water availability, land uses within a quarter mile, and "protected resource lands" surrounding the Planning Area was impractical due to the size of the project. Therefore, using the LESA model to determine the impact of implementation of the General Plan would have on farmland is considered inappropriate and was rejected as a possible impact determination source.

PROJECT IMPACTS AND MITIGATION MEASURES

Loss and Conversion of Agricultural Land

Impact 4.2.1 Implementation of the proposed General Plan Update would result in the direct loss of important farmlands (Prime Farmland, Unique Farmland, and Farmland of Statewide Importance) as designated by the Farmland Mapping and Monitoring Program. This is considered a **significant and unavoidable** impact.

According to the California State Department of Conservation Important Farmland Map (2006) as indicated in **Table 4.2-4** and depicted in **Figure 4.2-1**, the Planning Area contains approximately 20,061 acres of Prime Farmland and 6,893 acres of Farmland of Statewide Importance (defined hereafter as "important farmlands"). The Planning Area also contains

approximately 2,581 acres of Farmland of Local Importance, 11,751 acres of Unique Farmland, and approximately 6,559 acres of Grazing Land.

General Plan Planning Area – Areas Outside of Existing City Boundaries

Within the General Plan Planning Area outside of existing city boundaries are approximately 57,897 acres of agricultural land, consisting of approximately 19,102 acres of Prime Farmland, 6,575 acres of Farmland of Statewide Importance, 2,218 acres of Farmland of Local Importance, 11,358 acres of Unique Farmland, and 6,175 areas of Grazing Land.

The majority of the Prime Farmland, Farmland of Statewide Importance, and Unique Farmland in the Planning Area outside of existing city limits is located south and west of the City of Madera.

Figure 4.2-2 illustrates that there are important farmland areas that are proposed to be converted to urban land uses under the proposed General Plan Update Land Use Map. Proposed land uses in some areas with Prime Farmland and Farmland of Statewide Importance include Village Reserve, residential land use designations, and commercial land uses.

Implementation of the proposed General Plan Update Land Use Map would result in the conversion of approximately 11,503 acres falling outside of the city limits, within the Growth Boundary. Of the 11,503 acres, 5,347 acres are Prime Farmland, 1,664 acres are Farmlands of Statewide Importance, and 2,997 acres are Unique Farmlands. Loss of this farmland is considered a **significant impact**.

General Plan Planning Area – Areas Within Existing City Boundaries

As indicated in **Table 4.2-5**, the city contains approximately 958 acres of Prime Farmland and 318 acres of Farmland of Statewide Importance. The city also contains approximately 363 acres of Farmland of Local Importance, 393 acres of Unique Farmland, and approximately 383 acres of Grazing Land.

Within the City's current boundaries, the majority of the Prime Farmland, Farmland of Statewide Importance, and Unique Farmland is located within the southern and northwestern portions of the city.

Implementation of the General Plan Land Use Map would result in the conversion of approximately 1,682 acres of important farmland, including 878 acres of Prime Farmland and 292 acres of Farmland of Statewide Importance and 156 acres of Unique Farmland. It should be noted, however, that many of these acres classified as being converted under implementation of the General Plan already have approved tentative maps in place but construction has not yet started. With regard to farmland acreage being converted within the city limits, it has historically been the City's general rule not to annex agricultural properties unless a tentative map is either approved with rezoning or a tentative map application is in process (City of Madera Community Development Department, 2009). Loss of this farmland is considered a **significant impact**.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this agricultural conversion impact. The following list contains those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that assist in reducing (though not eliminating) this impact.

4.2 AGRICULTURAL RESOURCES

In addition to these policy provisions, the proposed General Plan Update Land Use Map establishes an agricultural/open space greenbelt along the perimeter of the Planning Area (see **Figure 3.0-7**). The greenbelt is intended to address the physical effects of agricultural practices on urban uses, such as chemical spraying, noise, etc., to ensure the long-term ability of agricultural uses to continue beyond the expanded urban area of the city and minimize land use conflicts between agricultural land uses and urban land uses.

The General Plan Update proposed urban Growth Boundary, in conjunction with the establishment of an average residential density that is higher for new development than existing residential development, is a feature of the proposed General Plan Update that is intended to minimize the conversion of agricultural lands to urban land uses.

Policy LU-10: *The Growth Boundary is considered by the City to define the physical limits of development in Madera. The City shall direct all future growth in Madera and in the unincorporated area outside the city limits to occur inside the Growth Boundary shown on the Land Use Map in this General Plan. Within the City's Planning Area, the City encourages the County to assist the City in maintaining an agricultural green belt around the Growth Boundary by only allowing agricultural uses where land is designated for such use on the City's General Plan Land Use Map.*

The following apply to the Growth Boundary:

- *The Growth Boundary may only be revised as part of a comprehensive update of the General Plan involving, at a minimum, the Land Use and Circulation elements.*
- *Any revision to the Growth Boundary shall be accompanied by a statement of findings which demonstrate the following:*
 - 1) *That the revision is consistent with the intent of the Growth Boundary and all other applicable policies in this General Plan.*
 - 2) *That the revision is necessary to accommodate planned growth in Madera.*

Policy LU-11: *The City specifically envisions the establishment and maintenance of a greenbelt of agricultural and other open space lands around the urbanized portion of the Planning Area, outside the Growth Boundary, as shown on the Land Use Map. In addition to the maintenance of appropriate agricultural land use designations, the City encourages the use of Williamson Act contract and similar mechanisms to ensure the maintenance of the greenbelt. Along the west edge of the Planning Area, the greenbelt is intended to be permanent, and the implementing mechanisms on the west edge should reflect that intent, including transfer of development rights, permanent conservation easements, etc. (See specific policies for Villages D & E for requirements to establish a permanent edge/buffer on the western boundary of these Villages.)*

Policy LU-12: *The City shall plan and install infrastructure to serve only the area inside the Growth Boundary. The expansion of urban services (specifically including*

residential sewer service) outside this boundary shall not be permitted unless the City Council finds that:

- 1) The extension is needed to address a clear public health or safety need, and
- 2) The infrastructure provided is sized to the minimum level necessary in order to reduce any excess capacity that could be used to support additional growth outside the boundary.

Action Item LU-12.1: Develop and implement programs and strategies that support the Growth Boundary and keep urban growth inside the Growth Boundary.

Policy LU-35:

VILLAGE D: SPECIFIC POLICIES

The following policies are intended to identify some of the unique issues for this area which will need to be addressed, and to guide development, as the area transitions to urban use.

- All future development in this Village shall conform to the Building Blocks principles as described in this General Plan.
- In conjunction with village and neighborhood planning, a mechanism shall be established which creates a permanent agricultural buffer where the westerly edge of the Village abuts the Growth Boundary.

This buffer shall average at least 400' in depth, with a minimum depth of 250', and must run continuously along westerly edge of the Village.

No habitable structures are to be located within this buffer, although passive recreational opportunities (such as trails and community gardens) may be allowed. Alternative methods and designs to establish the buffer may be proposed, and including placing the buffer on either side of the growth boundary. Physical maintenance of the buffer shall be provided consistent with the design and function of the space.

- The Village core area shall provide for an integrated mix of uses, including park and open space uses, along the river.
- Future development along the Fresno River should be designed to take advantage of the river frontage, including orienting development to front the river where not otherwise prohibited by site conditions.
- Village and neighborhood planning shall provide for the alignment of the designated arterial which runs through the Village east and west (Cleveland Avenue), to bend to the south to provide circulation to the proposed village core located along the Fresno River.
- All development proposals within Village D shall comply with the provisions of the Airport Land Use Master Plan. The establishment of land use designations at the village and neighborhood levels, as well as the layouts

4.2 AGRICULTURAL RESOURCES

of individual projects, shall reflect the allowable uses and densities in the Airport Land Use Master Plan.

Mitigation Measures

While the proposed General Plan Update policy provisions assist in minimizing conversion of agricultural lands to urban by establishing a greenbelt to contain urban growth and buffer agricultural uses from urban land uses, the General Plan Update would still result in the conversion of a substantial amount of important farmland acreage. There are no feasible mitigation measures available to offset this loss of important farmland, as important farmland cannot be easily created to offset the conversion of such land expected. Thus, this impact is considered **significant and unavoidable**.

Agricultural/Urban Interface Conflicts

Impact 4.2.2 Implementation of the proposed General Plan Update could result in the placement of urban uses adjacent to agricultural uses. This is considered a **significant and unavoidable** impact.

Implementation of the proposed City of Madera General Plan Update Land Use Map would place urbanized land uses adjacent to agricultural uses and would replace existing agricultural uses. It is anticipated that as the City builds out, new agriculture/urban interface conflicts may occur, although the establishment of the agricultural buffer associated with the Planning Area would help alleviate some of the agriculture/urban interface conflicts.

Figure 4.2-1 illustrates that there are important farmland areas adjacent to or near proposed urban land uses to the west, south, and east of the city, including some agricultural lands within the city limits adjacent to industrial, commercial, and residential land uses.

The following types of agricultural and urban land use conflicts, inconveniences, or discomforts associated with normal agricultural operations related primarily to the growing of crops and cattle grazing are expected to occur:

- Inconveniences or discomforts associated with dust, noise, and odor from agricultural operations;
- Restrictions on agricultural operations (such as pesticide application) along interfaces with urban uses;
- Conflicts with farm equipment and vehicles using roadways;
- Trespassing and vandalism on active farmlands; and
- Farmland proximity to urban areas can place growth pressure to convert land to urban uses as a result of above-mentioned conflicts and increases in property value.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing agricultural conversion and conflict impacts. The following list contains those policies that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that assist in reducing (though not fully mitigating) this impact.

In addition to these policy provisions, the proposed General Plan Update Land Use Map establishes an agricultural/open space greenbelt along the perimeter of the Planning Area (see **Figure 3.0-7**). The greenbelt is intended to address the physical effects of agricultural practices on urban uses, such as chemical spraying, noise, etc., to ensure the ability of agricultural uses to continue beyond the expanded urban area of the city and minimize land use conflicts between agricultural land uses and urban land uses.

Policy LU-10: *The Growth Boundary is considered by the City to define the physical limits of development in Madera. The City shall direct all future growth in Madera and in the unincorporated area outside the city limits to occur inside the Growth Boundary shown on the Land Use Map in this General Plan. Within the City's Planning Area, the City encourages the County to assist the City in maintaining an agricultural green belt around the Growth Boundary by only allowing agricultural uses where land is designated for such use on the City's General Plan Land Use Map.*

The following apply to the Growth Boundary:

- *The Growth Boundary may only be revised as part of a comprehensive update of the General Plan involving, at a minimum, the Land Use and Circulation elements.*
- *Any revision to the Growth Boundary shall be accompanied by a statement of findings which demonstrate the following:*
 - 1) *That the revision is consistent with the intent of the Growth Boundary and all other applicable policies in this General Plan*
 - 2) *That the revision is necessary to accommodate planned growth in Madera*

Policy LU-11: *The City specifically envisions the establishment and maintenance of a greenbelt of agricultural and other open space lands around the urbanized portion of the Planning Area, outside the Growth Boundary, as shown on the Land Use Map. In addition to the maintenance of appropriate agricultural land use designations, the City encourages the use of Williamson Act contracts and similar mechanisms to ensure the maintenance of the greenbelt.*

Along the west edge of the Planning Area, the Greenbelt is intended to be permanent, and the implementing mechanisms on the west edge should reflect that intent, including transfer of development rights, permanent conservation easements, etc. (See specific policies for Villages D & E for requirements to establish a permanent edge/buffer on the western boundary of these Villages)

Policy LU-35: *VILLAGE D: SPECIFIC POLICIES*

The following policies are intended to identify some of the unique issues for this area which will need to be addressed, and to guide development, as the area transitions to urban use.

4.2 AGRICULTURAL RESOURCES

- All future development in this Village shall conform to the Building Blocks principles as described in this General Plan.
- In conjunction with village and neighborhood planning, a mechanism shall be established which creates a permanent agricultural buffer here the westerly edge of the Village abuts the Growth Boundary.

This buffer shall average at least 400' in depth, with a minimum depth of 250', and must run continuously along westerly edge of the Village.

No habitable structures are to be located within this buffer, although passive recreational opportunities (such as trails and community gardens) may be allowed. Alternative methods and designs to establish the buffer may be proposed, and including placing the buffer on either side of the growth boundary. Physical maintenance of the buffer shall be provided consistent with the design and function of the space.

- The Village core area shall provide for an integrated mix of uses, including park and open space uses, along the river.
- Future development along the Fresno River should be designed to take advantage of the river frontage, including orienting development to front the river where not otherwise prohibited by site conditions.
- Village and neighborhood planning shall provide for the alignment of the designated arterial which runs through the Village east and west (Cleveland Avenue), to bend to the south to provide circulation to the proposed village core located along the Fresno River.
- All development proposals within Village D shall comply with the provisions of the Airport Land Use Master Plan. The establishment of land use designations at the village and neighborhood levels, as well as the layouts of individual projects, shall reflect the allowable uses and densities in the Airport Land Use Master Plan.

Policy CON-15: The City supports the protection of agricultural operations by requiring that buffers be established between urban residential areas and areas planned to remain in agricultural use. The buffers shall be designed to address the physical effects of agricultural practices on urban uses, such as chemical spraying, noise, etc.

In addition to these policies, the proposed General Plan Update includes implementation of the design guidelines and design review ordinances for residential and non-residential uses in the Villages and Districts as proposed (Policy LU-28). These design guidelines are expected to include provisions for landscape corridors, walls, and other features that provide buffering.

The City's Right-to-Farm Ordinance includes a provision to record a right-to-farm notice in conjunction with rezoning and subdivision applications for all such applications within 300 feet of agricultural lands.

Mitigation Measures

Implementation of proposed General Plan Update policies CON-16, LU-9, and LU-28 and the establishment of the agricultural/open space greenbelt as shown on the proposed Land Use Map would assist in reducing agriculture/urban interface conflicts within and adjacent to the city's planned urban areas associated with nuisance effects (dust, smoke noise, odor) and restrictions on agricultural operations from interfaces with urban uses. However, implementation of these policies would not fully mitigate agriculture/urban interface conflicts, especially in regard to farm equipment and vehicle conflicts on area roadways and potential trespassing and vandalism to active farmlands. Therefore, this impact is considered **significant and unavoidable**.

Agriculturally Zoned Lands and Williamson Act Contracts

Impact 4.2.3 Implementation of the proposed General Plan Update could result in a conflict with land currently zoned for agriculture as well as with existing Williamson Act contract lands. This is considered a **significant and unavoidable** impact.

Pursuant to Government Code Section 51243, the City is required to provide for the exclusion of uses other than agricultural, and other than those compatible with agricultural uses, for the duration of a Williamson Act contract. If a city annexes land under Williamson Act contract, the city must succeed to all rights, duties, and powers of the county unless conditions in Government Code Section 512343.5 apply to give the city the option to not succeed the contract. However, these stipulations do not apply to those lands within the General Plan Planning Area because all lands under Williamson Act contract were contracted prior to city annexation. Therefore the City must allow agricultural uses to continue on lands under Williamson Act contracts until those contracts expire or are canceled, which could take up to 10 years after application for nonrenewal is submitted.

As previously discussed and indicated in **Figure 4.2-3**, the Planning Area contains approximately 26,975 acres of land subject to Williamson Act contracts, with 17,152 prime acres, 5,035 non-prime acres, 3,874 Farmland Security Zone acres, 633 non-renewal acres, and 5,036 non-prime acres.

As previously discussed and indicated in **Figure 4.1-2**, some of the land falling outside of the existing city boundaries within the county is designated and zoned for agricultural land, particularly to the west and south of the city limits.

General Plan Planning Area – Areas Outside of Existing City Boundaries

Outside of the city limits and within the Planning Area (within the Growth Boundary), there are approximately 3,908 acres under Williamson Act contracts as well as lands currently designated and zoned for agricultural uses by the County that will be converted to urban uses from implementation of the proposed General Plan Update Land Use Map.

General Plan Planning Area – Areas Inside of Existing City Boundaries

As previously stated, there are approximately 39 acres within the existing city limits under a Williamson Act contract and in non-renewal status. This area is Prime Farmland and Farmland of Statewide Importance and is designated for industrial development in the proposed General Plan Update.

4.2 AGRICULTURAL RESOURCES

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan contains several goals, policies, and action items that would assist in reducing loss of Williamson Act contracted lands and conversion of agriculturally zoned lands to urban land uses. The following list contains those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that assist in reducing (though not fully mitigating) this impact.

In addition to these policy provisions, the proposed General Plan Update Land Use Map establishes an agricultural/open space greenbelt along the perimeter of the Planning Area (see **Figure 3.0-7**). The greenbelt is intended to address the physical effects of agricultural practices on urban uses, such as chemical spraying, noise, etc., to ensure the long-term ability of agricultural uses to continue beyond the expanded urban area of the city and minimize land use conflicts between agricultural land uses and urban land uses.

The General Plan Update proposed urban Growth Boundary, in conjunction with the establishment of an average residential density that is higher for new development than existing residential development, is a feature of the proposed General Plan Update that is intended to minimize the conversion of agricultural lands to urban land uses.

Policy LU-10: The Growth Boundary is considered by the City to define the physical limits of development in Madera. The City shall direct all future growth in Madera and in the unincorporated area outside the city limits to occur inside the Growth Boundary shown on the Land Use Map in this General Plan. Within the City's Planning Area, the City encourages the County to assist the City in maintaining an agricultural green belt around the Growth Boundary by only allowing agricultural uses where land is designated for such use on the City's General Plan Land Use Map.

The following apply to the Growth Boundary:

- The Growth Boundary may only be revised as part of a comprehensive update of the General Plan involving, at a minimum, the Land Use and Circulation elements.*
- Any revision to the Growth Boundary shall be accompanied by a statement of findings which demonstrate the following:*
 - 1) That the revision is consistent with the intent of the Growth Boundary and all other applicable policies in this General Plan*
 - 2) That the revision is necessary to accommodate planned growth in Madera*

Policy LU-11: The City specifically envisions the establishment and maintenance of a greenbelt of agricultural and other open space lands around the urbanized portion of the Planning Area, outside the Growth Boundary, as shown on the Land Use Map. In addition to the maintenance of appropriate agricultural land use designations, the City encourages the use of Williamson Act contracts and similar mechanisms to ensure the maintenance of the greenbelt.

Along the west edge of the Planning Area, the Greenbelt is intended to be permanent, and the implementing mechanisms on the west edge should

reflect that intent, including transfer of development rights, permanent conservation easements, etc. (See specific policies for Villages D & E for requirements to establish a permanent edge/buffer on the western boundary of these Villages)

Policy LU-35: VILLAGE D: SPECIFIC POLICIES

The following policies are intended to identify some of the unique issues for this area which will need to be addressed, and to guide development, as the area transitions to urban use.

- All future development in this Village shall conform to the Building Blocks principles as described in this General Plan.
- In conjunction with village and neighborhood planning, a mechanism shall be established which creates a permanent agricultural buffer where the westerly edge of the Village abuts the Growth Boundary.

This buffer shall average at least 400' in depth, with a minimum depth of 250', and must run continuously along westerly edge of the Village.

No habitable structures are to be located within this buffer, although passive recreational opportunities (such as trails and community gardens) may be allowed. Alternative methods and designs to establish the buffer may be proposed, and including placing the buffer on either side of the growth boundary. Physical maintenance of the buffer shall be provided consistent with the design and function of the space.

- The Village core area shall provide for an integrated mix of uses, including park and open space uses, along the river.
- Future development along the Fresno River should be designed to take advantage of the river frontage, including orienting development to front the river where not otherwise prohibited by site conditions.
- Village and neighborhood planning shall provide for the alignment of the designated arterial which runs through the Village east and west (Cleveland Avenue), to bend to the south to provide circulation to the proposed village core located along the Fresno River.
- All development proposals within Village D shall comply with the provisions of the Airport Land Use Master Plan. The establishment of land use designations at the village and neighborhood levels, as well as the layouts of individual projects, shall reflect the allowable uses and densities in the Airport Land Use Master Plan.

Policy CON-15: The City supports the protection of agricultural operations by requiring that buffers be established between urban residential areas and areas planned to remain in agricultural use. The buffers shall be designed to address the physical effects of agricultural practices on urban uses, such as chemical spraying, noise, etc.

4.2 AGRICULTURAL RESOURCES

Mitigation Measures

Implementation of the above General Plan Update policies would assist in reducing conflicts and loss of existing Williamson Act contracts and lands currently designated and zoned for agricultural uses. The establishment of the proposed greenbelt would help alleviate some of the interface conflicts from areas outside of the Planning Area by providing a buffer that will address the physical effects of agricultural practices on urban uses, such as chemical spraying, noise, etc., to ensure the long-term ability of agricultural uses to continue agricultural operations. However, they would not completely avoid this impact.

No feasible mitigation measures are available to reduce this impact to a less than significant level. Thus, this impact is considered **significant and unavoidable**.

4.2.4. CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The City of Madera and the Planning Area are located in the southern portion of Madera County. As previously described, urban development within Madera County (including the unincorporated areas and the cities of Madera and Chowchilla) has resulted in the loss of approximately 6,307 acres of important farmland (see **Table 4.2-6**) between 1984 and 2006. The existing and projected future urban development throughout the state is expected to further contribute to the loss of important farmlands.

The cumulative setting for agricultural resources impacts takes into account planned and proposed development anticipated in the Madera Planning Area under buildout conditions (see Section 4.0 for a further description of cumulative growth conditions). Buildout of the proposed General Plan Update is not expected to occur until roughly 2065, based on a projected residential growth rate of around 2.65 percent per year. While the focus of the cumulative impact analysis is Madera County, it is acknowledged that cumulative important farmland conversion contributions by the proposed General Plan are of a statewide concern. To this end, analysis of the cumulative impact of the proposed General Plan Update incorporates statewide data, as described in “Methodology” above.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Impacts to Agricultural Resources

Impact 4.2.4 Implementation of the proposed General Plan Update along with regional and statewide growth would result in a substantial contribution to the conversion of important farmland and may increase agriculture/urban interface conflicts. This is a **cumulatively considerable** and **significant and unavoidable** impact.

Within the city limits, implementation of the proposed General Plan Update Land Use Map would result in the conversion of approximately 1,682 acres of important farmland, including 878 acres of Prime Farmland, 292 acres of Farmland of Statewide Importance, and 156 acres of Unique Farmland.

In addition to this loss, implementation of the proposed General Plan Update Land Use Map would result in the conversion of approximately 11,503 acres falling outside of the city limits, within the Growth Boundary. Of the 11,503 acres, 5,347 acres are Prime Farmland, 1,664 acres are Farmlands of Statewide Importance, and 2,997 acres are Unique Farmlands.

The acreages would be in addition to important farmland conversions associated with development anticipated under the applicable land use plans of Madera County and the City of Chowchilla. Given the statewide conversion of important farmland areas and the extent of conversion in Madera County anticipated as a result of subsequent development under the General Plan, the project's contribution to this cumulative impact is considered significant.

In addition to the conversion of important farmland from subsequent development under the proposed General Plan Update, the project would also contribute to significant cumulative agriculture/urban interface conflicts that are considered a regional and statewide issue.

Important farmland conversions within the Planning Area would represent approximately 3.6 percent of the total important farmland acreage inventoried in Madera County in 2006 (approximately 13,185 acres of important farmland would be converted out of a total of 365,435 acres).

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan contains several goals, policies, and action items that would assist in reducing agricultural land conversion and conflict impacts. The reader is referred to Impacts 4.2.1 and 4.2.2 for those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that assist in reducing (though not fully mitigating) this impact.

In addition to these policy provisions, the proposed General Plan Update Land Use Map establishes an agricultural/open space greenbelt along the perimeter of the Planning Area (see **Figure 3.0-7**). The greenbelt is intended to address the physical effects of agricultural practices on urban uses, such as chemical spraying, noise, etc., to ensure the long-term ability of agricultural uses to continue beyond the expanded urban area of the city and minimize land use conflicts between agricultural land uses and urban land uses.

The General Plan Update proposed urban Growth Boundary, in conjunction with the establishment of an average residential density that is higher for new development than existing residential development, is a feature of the proposed General Plan Update that is intended to minimize the conversion of agricultural lands to urban land uses.

Mitigation Measures

Implementation of the proposed General Plan Update policies and action items would assist in reducing the project's contribution to cumulative agriculture/urban interface conflicts but not to less than cumulatively considerable (see the discussion under Impact 4.2.2). As described under Impact 4.2.1, no feasible mitigation measures are available to reduce the proposed General Plan Update's contribution to cumulative important farmland conversion impacts. Thus, the contribution to cumulative impacts on agricultural resources is **cumulatively considerable** and is considered a **significant and unavoidable** impact.

4.2 AGRICULTURAL RESOURCES

REFERENCES

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4.3 POPULATION/HOUSING/EMPLOYMENT

4.3 POPULATION/HOUSING/EMPLOYMENT

This section discusses the current population characteristics, housing, and employment conditions within the proposed General Plan Update Planning Area and analyzes the potential changes and employment opportunities within the Planning Area that would occur as a result of implementation of the proposed General Plan Update. Information for this section was obtained from websites of public agencies such as the U.S. Census Bureau and the California Department of Finance, websites from private organizations such as the California Association of Realtors and the Madera Chamber of Commerce, and demographic reports by ESRI.

4.3.1 EXISTING SETTING

REGIONAL SETTING/LOCAL SETTING

The City of Madera Planning Area consists of approximately 67,415 acres in the southern portion of Madera County. Urban land uses in the Planning Area generally consist of residential, industrial, commercial, office, recreational, and public uses within and adjacent to Madera. Residential, commercial, and agricultural uses occur outside the Madera city limits. See Section 4.1, Land Use, for a further description of land uses and applicable land use plans in the Planning Area.

DEMOGRAPHICS

Population Trends

The estimated 2008 population of Madera was 56,750 (California Department of Finance estimate, 2008). The 2000 U.S. Census counted 43,207 Madera residents. The Planning Area outside the Madera city limits had a 2008 estimated population of 21,658. Both the City of Madera and the Planning Area have experienced substantial population growth in the last 18 years (**Table 4.3-1**).

TABLE 4.3-1
CITY OF MADERA AND PLANNING AREA POPULATION TRENDS

Year	City of Madera ¹			Planning Area Outside City		
	Population	Change	% Change	Population	Change	% Change
1990	29,623	--	--	12,757	--	--
2000	43,207	13,584	46%	18,216	5,459	43%
2008 ²	56,710	13,503	31%	21,658	3,442	19%
2030 ²	68,088	11,378	20%	113,721	92,063	425%

Sources: California Department of Finance, 2000; ESRI, 2008

1- The table indicates population within city limits as amended over time. Specifically, for 1990, 2000, and 2008, the population within the city limits reflects the location of the city limits in place during those dates. The population projected to be within the city limits in 2030 reflects the city limits as show on the updated General Plan Land Use Map.

2- Estimates.

While the growth rate has slowed in recent years, the city's population growth rate since 2000 has been 3.5 percent annually, while the population of the Planning Area outside the city grew by 2.2 percent annually. By comparison, the average annual population growth rate of California was 1.5 percent during the same time. In addition, the population within the current

4.3 POPULATION AND HOUSING

city limits (2008) is projected to grow to approximately 68,088 by 2030, which is an increase of 20 percent over the city's 2008 population. The Planning Area outside the current city limits is estimated to have a population of 113,721 by 2030, which is an increase of 425 percent over the Planning Area's 2008 population. It should be noted that the majority of the population increase which will occur outside the current city limits is expected to occur in conjunction with urban development projects, which will trigger new annexations and expansions to the City's boundaries.

Household Trends

According to a 2008 estimate, there are 16,418 households in the city (California Department of Finance, 2008). In the Planning Area outside the city limits, the estimated number of households in 2008 was 5,653. **Table 4.3-2** shows the household growth trends in the city and the Planning Area since 1990. From 2000 to 2008, the number of households grew by an annual rate of 4 percent in the City of Madera and by 2 percent in the Planning Area. In California, households increased by an annual rate of 0.9 percent from 2000 to 2006, the most recent year for which state household data was available.

TABLE 4.3-2
CITY OF MADERA AND PLANNING AREA HOUSEHOLD TRENDS

Year	City of Madera ¹			Planning Area Outside City		
	Households	Change	% Change	Households	Change	% Change
1990	9,285	--	--	3,490	--	--
2000	11,978	2,693	29%	4,818	1,328	38%
2008 ²	16,418	4,440	37%	5,653	835	17%

Source: U.S. Census; ESRI, 2008

- 1- The table indicates population within city limits as amended over time. Specifically, for 1990, 2000, and 2008, the population within the city limits reflects the location of the city limits in place during those dates.
- 2- Estimates.

Household Size

Household size refers to the number of persons in a household. The 2008 estimated average household size for Madera was 3.67 persons per household, compared with 3.19 persons per household for Madera County and 2.94 persons per household in California (ESRI, 2008; California Department of Finance, 2008). **Table 4.3-3** displays the household sizes in Madera and the Planning Area outside the city.

TABLE 4.3-3
CITY OF MADERA AND PLANNING AREA HOUSEHOLD SIZES

Household Size	City of Madera (2008 est.)		Planning Area (2000)	
	Number	Percentage	Number	Percentage
1 person	2,440	16%	552	11%
2 person	3,576	23%	1,206	25%
3 person	2,436	16%	766	16%
4 person	2,434	16%	870	18%

4.3 POPULATION/HOUSING/EMPLOYMENT

5 person	1,747	11%	668	14%
6 person	1,104	7%	340	7%
7 + person	1,588	11%	416	9%
Total	15,325	100%	4,818	100%

Source: 2000 U.S. Census; ESRI, 2008

Households with two or fewer people constituted approximately 39 percent of the City of Madera households in 2008 and approximately 36 percent of Planning Area households in 2000. These percentages compare with approximately 48 percent of Madera County households and 53 percent of California households in 2000, the most recent year for which data is available (U.S. Census Bureau, 2000; ESRI, 2008). Households of four or more persons constituted approximately 45 percent of Madera households and 48 percent of Planning Area households in 2008, compared with 36 percent of Madera County households and 31 percent of California households (U.S. Census Bureau, 2000; ESRI, 2008).

Household Income

On average, the household incomes for Madera are lower compared to household incomes for Madera County or the state. According to a 2008 estimate, the median household income for Madera was \$39,330. By comparison, the median income in 2007 in Madera County was \$44,975 and in California was \$59,948 (U.S. Census Bureau, 2007; ESRI, 2008). These median incomes indicate a concentration of lower-income households in the City of Madera.

HOUSING

Tenure

Tenure describes the status of a household in a housing unit it occupies – either owner or renter. As shown in **Table 4.3-4**, renter-occupied housing units make up 46 percent of housing units in Madera, 27 percent of units in the Planning Area, and 34 percent of units in Madera County as a whole.

TABLE 4.3-4
CITY OF MADERA AND PLANNING AREA HOUSEHOLD TENURE

Housing Units	City of Madera (2008)		Planning Area (2008)		Madera County (2000)	
	Number	Percentage	Number	Percentage	Number	Percentage
Total Occupied	15,325	100%	5,653	100%	36,155	100%
Owner Occupied	8,316	54%	4,137	73%	23,934	66%
Renter Occupied	7,009	46%	1,516	27%	12,221	34%

Source: U.S. Census Bureau, 2000; ESRI, 2008

Age of Housing Units

Table 4.3-5 shows the age of housing units in the City of Madera and the Planning Area outside the city. Information on the Planning Area is from the 2000 U.S. Census, the most recent information available. Most of the housing units in the City of Madera are relatively new. Approximately 57 percent of Madera's housing stock was built since 1980, with approximately 26

4.3 POPULATION AND HOUSING

percent built since 1999. As of 2000, almost one-third of the housing units in the Planning Area were built from 1990 to 1998.

TABLE 4.3-5
AGE OF HOUSING UNITS IN MADERA AND PLANNING AREA

Year Built	City of Madera (2008)		Planning Area Outside City (2000)	
	Number	Percentage of Total	Number	Percentage of Total
1969 or earlier	4,296	27%	1,078	21%
1970–1979	2,628	16%	1,053	20%
1980–1989	2,170	13%	1,347	26%
1990–1998	2,835	18%	1,575	30%
1999–2008	4,140	26%	139*	3%
Total	16,069	100%	5,194	100%

Source: 2000 U.S. Census; ESRI, 2008

* Total from 1999 to March 2000.

Housing Price and Availability

For-Sale Housing Cost

After increases in the median price of houses throughout the first half of this decade, the residential real estate market has recently experienced a decrease in prices. The collapse of the subprime mortgage market, increases in foreclosures, and tightening of available credit for homebuyers have combined to place downward pressure on housing prices. The median sales price for a home in Madera was \$271,500 in July 2007, as reported by the California Association of Realtors. In July 2008, the median price was \$177,000 – a decrease of 35 percent. Median home sales prices in Madera County also decreased substantially – from \$289,500 in July 2007 to \$195,500 in July 2008 (California Association of Realtors, 2008). **Table 4.3-6** shows median sales prices for the City of Madera and Madera County over the past four years.

TABLE 4.3-6
MEDIAN SALES PRICE FOR SINGLE-FAMILY HOMES IN MADERA COUNTY

Year (July)	Madera		Madera County	
	Median Sales Price	Percentage Change	Median Sales Price	Percentage Change
2005	\$285,000	–	\$299,500	–
2006	\$303,000	+ 6%	\$308,000	+ 3%
2007	\$271,500	-10%	\$289,500	-6%
2008	\$177,000	-35%	\$195,500	-33%

Source: California Association of Realtors, 2008

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Rental Housing Cost

According to the Madera Housing Authority, in October 2007, the average monthly rent was \$797 for a two-bedroom apartment in Madera and \$1,159 for a three-bedroom apartment (Madera Chamber of Commerce website, accessed 2009). By comparison, according to the Madera County Housing Element, monthly rents for two-bedroom and three-bedroom apartments in 2002 were \$505 and \$624, respectively.

EMPLOYMENT

A 2008 estimate places the number of employed people 16 years of age and older in Madera at 19,491 (ESRI, 2008). The unemployment rate in Madera in 2007 was 11 percent, higher than the state unemployment rate of 6 percent that year (California Employment Development Department website, accessed 2008). **Table 4.3-7** provides a breakdown of employed residents by industry in Madera and in the Planning Area outside the city.

TABLE 4.3-7
EMPLOYMENT BY INDUSTRY IN MADERA AND PLANNING AREA, 2008 ESTIMATE

Industry	City of Madera		Planning Area Outside City	
	Number	Percentage	Number	Percentage
Agriculture/Mining	3,136	17%	1,012	13%
Construction	1,325	7%	436	6%
Manufacturing	1,829	10%	837	11%
Wholesale Trade	616	3%	324	4. %
Retail Trade	1,829	10%	917	12%
Transportation/Utilities	784	4%	381	5%
Information	168	1%	84	1%
Finance/Insurance/Real Estate	709	4%	406	5%
Services	7,225	39%	2,953	37%
Public Administration	1,045	6%	516	7%
Total	18,668	100%	7,867	100%

Source: ESRI, 2008

As indicated in **Table 4.3-7**, the predominant industrial employment sector in both areas is services. The next highest industrial employment sector is agriculture and mining. Manufacturing and retail trade are significant employers.

Table 4.3-8 lists the major manufacturing and processing plants in the Madera area. Food processing and related industries are the predominant manufacturing activities. Other major employers in the Madera area include the Madera Unified School District, Madera Community Hospital, and the City and County of Madera.

**TABLE 4.3-8
TOP MANUFACTURING EMPLOYERS IN MADERA**

Employer	Product or Service	Number of Employees
Royal Madera Vineyards	Fruit Packers	10–600*
Constellation Wines, U.S.	Wine and Brandy	430
Saint-Gobain Containers	Glass Bottles	370
Rain Creek Bakery	European Pastries	60–350*
Lamanuzzi and Pantaleo	Raisin Manufacturing	75–325*
Baltimore Aircoil Company of California	Cooling Systems	235
Certaainteed Corporation	Fiberglass Insulation	225
Evapco West	Evaporative Cooling/Industrial Refrigeration	199
Brake Parts, Inc.	Motor Vehicle Brake Systems	150
Georgia-Pacific LLC	Corrugated Boxes	150
JBT Food Tech	Food Processing Machinery	150
Warnock Food Products	Tortilla Chips, Taco Shells	130

Source: Madera Chamber of Commerce

* Seasonal employment

4.3.2 REGULATORY FRAMEWORK

FEDERAL

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970

The Uniform Act, passed by Congress in 1970, is a federal law that establishes minimum standards for federally funded programs and projects that require the acquisition of real property (real estate) or displace persons from their homes, businesses, or farms. The Uniform Act's protections and assistance apply to the acquisition, rehabilitation, or demolition of real property for federal or federally funded projects. 49 CFR Part 24 is the government-wide regulation that implements the Uniform Act.

Title 24 – Housing and Urban Development Part 42

Displacement, Relocation Assistance, and Real Property Acquisition for HUD and HUD-Assisted Programs

Section 104(d) of the Housing and Community Development Act provides minimum requirements for federally funded programs or projects when units that are part of a community's low-income housing supply are demolished or converted to a use other than lower moderate-income dwellings.

Section 104(d) requirements include:

- Replacement, on a one-for-one basis, of all occupied and vacant occupiable low- or moderate-income dwelling units that are demolished or converted to a use other than

4.3 POPULATION AND HOUSING

low- or moderate-income housing in connection with an activity assisted under the act, and

- Provision of certain relocation assistance to any lower-income person displaced as a direct result of the following activities in connection with federal assistance:
 - Demolition of any dwelling unit, or
 - Conversion of a low- or moderate-income dwelling unit to a use other than a low- or moderate-income residence.

Section 104(d) requirements are triggered by the use of HOME, CDBG, Section 108 Loan Guarantee, or UDAG funding in a project involving the demolition or conversion of low- or moderate-income housing.

STATE

California Relocation Statute – Government Code Section 7260

The California Relocation Statute is a California law that establishes minimum standards for state funded programs and projects that require the acquisition of real property (real estate) or displace persons from their homes, businesses, or farms. The statute's protections and assistance apply to the acquisition, rehabilitation, or demolition of real property for state funded projects. The statute is intended for the benefit of displaced persons to ensure that such persons receive fair and equitable treatment and do not suffer disproportionate injuries as the result of programs designed for the benefit of the public as a whole. Title 25, Division 1, Chapter 6 of the California Code of Regulations provides the regulatory guidelines to enforce the statute.

Title 25 Division 1 Chapter 6 Subchapter 1 – Relocation Assistance and Real Property Acquisition

This section of Title 25 provides guidelines to assist public entities in the development of regulations and procedures implementing Government Code Section 7260. The guidelines are designed to carry out the following policies of Section 7260:

- 1) To ensure that uniform, fair, and equitable treatment is afforded persons displaced from their homes, businesses, or farms as a result of the actions of a public entity in order that such persons shall not suffer disproportionate injury as a result of action taken for the benefit of the public as a whole; and
- 2) In the acquisition of real property by a public entity, to ensure consistent and fair treatment for owners of real property to be acquired, to encourage and expedite acquisition by agreement with owners of such property in order to avoid litigation and relieve congestion in courts, and to promote confidence in public land acquisition.

4.3.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

According to the CEQA Guidelines Section 15131(a), economic or social effects of a project are not treated as significant effects on the environment. If the proposed project were to cause physical changes as a result of economic or social changes, then the physical effects (such as the destruction of habitat resulting from housing construction to accommodate increased

population) could be considered a significant environmental effect. A population and housing impact is considered significant if implementation of the project would result in any of the following:

- 1) Induce substantial growth or concentration of population in an area either directly or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure) that results in a physical effect on the environment.
- 2) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.
- 3) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Growth inducement effects are specifically addressed in Section 7.0 of this document.

METHODOLOGY

This section was prepared using existing and projected demographic, housing, and employment information. Demographic information and data was obtained from various governmental agencies through their websites and discussions with agency staff members. Agencies and websites consulted included the U.S. Bureau of the Census, the California Department of Finance, Madera County, and the California Employment Development Department.

PROJECT IMPACTS AND MITIGATION MEASURES

Population, Housing, and Employment Increases

Impact 4.3.1 Implementation of the proposed General Plan Update would include land uses that promote an increase in population, housing, and employment to the area, and thus induce substantial growth that would result in physical effects to the environment. This is a **significant** impact.

When considering the potential impacts a project may have on the physical environment, the existing conditions must be compared to the expected outcome the project may produce and the potential environmental impacts this change may cause. The projected increase in the City of Madera General Plan Planning Area population and housing units would result in direct and indirect environmental effects such as noise, demand for services and utilities, traffic, and air quality. These effects associated with buildout of the proposed General Plan Update are discussed in the relevant chapters of this EIR. The following is a discussion of implementation of the proposed General Plan Update and its potential to induce substantial growth.

General Plan Planning Area – Areas Outside of Existing City Boundaries

Implementation of the Madera General Plan and the associated land use designations would directly cause growth into areas that are currently rural in nature by allowing urban development. Using 2008 Department of Finance estimates as the base year, the City projects that population within the Madera region (Madera, Fresno, and Merced counties) will increase from 1,337,235 to 2,142,589 by 2030, a 60 percent increase. The increase is largely attributable to new development that would occur on lands currently outside of the City of Madera. This represents substantial growth in the area and will have a potentially significant physical effect on the environment. Therefore, this is considered a **significant** impact.

4.3 POPULATION AND HOUSING

General Plan Planning Area – Areas Within Existing City Boundaries

The City of Madera is anticipated to have substantial growth in population, housing, and employment based on the proposed Madera General Plan land uses. The City of Madera has a projected population of 68,088, 19,072 housing units, and 18,199 jobs for the region by the year 2030 (within the city limits as they are shown on the General Plan Update Land Use Map). This represents substantial growth in the area and will have a potentially significant physical effect on the environment. Implementation of the Madera proposed General Plan Update and the associated land use designations would directly cause growth. Therefore, this is considered a **significant** impact.

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan Update includes several policy provisions that address growth of the City of Madera. The following proposed General Plan Update policies are contained in the General Plan Land Use Element and include specific, enforceable requirements and/or restrictions and corresponding performance standards that assist in addressing this impact by limiting the physical extent of future urban development.

In addition to these policy provisions, the proposed General Plan Update Land Use Map establishes a Growth Boundary and an agricultural/open space greenbelt along the perimeter of the Planning Area (see **Figure 3.0-7** and Policy LU-11 below). The greenbelt is intended to ensure the long-term ability of agricultural uses to continue beyond the expanded urban area of the city.

The General Plan Update proposed urban Growth Boundary, in conjunction with the establishment of an average residential density that is higher for new development than existing residential development, is a feature of the proposed General Plan Update intended to minimize the conversion of agricultural lands to urban land uses.

Policy LU-10: The Growth Boundary is considered by the City to define the physical limits of development in Madera. The City shall direct all future growth in Madera and in the unincorporated area outside the city limits to occur inside the Growth Boundary shown on the Land Use Map in this General Plan. Within the City's Planning Area, the City encourages the County to assist the City in maintaining an agricultural green belt around the Growth Boundary by only allowing agricultural uses where land is designated for such use on the City's General Plan Land Use Map.

The following apply to the Growth Boundary:

- *The Growth Boundary may only be revised as part of a comprehensive update of the General Plan involving, at a minimum, the Land Use and Circulation elements.*
- *Any revision to the Growth Boundary shall be accompanied by a statement of findings which demonstrate the following:*
 - 1) *That the revision is consistent with the intent of the Growth Boundary and all other applicable policies in this General Plan*

- 2) That the revision is necessary to accommodate planned growth in Madera

Policy LU-11: The City specifically envisions the establishment and maintenance of a greenbelt of agricultural and other open space lands around the urbanized portion of the Planning Area, outside the Growth Boundary, as shown on the Land Use Map. In addition to the maintenance of appropriate agricultural land use designations, the City encourages the use of Williamson Act contracts and similar mechanisms to ensure the maintenance of the greenbelt.

Along the west edge of the Planning Area, the Greenbelt is intended to be permanent, and the implementing mechanisms on the west edge should reflect that intent, including transfer of development rights, permanent conservation easements, etc. (See specific policies for Villages D & E for requirements to establish a permanent edge/buffer on the western boundary of these Villages).

Policy LU-13: The City shall support the annexation of property to its boundaries for the purpose of new development only when it determines that the following conditions exist:

- 1) *Sufficient public infrastructure, facilities, and services are available or will be provided in conjunction with new development; and*
- 2) *Demands on public infrastructure, facilities and services created by the new development will not result in reductions in capacity that is necessary to serve the existing city limits (including demand created by infill development), reductions in existing service levels within the city limits, or the creation of detrimental fiscal impacts on the City.*

Mitigation Measures

Implementation of the proposed General Plan Update Land Use Map and the above policies provide for intensification of land uses, mixed-use development, and housing in infill locations in close proximity to employment centers and/or transit. These provisions assist in the reduction of traffic, air, and noise impacts by providing for community design that promotes alternative transportation resources. Nevertheless, implementation of the proposed General Plan Update would allow for a substantial increase in population, housing units, and employment in the City of Madera and Planning Area. This increase would have a considerable impact on the physical environment (as documented in the technical sections of this EIR) regardless of the above-listed policies. Therefore, this impact is considered **significant and unavoidable**.

Displacement of a Substantial Number of Persons or Housing

Impact 4.3.2 Implementation of the proposed General Plan Update is not expected to result in the substantial displacement of housing and/or persons due to the construction of infrastructure necessary to serve new development or revitalization efforts. This is considered a **less than significant** impact.

While implementation of the proposed General Plan Update does not, in and of itself, provide for the construction of any new development, it would change land use designations in areas,

4.3 POPULATION AND HOUSING

thereby allowing future growth that may require additional and/or enlargement of infrastructure such as roadways and pipelines. Additionally, the proposed General Plan Update identifies a circulation system that would require the construction of new roadways within the Planning Area. Construction of these roadways may be the impetus for the removal of some housing units and/or businesses, thereby displacing persons. However, such displacement is expected to be minor, given that roadway sizing and alignment set forth in the proposed General Plan Update was designed to largely avoid impacts to existing development areas (see **Figure 3.0-9**).

Implementation of the proposed General Plan Update would not, in and of itself, displace substantial numbers of housing units or people nor does it propose substantial redesignations of residential areas to land uses that would require relocation of residents. State and federal law require due compensation for persons required to relocate as a result of redevelopment projects carried out by the City or any projects that use federal or state funding. Any private development that may occur would pay the fair market price for any land/housing acquired as a result of project development. Therefore, although some isolated displacement of persons or housing may result, due compensation offsets any cost-related effects. Therefore, impacts related to a substantial displacement of housing units or people as a result of implementation of the proposed General Plan Update are **less than significant**.

Mitigation Measures

None required.

4.3.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for population and housing includes Madera, Fresno, and Merced counties, including the cities within these counties. The cumulative setting includes buildout of the Planning Area. At buildout, a population of 174,783 is anticipated as well as 48,959 housing units, and 49,055 jobs within the General Plan Planning Area, but outside existing city limits. In addition to the anticipated growth within the current city boundaries, the proposed General Plan Update also identifies the Planning Area which could also include future City annexation areas. The Planning Area has a projected buildout of 73,747 housing units for a buildout population of 263,278 (including the city). Buildout population and the number of housing units will increase by more than 700 percent over the current levels. It should be noted that this growth is expected to occur beyond the year 2030. Buildout of the proposed General Plan Update is not expected to occur until roughly 2065, based on a projected residential growth rate of around 2.65 percent per year.

Table 4.3-9 below identifies the proposed General Plan Update Planning Area buildout population, housing units, and employment for those areas that are currently outside the existing city limits. These buildout projections are based on land use designations for areas within the General Plan Planning Area but outside of current city boundaries.

TABLE 4.3-9
GENERAL PLAN PLANNING AREA – AREA OUTSIDE OF EXISTING CITY LIMITS

	Existing	Buildout	Percentage Change
Residential Units	5,653	48,959	766%
Population	21,658	174,783	707%
Employment ¹	7,867	49,055	524%

Note: Buildout projections under the entire Planning Area exclude the city.

¹ Total employment also includes jobs that are not included under commercial, office, and industrial, such as public school employment.

An expected population of approximately 88,495 within the existing city limits under buildout conditions is anticipated, which is an increase of 56 percent. Employment and the number of housing units are also anticipated to increase (see **Table 4.3-10** for buildout projections).

TABLE 4.3-10
GENERAL PLAN PLANNING AREA – AREA WITHIN EXISTING CITY LIMITS

	Existing	Buildout	Percentage Change
Residential Units	16,418	24,788	51%
Population	56,710	88,495	56%
Employment ¹	11,624	18,593	60%

Source: PMC

¹ Total employment also includes jobs that are not included under commercial, office, and industrial, such as public school employment.

Growth projections for the region to the year 2030 are illustrated in **Table 4.3-11** below. As identified in the table, the Madera region is anticipated to have 2,142,589 people by 2030.

TABLE 4.3-11
CUMULATIVE PROJECTIONS – 2030

County	Population
Madera	273,456
Fresno	1,429,228
Merced	439,905
Regional Total	2,142,589

Source: California Department of Finance Projections, 2007

Full buildout of the city and the region would increase residential and employment beyond the projections identified for year 2030. As previously identified, the Planning Area is not expected to reach full buildout by 2030.

This projected regional growth represents substantial growth in the area and will result in significant environmental effects to the environment. The reader is referred to the other technical sections of the Draft EIR for a complete analysis of the anticipated cumulative

4.3 POPULATION AND HOUSING

environmental effects of anticipated regional growth in combination with the proposed General Plan Update.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Population and Housing Increases

Impact 4.3.3 Subsequent land use activities associated with implementation of the proposed General Plan Update, in addition to existing, approved, proposed, and reasonably foreseeable development, could result in a cumulative increase in population and housing growth in the City of Madera as well as in the surrounding cities and counties, along with associated environmental impacts. This is considered a **cumulatively considerable** impact.

As discussed earlier in this section, development under the proposed General Plan Update would lead to an increase in population and employment. Development and growth in the city, as a result of the implementation of the proposed General Plan Update, would contribute to cumulative population and housing conditions in the unincorporated areas of Madera County, as well as in surrounding cities and counties.

The impacts of population and housing growth in the region are both direct and indirect, and include the following:

- Aesthetics – Further conversion of rural, agricultural, and natural open space landscape characteristics to urban conditions.
- Agricultural Resources – Continued loss of farmland to urban uses as well as increased conflicts with agricultural operations and urban uses.
- Air Quality – Increases in air pollutant emissions potentially conflicting with air quality attainment efforts under state and federal Clean Air Acts. Also increased potential for the exposure to toxic air contaminants.
- Biological Resources – Loss of special-status plant and animal species habitats, degradation of habitats, and loss of special-status species.
- Cultural Resources – Impacts to known and unknown archaeological and historic resources in the region.
- Geology and Soils – Loss of top soil.
- Hydrology and Water Quality – Additional sources of point and non-point sources of surface water quality pollutants to region waterways. Further demand on groundwater resources and potential overdraft issues.
- Noise – Increased transportation noise levels from increased traffic volumes.
- Public Services and Utilities – Increased demand for the development and expansion of public services and facilities and associated environmental issues.
- Traffic – Increased traffic volumes on the region's highways and regional roadways resulting in deficient levels of service of operation.

These effects, associated with development under the proposed General Plan Update, have been identified and considered within relevant sections of this document. However, it should be noted that the implementation of the proposed General Plan Update's growth strategy of increased development intensities to accommodate growth efficiently (in regard to the utilization of land area) would provide reductions in these impacts to the region by minimizing further conversion of land to urban uses (sprawl) as compared to the continuation of current land use patterns and residential densities of the region.

The proposed General Plan Update includes policies and actions that serve to reduce the impact of development and population growth and the related demand for jobs and a variety of housing types that accompany a larger population. However, these policies and actions do not restrict the growth in the area nor remove the potential environmental impacts due to a substantial population or housing increase in the Planning Area or the proposed General Plan Update's contribution to the cumulative environmental effects noted above. Therefore, the proposed General Plan Update's contribution to cumulative impacts is considered **cumulatively considerable**.

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan Update contains several policies that would assist in reducing these impacts. The reader is referred to Impact 4.3.1 for those policies that contain specific, enforceable requirements and/or restrictions and corresponding performance standards to assist in reducing (though not fully mitigating) this impact.

In addition to these policy provisions, the proposed General Plan Update Land Use Map establishes an agricultural/open space greenbelt along the perimeter of the Planning Area (see **Figure 3.0-7**). The greenbelt is intended to ensure the long-term ability of agricultural uses to continue beyond the expanded urban area of the city.

The General Plan Update proposed urban Growth Boundary, in conjunction with the establishment of an average residential density that is higher for new development than existing residential development, is also a feature of the proposed General Plan Update intended to minimize the conversion of agricultural lands to urban land uses.

Mitigation Measures

Proposed General Plan Update policies provide for housing in close proximity to employment centers and/or transit, therefore reducing vehicle traffic and its associated air and noise impacts. The proposed General Plan Update Growth Boundary also minimizes impacts to agricultural and biological resources by creating more compact, dense development that results in fewer land acres being impacted. These policies and actions would aid in the reduction of increased impacts to the environment. Nevertheless, implementation of the proposed General Plan Update would allow for a substantial increase in population and housing units in the City of Madera and Planning Area, as illustrated in **Table 4.3-9** and **Table 4.3-10** which would have a considerable impact on the physical environment regardless of the above-listed policies and actions. Therefore, this impact is **cumulatively considerable** and a **significant and unavoidable** impact.

4.3 POPULATION AND HOUSING

REFERENCES

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4.4 HAZARDS AND HUMAN HEALTH

This section provides information on safety hazards in the City of Madera General Plan Planning Area. The section also identifies the methods used in analyzing the General Plan's potential to create hazards to public health or the environment related to hazardous materials, substances, or waste and also identifies other potential hazards that may impact public safety. The reader is referred to Section 4.8, Geology and Soils, for information regarding impacts associated with geologic and seismic hazards, Section 4.9, Hydrology and Water Quality, for information regarding impacts associated with water quality and flooding, and Section 4.12, Public Services and Utilities, for impacts related to fire hazards.

4.4.1 EXISTING SETTING

HAZARDS AND CONTAMINATED SITES

Hazardous Materials Defined

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined in Title 22 of the California Code of Regulations (CCR) as:

...A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed (California Code of Regulations, Title 22, Section 66260.10).

Chemical and physical properties that cause a substance to be considered hazardous, including the properties of toxicity, ignitability, corrosivity, and reactivity, are defined in the CCR, Title 22, Section 66261.20 through 66261.24. Factors that influence the health effects of exposure to hazardous material include the dose to which the person is exposed, the frequency of exposure, the exposure pathway, and individual susceptibility.

Public health is potentially at risk whenever hazardous materials are or will be used. It is necessary to differentiate between the "hazard" of these materials and the acceptability of the "risk" they pose to human health and the environment. A hazard is any situation that has the potential to cause damage to human health and the environment. The risk to health and public safety is determined by the probability of exposure, in addition to the inherent toxicity of a material (California Department of Toxic Substances Control, 2009).

There are four types of potential hazards related to the proposed General Plan Update:

- Transport of hazardous materials
- Exposure to hazardous materials
- Airport operations hazards
- Interference with emergency response plans

Hazardous Materials Sites within the Planning Area

The State of California Hazardous Waste and Substances Site List (also known as the "Cortese List") is a planning document used by state and local agencies and developers to comply with

4.4 HAZARDS AND HUMAN HEALTH

the California Environmental Quality Act (CEQA) requirements in providing information about the location of hazardous materials sites. California Government Code Section 65962.5 requires the California Environmental Protection Agency (Cal-EPA) to annually update the Cortese List. The Department of Toxic Substances Control (DTSC) is responsible for preparing a portion of the information that comprises the Cortese List. Other state and local government agencies are required to provide additional hazardous material release information that is part of the complete list. DTSC's Site Mitigation and Brownfields Reuse Program EnviroStor database provides DTSC's component of Cortese List data by identifying State Response and/or Federal Superfund and backlog sites listed under Health and Safety Code Section 25356. In addition, DTSC's Cortese List includes Certified with Operation and Maintenance sites. A search of the Cortese database was conducted in March 2009 for sites within the Planning Area. This search produced results for the following sites:

- 1 State Response Site (active)
- 2 Voluntary Cleanup Sites (active)
- 1 School Cleanup Site (active)
- 1 Evaluation Site (open)
- 2 Military Evaluation Sites (inactive)
- 6 School Investigation Sites (no further actions required)

In addition to EnviroStor, the CAL-SITES Abandoned Sites Information System (ASPIS) database, compiled by Cal-EPA, can also be used to identify and track potential hazardous waste sites. This database is regularly uploaded to the State's Geographic Environmental Information Management System (GEIMS) so that agencies and the general public can access information regarding a specific site. GEIMS, a data warehouse which tracks regulatory data regarding leaking underground fuel tanks (LUFTs), other contaminant release sites, water quality information, water use information, and infrastructure data, can be used to identify properties that are known or have had contaminant spills. GeoTracker, the interface to GEIMS, uses commercially available software to allow users to access data from GEIMS over the Internet. According to the GEIMS database, as of March 2009, there were 92 leaking underground fuel tanks (5 of which are still open), 6 land disposal sites (all of which are still open), and 12 other cleanup sites (7 of which are still open) within the Planning Area. See **Appendix D** for a listing of all the LUST sites in the Planning Area.

The National Priorities List (NPL) is maintained by the U.S. Environmental Protection Agency (EPA) and lists the most severe hazardous waste sites as identified by Superfund. Sites are put on the NPL after they have been scored using the Hazard Ranking System, as well as having been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money. The NPL is primarily an informational resource that identifies sites that may warrant cleanup. As of March 2009, there were no NPL sites in the Planning Area.

Landfills and other solid waste disposal facilities can also be sources of groundwater contamination. The California Integrated Waste Management Board (CIWMB) lists 13 such sites in Madera County, including landfills (open and closed) and other solid waste disposal facilities. Specific information on each of these sites is available through Solid Waste Information System (SWIS, maintained by the CIWMB). Several of the landfills are included in additional databases as well. None of these facilities were found to be in violation of CIWMB standards during site inspections.

Known and Unknown Large Hazardous Material Issues in the Planning Area

Pesticides

Pesticides are also a major source of groundwater pollution that frequently contaminate drinking water and irrigation wells. Pesticide properties include both physical and chemical characteristics such as solubility, adsorption, volatility, and the potential for degradation. Pesticide chemicals that dissolve readily in water are highly soluble, thus making them available for transport with the water flow. Such pesticides have a tendency to leach from the soil into groundwater. However, many pesticides do not leach because they are adsorbed into soil particles or organic matter, even though they may have a relatively high solubility. Highly volatile chemicals are easily lost to the atmosphere and are less likely to leach into the groundwater, unless they are also highly soluble and collected in water systems. Degradation affects the potential for a pesticide to reach groundwater, and the persistence of the pesticide influences the potential for long-term contamination. The longer the compound lasts before it is broken down, the longer it is subject to the forces of leaching. However, many highly persistent pesticides (e.g., chlorinated hydrocarbons) have not been found in groundwater because of their low solubility and strong adsorption to soil particles. On the other hand, some pesticides of low persistence (e.g., aldicarb) have been found in groundwater. **Table 4.4-1** lists the persistency of certain pesticides in soils. Information on other pesticides can be found on pesticide labels or through EPA Fact Sheets and Health Advisories, Material Data Safety Sheets, and company literature. As with all contaminated sites, it is important to have a thorough understanding of site conditions and contaminant characteristics prior to assessing relative risk.

Soil properties that affect pesticide movement include texture, permeability, and organic matter content. Management practices, or the methods used to apply pesticides, are another factor determining leaching potential. Injection or incorporation into the soil, as in the case of nematicides, makes the pesticide most readily available for leaching. Most of the pesticides that have been detected in groundwater have been incorporated into the soil rather than sprayed onto growing crops. It is important to remember that pesticide and groundwater relationships are site-specific, and even minor changes in the soil-crop-environment-pesticide relationship can change the potential for groundwater contamination.

TABLE 4.4-1
PESTICIDE PERSISTENCE IN SOIL

Low Persistence (half-life < 30 days)	Moderate Persistence (half-life 30–100 days)	High Persistence (half-life > 100 days)
Aldicarb	Aldrin	Bromacil
Captan	Atrazine	Chlordane
Dalapon	Carbaryl	Lindane
Dicamba	Carbofuran	Paraquat
Malathion	Diazinon	Picloram
Methyl Parathion	Endrin	Trifluralin
Oxamyl	Fonofos	
2, 4-D	Glyphosate	
2, 4, 5-T	Heptachlor	
	Linuron	

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Low Persistence (half-life < 30 days)	Moderate Persistence (half-life 30–100 days)	High Persistence (half-life > 100 days)
	Parathion	
	Phorate	
	Simazine	
	Terbacil	
	TCA	

Source: U.S. Environmental Protection Agency, 2009.

Note: Half-life is the period over which the concentration of a specified chemical or drug takes to fall to half its original concentration.

Other Sources

Dry cleaning operations and historical operation of tanneries have led to soil and groundwater contamination by solvents, including perchloroethylene (PCE), tetrachloroethene (TCE), and chromium. The Central Valley Regional Water Quality Control Board (RWQCB) is currently the oversight agency for contaminated sites of this type in the Planning Area.

The former Oberti salt ponds may also be a source of soil and water contamination in the Planning Area. A groundwater extraction program was initiated around 1990 at the California Olive Grower's facility to remediate areas of groundwater impacted with high salinity brine waste that migrated from the Oberti salt disposal ponds associated with olive production. Central Valley RWQCB staff conducted an evaluation of the groundwater extraction program and determined in 2004 that the groundwater extraction program had been effective and could end, with ongoing monitoring to continue (RWQCB, 2004).

Transportation of Hazardous Materials

The transportation of hazardous materials within the Planning Area is subject to various federal, state, and local regulations. Title 13 of the California Code of Regulations designates specific roadways and transportation routes for explosives, poisonous inhalation hazards, and radioactive materials. The Planning Area does not contain any of these roadways or routes. When a hazardous material is transported into the Planning Area, the most direct route must be taken to or from the nearest state-designated transportation route. The following are descriptions of provisions included in the California Vehicle Code (CVC) and pertain to the transportation of hazardous-related materials.

- The Highway Patrol designates routes in California which are to be used for the transportation of explosives. (CVC Section 31616)
- The CVC applies when the explosives are transported as a delivery service for hire or in quantities in excess of 1,000 pounds. The transportation of explosives in quantities of 1,000 pounds or less, or other than on a public highway, is subject to the California Health and Safety Code. (CVC Section 31601(a))
- It is illegal to transport explosives or inhalation hazards on any public highway not designated for that purpose, unless the use of the highway is required to permit delivery of, or the loading of, such materials. (CVC Section 31602(b) and Section 32104(a))

- When transporting explosives through or into a city for which a route has not been designated by the Highway Patrol, drivers must follow routes as may be prescribed or established by local authorities. (CVC Section 31614(a))
- Inhalation hazards and poison gases are subject to additional safeguards. These materials are highly toxic, spread rapidly, and require rapid and widespread evacuation if there is loss of containment or a fire. The Highway Patrol designates through routes to be used for the transportation of inhalation hazards. It may also designate separate through routes for the transportation of inhalation hazards composed of any chemical rocket propellant. (CVC Section 32100 and Section 32102(b))

Airport Operations Hazards

The Madera Municipal Airport is located in the northwestern portion of the General Plan Planning Area, within the incorporated boundaries of the city. The airport is currently operated by the City and, as such, the current General Plan and associated zoning and other requirements have been established by the City in order to be consistent with the requirements of the Airport Land Use Compatibility Plan (ALUCP). The ALUCP establishes certain land use restrictions and height requirements within the vicinity of the airport in order to minimize the effect of the airport on people and structures on the ground in the areas of noise, safety, and land use (see Regulatory Framework, below).

4.4.2 REGULATORY FRAMEWORK

FEDERAL

Hazards and Contaminated Sites

Environmental Protection Agency

The United States Environmental Protection Agency (EPA) provides leadership in the nation's environmental science, research, education, and assessment efforts. EPA works closely with other federal agencies, state and local governments, and Indian tribes to develop and enforce regulations under existing environmental laws. EPA is responsible for researching and setting national standards for a variety of environmental programs and delegates to states and tribes responsibility for issuing permits and for monitoring and enforcing compliance.

Other Federal Agencies

Other federal agencies that regulate hazardous materials include the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and the National Institute of Health (NIH). The following federal laws and guidelines govern hazardous materials:

- Federal Water Pollution Control
- Clean Air Act
- Occupational Safety and Health Act
- Federal Insecticide, Fungicide, and Rodenticide Act
- Comprehensive Environmental Response, Compensation, and Liability Act
- Guidelines for Carcinogens and Biohazards
- Superfund Amendments and Reauthorization Act Title III
- Resource Conservation and Recovery Act

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- Safe Drinking Water Act
- Toxic Substances Control Act

Table 4.4-2 lists federal, state, and local regulatory agencies that oversee hazardous materials handling and hazardous waste management, and the statutes and regulations that they administer.

**TABLE 4.4-2
REGULATORY AGENCIES FOR HAZARDOUS MATERIALS**

Federal Agencies	
Regulatory Agency	Authority
Department of Transportation (DOT)	Hazardous Materials Transportation Act – Code of Federal Regulations (CFR) 49
Environmental Protection Agency (EPA)	Federal Water Pollution Control Act Clean Air Act Resource Conservation and Recovery Act (RCRA) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Superfund Amendments and Reauthorization Act (SARA) Federal Insecticide, Fungicide, and Rodenticide Act Toxic Substances Control Act (TSCA)
National Institute of Health	Guidelines for Carcinogens and Biohazards
Occupational Safety and Health Administration (OSHA)	Occupational Safety and Health Act and CFR 29
State Agencies	
Regulatory Agency	Authority
Department of Toxic Substances Control (DTSC)	California Code of Regulations
Department of Industrial Relations (CAL-OSHA)	California Occupational Safety and Health Act, CCR Title 8
State Water Resources Control Board and Regional Water Quality Control Board	Porter-Cologne Water Quality Act Underground Storage Tank Law
Health and Welfare Agency	Safe Drinking Water and Toxic Enforcement Act
Air Resources Board	Air Resources Act
Office of Emergency Services	Hazardous Materials Release Response Plan/Inventory Law
Department of Fish and Game	Fish and Game Code
Department of Food and Agriculture	Food and Agriculture Code
State Fire Marshall	Uniform Fire Code, CCR Title 19
Regional/County Agencies	
Regulatory Agency	Authority
Air Pollution Control District	Air Resources Act

Federal Aviation Administration

The mission of the Federal Aviation Administration (FAA) organization is to provide leadership in planning and developing a safe and efficient national airport system to satisfy the needs of aviation interests of the United States, with due consideration for economics, environmental compatibility, local proprietary rights, and safeguarding the public investment. Federal Aviation Regulation (FAR) 49 Code of Federal Regulations (CFR) Part 77 establishes standards and notification requirements for objects affecting navigable airspace. This notification serves as the basis for:

- Evaluating the effect of the construction or alteration on operating procedures;
- Determining the potential hazardous effect of the proposed construction on air navigation;
- Identifying mitigating measures to enhance safe air navigation; and
- Charting of new objects.

The Federal Aviation Administration FAR 49 CFR Part 77 imaginary surfaces, which are used for airport design and planning purposes, are described as follows:

- Primary – Aligned (longitudinally) with each runway and extends 200 feet from each runway end.
- Approach – Longitudinally centered with the runway and extends beyond the primary surface.
- Horizontal – Horizontal plane 150 feet above the established airport elevation. Constructed by swinging arcs around the end of the primary surface.
- Conical – 20:1 slope surface extending beyond the horizontal surface.
- Transitional – Constructed to join approach and horizontal or approach and transitional surfaces.

The FAR Part 77 notification allows the FAA to identify potential aeronautical hazards in advance, thus preventing or minimizing the adverse impacts to the safe and efficient use of navigable airspace. The regulations identify three-dimensional imaginary surfaces on and around airports through which no object should penetrate. All development projects under the proposed General Plan would be subject to review associated with Part 77, if obstruction into the navigable airspace is anticipated.

STATE

Hazards and Contaminated Sites

California Environmental Protection Agency

The California Environmental Protection Agency (Cal-EPA) and the State Water Resources Control Board establish rules governing the use of hazardous materials and the management of hazardous waste. Applicable state and local laws include the following:

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- Public Safety/Fire Regulations/Building Codes
- Hazardous Waste Control Law
- Hazardous Substances Information and Training Act
- Air Toxics Hot Spots and Emissions Inventory Law
- Underground Storage of Hazardous Substances Act
- Porter-Cologne Water Quality Control Act

Subsequent development under the proposed General Plan may be subject to one or more of the above laws.

Department of Toxic Substances Control

Within Cal-EPA, the Department of Toxic Substances Control (DTSC) has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the state agency, for the management of hazardous materials and the generation, transport, and disposal of hazardous waste under the authority of the Hazardous Waste Control Law (HWCL).

California Department of Transportation, Division of Aeronautics

The California Division of Aeronautics fosters and promotes the development of a safe, efficient, dependable, and environmentally compatible air transportation system. The division issues permits for and annually inspects hospital heliports and public-use airports, makes recommendations regarding proposed school sites within two miles of an airport runway, and authorizes helicopter landing sites at or near schools. Aviation system planning provides for the integration of aviation into transportation system planning on a regional, statewide, and national basis. The Division of Aeronautics administers noise regulation and land use planning laws that foster compatible land use around airports and encourages environmental mitigation measures to lessen noise, air pollution, and other impacts caused by aviation. The division prohibits the construction of any structure that would penetrate an imaginary surface, unless the Division of Aeronautics has first issued a permit allowing its construction.

Other Applicable State and Local Hazardous Materials Laws and Policies

Other applicable state and local hazardous materials laws and policies are provided in **Table 4.4-3**.

TABLE 4.4-3
OTHER APPLICABLE HAZARDOUS MATERIAL REGULATIONS

Regulation	Authority
Hazardous Substance Account Act of 1981	The Carpenter-Presley-Tanner Hazardous Substances Act or Hazardous Substance Account Act, also known as the California Superfund, establishes a program to provide for response authority and funding for accidental releases of hazardous substances and hazardous waste disposal sites that pose a threat to public health or the environment.
Toxic Injection Well Control Act of 1985	The Toxic Injection Well Control Act prohibits any injection of hazardous waste into the ground that would endanger the use of the particular groundwater that is designated as drinking water.

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Regulation	Authority
Business Plan Act (1985)	<p>The California Hazardous Materials Release Response Plans and Inventory Law, also known as the Business Plan Act, requires preparation of Hazardous Materials Business Plans and disclosure of hazardous material inventories. A Business Plan includes information such as an inventory of hazardous materials handled, storage location of hazardous materials, an emergency response plan, and provisions for employee training in safety and emergency response procedures. The State Office of Emergency Services (OES) has primary regulatory responsibility with delegation of authority to local jurisdictions. Local agencies include the various local fire protection districts and the Solid Waste & Hazardous Materials Division of Emergency Management Division (EMD).</p> <p>Under certain circumstances, a business must prepare a Risk Management and Prevention Plan to minimize offsite risks associated with acutely hazardous materials. This plan provides additional planning information that covers equipment and system safety, operating procedures, preventive maintenance, upset risk assessments, and safety auditing. Statewide, the Department of Toxic Substance Control (DTSC) has primary regulatory responsibility for management of hazardous materials, with delegation of authority to the local agencies mentioned above.</p>
California Hazardous Waste Control Act of 1986	<p>The California Hazardous Waste Control Act, also known as the Tanner Act (AB 2948), requires the preparation of a County Hazardous Waste Management Plan and the identification of potential areas for the siting of needed future hazardous waste facilities.</p>
Safe Drinking Water and Toxic Enforcement Act of 1986	<p>The Safe Drinking Water and Toxic Enforcement Act, also known as Proposition 65, prohibits the contamination of drinking water with chemicals known to cause cancer or reproductive toxicity. Many hazardous materials are included in this category. This law also requires the publication and annual updates of a list of these chemicals. The California Office of Environmental Health Hazard Assessment (OEHHA) last updated the list in March 4, 2005, and more than 600 chemicals have so far been listed (Office of Environmental Health Hazard Assessment, 2005).</p>
Assembly Bill 1809 (1986)	<p>Assembly Bill (AB) 1809 addresses hazardous waste generated by households. AB 1809 requires counties to identify a program for the safe management of household hazardous wastes, which should be separated from the solid waste stream. The law authorizes cities and counties to approve an increase in solid waste collection fees to offset the cost of establishing, publicizing, and maintaining a household hazardous waste inspection program. AB 1809 also requires the California Integrated Waste Management Board to develop a public information program.</p>
Assembly Bill 2185 (1987)	<p>AB 2185, also known as the Waters Bill, incorporated the provisions of Title III of the Superfund Amendments and Reauthorization Act into a state program. This law delegated implementation of emergency planning and</p>

4.4 HAZARDS AND HUMAN HEALTH

Regulation	Authority
	community-right-to-know programs to the OES, which has in turn authorized local government agencies to implement the program. Local Administering Agencies are required to prepare Area Plans for environmental emergency planning purposes and to identify and maintain resources for disasters and accidental releases.
Aboveground Petroleum Storage Act of 1990	The Aboveground Petroleum Storage Act establishes an inspection program for above ground storage tanks. In general, the Act requires owners or operators of aboveground petroleum storage tanks to file a storage statement and implement measures to prevent spills.
Medical Waste Management Act of 1991	Within the regulatory framework of the Medical Waste Management Act, the Medical Waste Management Program of the California Department of Health Services (DHS) ensures the proper handling and disposal of medical waste throughout California. DHS permits and inspects medical offsite treatment facilities, transfer stations, and medical waste transporters throughout the state. Locally, EMD enforces the provisions of this Act (California Department of Health Services, 2002).
Assembly Bill 2707 (1991)	AB 2707 requires cities and counties to prepare a Household Hazardous Waste Element, which would be included in their County Hazardous Waste Management Plan.
Senate Bill 1082 (1993)	Senate Bill (SB) 1082 required the establishment of a unified hazardous waste and hazardous materials management program. The result was the California Environmental Protection Agency (Cal-EPA) Unified Program, which consolidates, coordinates, and makes consistent the administration, permitting, inspections, enforcement, and fee functions of DTSC, the SWRCB, the RWQCB, OES, and the State Fire Marshal. The Unified Program is implemented at the local government level by the CUPA (California Environmental Protection Agency, 2005).
Assembly Bill 2886 of 2000	The bill authorizes the SWRCB to require a person who is submitting a report relating to a program administered by the board, to the board, a regional board, or a local agency, to submit the report in electronic format, as prescribed. This bill created the geotracker database.

Source: Napa County, BDR 2005

LOCAL

Madera County Airports Land Use Compatibility Plan

The Madera County Airport Land Use Commission prepared and adopted a combined Airport Land Use Compatibility Plan for both public-use airports located within the county. This document serves as the ALUCP for both the Chowchilla Municipal Airport and the Madera Municipal Airport. Chowchilla Municipal Airport is located in the community of Chowchilla, approximately 7.4 miles northwest of the General Plan Planning Area. Therefore, it is not a factor for the proposed project and is not discussed further. The Madera Municipal Airport is located in

the northwestern portion of the General Plan Planning Area, within the incorporated boundaries of the City of Madera.

ALUCPs, as mandated by the State PUC and the Caltrans Division of Aeronautics, are concerned with three major issue areas: noise, safety, and land use. The noise aspect of the ALUCP and its effect on the proposed General Plan Update are discussed in Section 4.7, Noise, of this EIR. The land use impacts of the ALUCP on the proposed Update are discussed in Section 4.1, Land Use, of this EIR.

In the area of safety, the ALUCP establishes both safety areas, incorporated into Compatibility Zones surrounding the airport, and height limits, established according to Federal Aviation Regulations Part 77. Compatibility Zones described in the ALUCP are placed such that effects to land uses and safety concerns due to aircraft overflights, landing, and takeoffs are minimized. Primary control of hazards within these zones concerns the limiting of certain land uses that would result in a concentration of large numbers of people on the ground (or certain sensitive persons such as children or the infirm) and through the prevention of the development/operation of uses that constitute a hazard to flight. Uses that pose a hazard to flight include any uses that would generate dust, steam, or smoke; glare or bright lights; result in electrical or radio interference with landing instrumentation or communications; and any use that would attract large quantities of birds.

Height restrictions established in the vicinity of the airport were formulated according to the requirements of FAR Part 77, which establishes a series of "imaginary surfaces" surrounding the airport. Any structure that would rise above these surfaces is considered a possible hazard to aircraft, and certain procedures must be undertaken with the ALUC and the FAA in order to address possible changes in air navigation and approach/departure guidelines and procedures.

4.4.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

Based on criteria derived from Appendix G in the CEQA Guidelines, the proposed General Plan would result in a significant impact to the environment or to human health and safety if the project would:

- 1) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- 2) 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.
- 3) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- 4) Be located on a site that is included on a list of hazardous materials sites compiled by Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.
- 5) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area.

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- 6) For a project in the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area.
- 7) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

The reader is referred to Section 4.5, Transportation and Circulation, regarding potential safety hazards with railroad operations and Section 4.12, Public Services and Utilities, regarding fire hazards.

METHODOLOGY

This section analyzes the impacts associated with the implementation of the proposed General Plan, including the risk of upset due to potential hazardous substances, such as hazardous materials and/or hazardous waste within the Planning Area, and other hazards to public safety. This evaluation of the General Plan's potential to create hazards to the public health or the environment related to hazardous substances is based on database research, field review of the Planning Area, review of the Madera County General Plan, and consultation with applicable local, state, and federal agencies.

PROJECT IMPACTS AND MITIGATION MEASURES

Routine Transport of Hazardous Materials

Impact 4.4.1 Implementation of the General Plan could include the transport, use, and/or disposal of hazardous materials on Planning Area roadways, which could result in exposure of such materials to the public either through routine use or due to accidental release. Implementation of proposed General Plan policies and action items would result in a **less than significant** impact.

Within the Planning Area, Avenue 12 and Highways 99 and 145 may be used by vehicles carrying hazardous or toxic substances. There are no approved transportation routes in the Planning Area for the transportation of explosives. It is illegal to transport explosives or inhalation hazards on any public highway not designated for that purpose, unless the use of the highway is required to permit delivery or the loading of such materials (California Vehicle Code Sections 31602(b), 32104(a)). The California Highway Patrol (CHP) also designates through routes to be used for the transportation of inhalation hazards and may designate separate through routes for the transportation of inhalation hazards composed of any chemical rocket propellant (California Vehicle Code, Section 32100 and Section 32102(b)).

The transportation of hazardous materials on area roadways is regulated by the California Highway Patrol, U.S. Department of Transportation (Hazardous Materials Transportation Act), and Caltrans. Use of these materials is regulated by the DTSC (22 Cal. Code of Regulations Section 66001, et seq.) and is intended to provide an acceptable level of protection to the public from accidental releases. The use, storage, and transport of hazardous materials by developers, contractors, business owners, and others are required to be in compliance with local, state, and federal regulations during project construction and operation. Facilities that use hazardous materials are required to obtain permits and comply with appropriate regulatory agency standards and regulations designed to avoid hazardous material releases. All existing and future development in the unincorporated city would be required to comply with federal, state, and local regulations regarding the handling and transportation of hazardous materials. Therefore this impact would be **less than significant**.

Proposed General Plan Policies and Action Items that Provide Mitigation

The following proposed General Plan policies address the use and handling of hazardous materials and associated land uses involving hazardous materials:

Policy HS-15: The City will coordinate with the California Highway Patrol, the Madera County Department of Environmental Health Services, the Madera County Sheriff's Department, and all other appropriate local, state and federal agencies in hazardous materials route planning, notifications and incident response, to ensure appropriate first response to hazardous material incidents.

Policy HS-17: The City shall seek to avoid and minimize exposure of sensitive land uses to potentially hazardous emissions along truck routes and rail lines which may be used by surface vehicles and rail cars carrying hazardous or toxic substances. These truck routes include Avenue 12 and Highways 99 and 145. Rail corridors include the two primary lines running north-south through Madera, as well as the spur line which serves the industrial area in the southwest portion of the City.

Implementation of the policies described above, as well as adherence to all federal, state, and local regulations regarding the transportation of hazardous materials, would reduce the potential for public safety impacts associated with the routine transportation of hazardous materials on Planning Area roadways to an acceptable level and to a **less than significant** level.

Mitigation Measures

None required.

Release and Exposure to Hazardous Materials

Impact 4.4.2 Implementation of the proposed General Plan Update could result in the release of hazardous materials into the environment under reasonably foreseeable upset or accident conditions. This is considered a **less than significant** impact.

Hazardous materials used during construction and operational activities throughout the Planning Area may expose nearby residents and local schools to toxic emissions. Electrical transformers and industrial products containing polychlorinated biphenyls (PCBs) and heavy metals, as well as persistent residual chemicals including pesticides, herbicides, and fertilizers, have the potential to pose a health and safety risk via accidental release or misuse in the Planning Area (the reader is referred to Section 4.9, Hydrology and Water Quality, regarding water quality and pesticide, herbicide, and fertilizer concerns). The potential for exposure to toxic air contaminants is addressed in Section 4.6, Air Quality.

Land uses or development associated with the General Plan for the proposed residential and non-residential uses would involve the storage, use, and transport of hazardous materials (e.g., gasoline fuels, demolition materials, asphalt, lubricants, toxic solvents, pesticides, and herbicides) during construction, demolition, and landscaping activities and operations. In addition, certain commercial uses, including water treatment plants, swimming pool facilities, gas stations, and dry cleaners that store and use hazardous materials, could pose a potential hazard to the environment.

4.4 HAZARDS AND HUMAN HEALTH

The Cortese List, prepared pursuant to Government Code Section 65962.5 by the California Department of Toxic Substances Control, lists 13 sites in the Planning Area. Also, the Regional Water Quality Control Board has listed several leaking underground storage tank sites in the Planning Area (see **Appendix D**). If underground storage tanks (USTs) are discovered during any phase of a project, removal is required prior to additional site preparation or development activities (California State Water Resources Control Board Underground Storage Tank Program and California Health and Safety Code Section 25281, et seq.). All UST removal and remediation efforts must comply with the Madera County Department of Environmental Health standards. If discovered, the tanks would require removal prior to any development activities. If subsurface contamination occurred as a result of tank leakage or overfilling, the contamination would require assessment and remediation in compliance with Madera County Department of Environmental Health regulations.

As discussed under Impact 4.4.1, the transportation of hazardous materials on area roadways is regulated by the CHP, U.S. Department of Transportation (Hazardous Materials Transportation Act), and Caltrans, and use of these materials is regulated by the DTSC (22 Cal. Code of Regulations Section 66001, et seq.). The use, storage, and transport of hazardous materials by developers, contractors, business owners, and others are required to be in compliance with local, state, and federal regulations during project construction and operation. Facilities that use hazardous materials are required to obtain permits and comply with appropriate regulatory agency standards designed to avoid hazardous waste releases. All existing and future projects in the General Plan Planning Area would be required to comply with federal, state, and local regulations regarding the handling, transportation, disposal, and cleanup of hazardous materials.

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan contains goals, policies, and action items that are intended to protect public health from exposure to hazardous materials within the Planning Area. The following list contains those policies that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address the impact:

- Policy HS-10: The City will regulate the storage of hazardous and waste materials consistent with state and federal law. The City shall not permit above ground tanks without considering the potential hazards that would result from the release of stored liquids caused by possible rupture or collapse, and may request applicants to have an emergency response plan.*
- Policy HS-11: The City will work with responsible agencies to ensure that all industrial facilities are constructed and operated in accordance with the most current safety and environmental protection standards.*
- Policy HS-14: Industries which store and process significant quantities of hazardous or toxic materials shall provide a buffer zone between the installation that houses such substances and the property boundaries of the facility sufficient to protect the public in the event of the release or leak of the materials.*
- Policy HS-16: The City will work with other responsible agencies on efforts to clean up or contain identified soil or water contamination in the city limits. This policy will extend to the former Oberti salt ponds and other related facilities at such time as they are annexed to the city.*

Policy HS-18: The City shall require written confirmation from applicable local, regional, state, and federal agencies that known contaminated sites have been deemed remediated to a level appropriate for land uses proposed prior to the City approving site development or provide an approved remediation plan that demonstrates how contamination will be remediated prior to site occupancy. This documentation shall specify the extent of development allowed on the remediated site as well as any special conditions and/or restrictions on future land uses.

Implementation of the above proposed General Plan policies would require that hazardous materials and wastes are handled consistent with state and federal laws associated with public and worker safety, remediation, adequate buffers and boundaries are provided to protect the public from industries that utilize hazardous materials, ensure that reasonably foreseeable hazards are adequately addressed, and address and coordinate cleanup efforts of contaminated sites. Thus implementation of these provisions would reduce this impact to **less than significant**.

Mitigation Measures

None required.

Airport Operations

Impact 4.4.3 Implementation of the proposed General Plan could locate development near Madera Airport. This impact is considered **less than significant**.

Airports establish planning boundaries for height, noise, and safety around each airport as well as policies that determine the compatibility of new land uses proposed within each planning area boundary. Airport operation hazards are generally associated with aircraft accidents, particularly during takeoffs and landings due to incompatible land uses, power transmission lines, wildlife hazards (e.g., bird strikes), and tall structures that penetrate the imaginary surfaces surrounding an airport. As shown in **Figure 3.0-7**, there is development proposed within the ALUCP of the Madera Airport, including two villages adjacent to the airport. State Airport Land Use Commission (ALUC) law requires a jurisdiction to amend its General Plan and other land use regulations to achieve consistency with airport ALUCPs adopted by the ALUC. Additionally, the Federal Aviation Regulations, Part 77 defines a series of imaginary surfaces surrounding all public use airports. Any proposed object or structure that would penetrate any of these imaginary surfaces as they apply to the affected airport facilities is considered by the Federal Aviation Administration to be an obstruction to air navigation. An obstruction to air navigation may not be a hazard to air navigation; however, the FAA presumes it to be a hazard and treats it as such until an FAA aeronautical study determines that it does not have a substantial adverse effect on the safe use of the navigable airspace by aircraft.

The Madera County Airport Land Use Commission (ALUC) prepared and adopted a combined Airport Land Use Compatibility Plan for both public-use airports located within the county. This document serves as the ALUCP for both the Chowchilla Municipal Airport and the Madera Municipal Airport. The ALUCP establishes the planning area boundaries of Madera Municipal Airport and provides the land use guidelines on which compatible uses are determined. The ALUC reviews and determines of compatibility of individual development proposals (as specified in the ALUCP), general plan amendments, and other land use plans and regulations around the airport. Federal Aviation Regulations, which involve the Caltrans Division of Aeronautics, mandate height restrictions for buildings within imaginary surfaces surrounding airports (FAR,

4.4 HAZARDS AND HUMAN HEALTH

Part 77). Buildings within the Madera Municipal Airport safety zone would be required to adhere to both Federal Aviation Administration regulations and the local ALUCP. The reader is referred to Section 4.1, Land Use, for additional discussion regarding Madera Municipal Airport and the ALUCP.

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan contains the following policies that are intended to avoid airport conflicts within the Planning Area.

Policy HS-31: The City shall consider the compatibility criteria in the Airport Land Use Compatibility Plan for the Madera Airport and the Madera Municipal Airport Master Plan in the review of potential land uses or projects.

Policy HS-32: The City shall ensure that new development near the Madera Airport is designed to protect public safety from airport operations consistent with recommendations and requirements of the Airport Land Use Commission, the Federal Aviation Administration, and other responsible agencies.

Policy LU-35: VILLAGE D: SPECIFIC POLICIES

The following policies are intended to identify some of the unique issues for this area which will need to be addressed, and to guide development, as the area transitions to urban use.

- All future development in this Village shall conform to the Building Blocks principles as described in this General Plan.*
- In conjunction with village and neighborhood planning, a mechanism shall be established which creates a permanent agricultural buffer where the westerly edge of the Village abuts the Growth Boundary.*

This buffer shall average at least 400' in depth, with a minimum depth of 250', and must run continuously along westerly edge of the Village.

No habitable structures are to be located within this buffer, although passive recreational opportunities (such as trails and community gardens) may be allowed. Alternative methods and designs to establish the buffer may be proposed, and including placing the buffer on either side of the growth boundary. Physical maintenance of the buffer shall be provided consistent with the design and function of the space.

- The Village core area shall provide for an integrated mix of uses, including park and open space uses, along the river.*
- Future development along the Fresno River should be designed to take advantage of the river frontage, including orienting development to front the river where not otherwise prohibited by site conditions.*
- Village and neighborhood planning shall provide for the alignment of the designated arterial which runs through the Village east and west*

(Cleveland Avenue), to bend to the south to provide circulation to the proposed village core located along the Fresno River.

- *All development proposals within Village D shall comply with the provisions of the Airport Land Use Master Plan. The establishment of land use designations at the village and neighborhood levels, as well as the layouts of individual projects, shall reflect the allowable uses and densities in the Airport Land Use Master Plan.*

Adherence to federal regulations and Comprehensive Land Use Plan regulations and implementation of the above policies would ensure that new development is designed to provide for public safety from airport operations. Thus, this impact is **less than significant**.

Mitigation Measures

None required.

Interference with an Adopted Emergency Response or Evacuation Plan

Impact 4.4.4 Proposed land uses and/or changes in land use patterns that would occur as a result of implementation of the proposed Madera General Plan Update would not interfere with adopted emergency response or evacuation plans. This is considered a **less than significant** impact.

The proposed General Plan Update would not alter the City's overall land use pattern or land use designations to such an extent that would conflict with the City's emergency response and/or evacuation plans. The City does plan to change from the previous practice of rapid outward expansion to a more densely developed city that uses more compact land use patterns to encourage walking, bicycling, and transit use; preserve agricultural and other open space uses; and reduce infrastructure costs.

An efficient roadway and circulation system is vital for the evacuation of residents and the mobility of fire suppression, emergency response, and law enforcement vehicles. Implementation of the General Plan will add additional traffic and residences requiring evacuation in case of an emergency. Implementation of the proposed roadway system under the proposed General Plan Update would provide for a "modified grid" roadway system, particularly for new development, and encourage pedestrian circulation access around the city and at the neighborhood level through the design of roadways and pedestrian facilities. Implementation of the proposed roadway system within the General Plan Update would improve city roadway connectivity, allowing for better emergency vehicle access to residences as well as evacuation routes for area residents (see **Figure 3.0-5**).

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan contains the following action item and policy that provide policy direction on emergency response and evacuation:

Action HS-8.1: Adopt an All Hazards (natural and manmade) Disaster Plan. The Plan should be sufficiently broad in scope to include the designation of evacuation routes, staging areas, shelters, PODs (points of distribution), and protocols for coordinating all local government and volunteer agencies in assisting local

4.4 HAZARDS AND HUMAN HEALTH

residents in the event of a major earthquake, large-scale fire or explosion, or hazardous chemical spill or release of hazardous airborne gas.

Policy HS-34: The City shall continue to maintain and update emergency service plans, including the Madera City Fire Department Emergency Operations Plan and the Hazardous Material Spills Emergency Response Plan.

As identified above, the proposed General Plan Update's circulation system would improve access throughout the City of Madera and Planning Area, while the above policy and action item would continue to maintain and update emergency response and evacuation plans. Thus, the proposed General Plan Update would not conflict with adopted emergency response or evacuation plans. This impact is **less than significant**.

Mitigation Measure

None required.

4.4.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for hazards and human health risks associated with the General Plan includes the City of Madera as well as the unincorporated portions of the Planning Area. Hazardous material, human health, and safety impacts as described in CEQA Appendix G are generally site-specific and not cumulative by nature. The potential cumulative impacts due to the increased use of hazardous materials resulting from proposed development under the General Plan under buildout conditions include, but are not limited to, air quality, noise, water quality, flooding, and fire, as well as exposure to multiple contaminants. The cumulative impacts associated with affected resources, such as air and water, are analyzed in the applicable technical sections of this EIR.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Hazards and Health Impacts

Impact 4.4.5 Implementation of the proposed General Plan would not contribute to any regional cumulative hazards. This is considered a **less than cumulatively considerable** impact.

Development associated with the proposed General Plan Update and future development in the proposed annexation areas could result in increased hazard related impacts; however, these impacts would be specific to individual sites in the Planning Area and are not tied to any regional (beyond the Planning Area) hazard or contamination issues (the reader is referred to Section 4.6, Air Quality, regarding regional public health issues associated with air pollutants and toxic air contaminants). Proposed General Plan policy provisions and mitigation measures identified under Impacts 4.4.1 through 4.4.4 would assist in reducing the impacts. Federal, state, and local regulations would determine appropriate land uses within the vicinity of the airport in the Planning Area. Anticipated development projects (e.g., residential, commercial, park, and recreational land uses) that would occur under the proposed General Plan Update would also include, but not be limited to, public and utility extension projects, roadway widenings and extensions, intersection improvements, water system distribution improvements, and trail

extensions. These proposed land use activities would not significantly increase human health or safety risks.

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan Update contains several policies and action items that address potential hazard impacts associated with implementation of the proposed General Plan Update. The reader is referred Impacts 4.4.1 through 4.4.4 for the list of policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that assist in reducing this impact.

Mitigation measure MM 4.4.2 would ensure that contaminated sites are remediated prior to development and occupancy.

As identified under Impacts 4.4.1 through 4.4.4, implementation of the proposed General Plan Update policy provisions as well as mitigation measure MM 4.4.2 would ensure that all project-related hazard impacts are mitigated. Since none of these impacts are related to regional (beyond the Planning Area) hazard or contamination issue, the proposed General Plan Update's hazard impact would be **less than cumulatively considerable**.

Mitigation Measures

None required.

4.4 HAZARDS AND HUMAN HEALTH

REFERENCES

California Code of Regulations, Title 13, Chapter 6, Articles 1 and 2, <http://government.westlaw.com/linkedslice/default.asp?SP=CCR-1000> (accessed March 4, 2009).

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Madera County Airport Land Use Commission. Airport Land Use Compatibility Plan – Madera County Airports. December 16, 1993.

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U.S. Environmental Protection Agency. NPL Sites in California.
<http://www.epa.gov/superfund/sites/npl/ca.htm> (accessed March 4, 2009).

4.5 TRANSPORTATION AND CIRCULATION

This section describes potential impacts on the transportation system associated with adoption of the proposed City of Madera General Plan. The impact analysis evaluates the local and regional roadway, transit, bicycle, pedestrian, and aviation components of the overall transportation system. This traffic analysis was conducted by Fehr & Peers Associates.

4.5.1 EXISTING CONDITIONS

PHYSICAL ENVIRONMENT

The existing physical conditions of the transportation system are described below. This description is organized by transportation system component within the "study area", which includes roadway and transportation facilities within the City limits and proposed General Plan Planning Area.

Regional Roadway System

Madera's transportation system is focused around the roadway network. Although automobile travel is the primary function for the roadway network, it also serves a variety of other modes: trucks, buses, bicycling, and walking. According to the 2000 U.S. Census approximately 91% of all working city residents traveled from home to work by automobile. Travel by transit, bicycling, and walking combined accounted for approximately 4%, working at home accounted for approximately 3%, while travel by other means accounted for approximately 2%.

Madera's roadway network is a modified grid system consisting of arterials, collectors, and local collectors. State Route (SR) 99 is the primary transportation corridor extending through the county from north to south. SR 99 not only connects the City of Madera to Merced County and Fresno County, but serves as a major goods movement route.

Work, shopping, recreation, school, and goods movement trips are responsible for most of the travel demand on the transportation system. Recreation attractions include the seven major parks in the City; regional recreation facilities contributing traffic to the area include the local lakes in Madera County, the Millerton Lake State Recreation Area, Yosemite National Park, and many others. Madera also serves as the County seat, and most public agency functions in the County are either centralized in, or have a presence in, the City of Madera.

The City is bifurcated by several major goods movement lines, which limits east-west and north-south connectivity. Outside the Downtown District, both the railroads and SR 99 intersect local roadways at 45 degree angles. Within the Downtown District, street orientations were determined by the orientation of the original rail lines. The at-grade railroad crossings of the Union Pacific Railway and Burlington Northern Santa Fe (BNSF) Railway and interchanges with SR 99 exacerbate peak period congestion at the following locations:

- | | | |
|----------------------|--------------------------|------------------------------|
| • Central Avenue | • Madera Avenue (SR 145) | • Avenue 15 |
| • Cleveland Avenue | • 3 rd Street | • Avenue 15 ½ (Storey Road) |
| • Country Club Drive | • 4 th Street | • Avenue 16 (Kennedy Street) |
| • Gateway Drive | • 6 th Street | • Avenue 17 |

4.5 TRANSPORTATION AND CIRCULATION

- Olive Avenue
- Yosemite Avenue (SR 145)
- 9th Street
- Avenue 12
- Road 29
- Raymond Road

Howard Road is a major commercial corridor that also experiences congestion during the peak periods.

Major roadways are described below:

State Highways

State Route 99 (SR 99) traverses the San Joaquin and Sacramento Valleys beginning at Interstate 5 (I-5) at the base of the Tehachapi's in Kern County and ending at Route 36 near Red Bluff in Tehama County. Within Madera, SR 99 is a four-lane freeway with interchanges at Avenue 12, Avenue 13 ½ (Almond Avenue), Gateway Drive, Madera Avenue (SR 145), Fourth Street, Second Street, Cleveland Avenue, Avenue 16, Avenue 17, and Avenue 18 ½.

State Route 145 (SR 145) is primarily a two-lane conventional highway connecting I-5 in southern Fresno County to SR 41 in northern Madera County. SR 145 primarily serves agricultural traffic in the unincorporated areas and a mix of commuter traffic in the Cities of Madera and Kerman. Within Madera, SR 145 alternates between a two and four-lane roadway and serves as the "main street" in downtown Madera.

Major Roadways

Road 23 is a two-lane north-south arterial with access to SR 99 via Avenue 18 ½. An existing two-lane bridge crosses the Fresno River.

Westberry Boulevard, north of Avenue 14 and within the City limits, is a two-lane north-south arterial connecting adjacent neighborhoods to SR 99 via east-west roadways such as Cleveland Avenue, Sunset Avenue, and Howard Road.

Granada Street is a two-lane north-south collector between Avenue 13 ½ (Almond Avenue) and Cleveland Avenue that includes an existing crossing of the Fresno River. Granada Street between Avenue 13 (Pecan Avenue) and Avenue 12 is a two-lane arterial.

Schnoor Avenue is a two-lane collector north-south between Avenue 12 and the Fresno River. Schnoor Avenue north of the Fresno River is a two-lane arterial. An existing bridge provides access across the Fresno River.

Madera Avenue (SR 145) is a two-lane north-south arterial between Avenue 12 and Avenue 13 ½ (Almond Avenue), and a four-lane arterial between Avenue 13 ½ (Almond Avenue) and Gateway Drive. The SR 99 / Madera Avenue (SR 145) interchange is a modified Type L-2 spread diamond configuration.

Road 29 is a two-lane north-south arterial between Avenue 12 and SR 145 which provides direct access to the Madera station of Amtrak near the Road 29 / Avenue 15 ½ (Storey Road) intersection. Country Club Drive is a four-lane north-south arterial between Gateway Drive and Avenue 17 where it transitions to a two-lane arterial. Country Club Drive provides direct access to SR 99 via the Cleveland Avenue interchange.

D Street is a two-lane north-south arterial between Sunrise Avenue and Cleveland Avenue where it transitions to a two-lane collector to Avenue 17. An existing bridge provides access across the Fresno River.

Lake Street is a two-lane north-south collector between Sunrise Avenue and Yosemite Avenue (SR 145) where it transitions to a two-lane arterial to Avenue 17. An existing bridge provides access across the Fresno River.

Raymond Road is a two-lane north-south arterial between Cleveland Avenue and the City line.

Avenue 17 is a two-lane east-west arterial between Road 23 and Walden Avenue, and a four-lane arterial from Walden Drive to Country Club Drive, and a two-lane arterial between Crystal Drive and the BNSF Railway.

Avenue 16 (Kennedy Street) is a two-lane east-west arterial between Road 23 and Road 24 and a two-lane arterial from Condor Drive to SR 99. Avenue 16 (Kennedy Street) is discontinuous between Road 24 and Condor Drive. The SR 99 / Avenue 16 (Kennedy Street) interchange is a Type L-7 configuration with loop on-ramps in the northwest quadrant and a Type L-8 configuration with off-ramps in the northeast quadrant.

Cleveland Avenue is a two-lane east-west arterial between Road 23 and Westberry Boulevard, a two-lane divided arterial between Westberry Boulevard and Granada Drive, a four-lane arterial between Granada Drive and Schnoor Avenue, and a four-lane arterial with auxiliary lanes between Schnoor Avenue and SR 99. Cleveland Avenue is a two-lane arterial between Country Club Drive and SR 145. The SR 99 / Cleveland Avenue interchange is a Type L-2 spread diamond configuration.

Gateway Drive is a two-lane east-west arterial between Olive Avenue and the Fresno River where it transitions to two northbound lanes and a single southbound lane. Gateway Drive is a four-lane arterial between Cleveland Avenue and the SR 99 / Avenue 16 interchange. An existing bridge provides access across the Fresno River.

Howard Road is a two-lane arterial between Road 23 and Granada Drive and a four-lane arterial between Granada Drive and Pine Street.

Olive Avenue is a four-lane east-west arterial between Howard Road/Yosemite Avenue and Madera Avenue.

Avenue 13 (Pecan Avenue) is a two-lane east-west arterial between Road 23 and Pine Street where it transitions to two-lane westbound lanes and a single eastbound lane to Stadium Avenue. Avenue 13 is generally a two-lane arterial between Stadium Avenue and Road 29 except where intermittent fronting improvements provide a second travel lane. Avenue 13 provides an overcrossing of SR 99.

Avenue 12 is a two-lane east-west arterial connecting Road 23 to Road 30 ½ with an interchange at SR 99. It has one lane in each direction between Road 23 and Road 30 where it transitions to two in the westbound direction along the Madera State Center Community College. The SR 99 / Avenue 12 interchange is a Type L-1 tight diamond configuration in the northbound direction and a Type L-7 configuration in the southbound direction.

4.5 TRANSPORTATION AND CIRCULATION

STUDY AREA

Fehr & Peers conducted a detailed analysis of the following roadway segments and freeway facilities under existing conditions within the study area. As noted above, the study area includes roadway and transportation facilities within the current City limits and proposed General Plan Planning Area. These roadway facilities were identified based on input from City staff.

ROADWAYS

1. Avenue 12 – Road 23 to Granada Street
2. Avenue 12 – Granada Drive to Pine Street
3. Avenue 12 – SR 99 to Road 30
4. Avenue 13 – Road 24 to Granada Drive
5. Avenue 13 – Pine Street to SR 145
6. Avenue 13 – SR 145 to SR 99
7. Tozer Avenue – Avenue 15 to Sunrise Avenue
8. Ellis Avenue – Country Club Drive to Lake Street
9. Avenue 17 – SR 99 to Country Club Drive
10. Avenue 17 – Country Club Drive to Lake Street
11. Cleveland Avenue – Granada Drive to Schnoor Avenue
12. Cleveland Avenue – Schnoor Avenue to SR-99
13. Cleveland Avenue – Sharon Road to D Street
14. Sunset Avenue – Granada Drive to Schnoor Avenue
15. Howard Road – Granada Drive to Schnoor Avenue
16. Olive Avenue – Yosemite Avenue to Madera Avenue (SR 145)
17. Madera Avenue (SR 145) – Ave 13 ½ (Almond Avenue) to SR 99
18. Gateway Drive (SR 145) – Madera Avenue to Yosemite Avenue
19. Yosemite Avenue (SR 145) – Gateway Drive to Cleveland Avenue / Tozer Street
20. Yosemite Avenue (SR 145) – Cleveland Avenue / Tozer Street to Road 29
21. Westberry Boulevard – Sunset Avenue to Howard Road
24. Raymond Road – Cleveland Avenue to BNSF Railway
25. Tozer Avenue – Olive Avenue to Avenue 13 ½ (Almond Avenue)
26. Country Club Drive – Cleveland Avenue to Ellis Avenue
27. Country Club Drive – Avenue 17 to Avenue 18
28. Pine Street – Howard Road to Avenue 13 (Pecan Avenue)
29. Granada Drive – Howard Road to Avenue 13 (Pecan Avenue)
30. Road 23 – Avenue 17 to Sunset Avenue
31. Howard Road – Schnoor Street to Pine Street
32. Avenue 13 – SR 99 to Road 29
33. Avenue 15 – Tozer Avenue to Road 29
34. Avenue 17 – Road 23 to SR 99
35. Road 23 – Avenue 13 (Pecan) to Avenue 12
36. Country Club Drive – Avenue 18 to Avenue 17
37. Country Club Drive – Club Drive to Avenue 18 1/2
38. Granada Drive – Cleveland Avenue to Fresno River
39. Granada Drive – Sunset Avenue to Avenue 14
40. 4th Street – SR 99 to Gateway Drive
41. 4th Street – Gateway Drive to D Street
42. D Street – Cleveland Avenue to Adell Street
43. D Street – 4th Street to Central Avenue
44. Almond Avenue – East of SR 145
45. Almond Avenue – Stadium Road to SR 145

22. Road 29 – SR 145 to Avenue 15
23. Road 29 – Olive Avenue to Almond Avenue

46. Gateway Drive – 4th Street to Central Avenue
47. Gateway Drive – Cleveland Avenue to SR 99

FREEWAY SEGMENTS

1. SR 99 – Avenue 20 to Avenue 18 ½
2. SR 99 – Avenue 16 to Cleveland Avenue
3. SR 99 – Second Street to Fourth Street
4. SR 99 – SR-145 to Gateway Drive
5. SR 99 – Avenue 12 to Avenue 9

TRAFFIC OPERATIONS METHODOLOGY

The analysis methodology used to analyze roadway and freeway facilities is described below. The operations of roadway facilities are described with the term *level of service*. Level of service (LOS) is a qualitative description of traffic flow from the perspective of motorists based on factors such as speed, travel time, delay, freedom to maneuver, volume, and capacity. Six levels are defined from LOS A, as the least congested operating conditions, to LOS F, or the most congested operating conditions. LOS E represents “at-capacity” operations. When volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F.

For this General Plan analysis, LOS was determined by comparing existing and forecasted daily traffic volumes for selected roadway and freeway segments with daily LOS capacity thresholds. These thresholds are shown in **Table 4.5-1** and are consistent with capacities identified in the Madera County Regional Transportation Plan (Madera County Transportation Commission, 2007). This methodology also correlates to the 2000 Highway Capacity Manual and the 2002 Florida Quality/Level of Service Handbook.

**TABLE 4.5-1
ROADWAY SEGMENT DAILY VOLUME THRESHOLDS¹**

Facility Type	Number of Lanes	Daily Volume Threshold				
		LOS A	LOS B	LOS C	LOS D	LOS E
Urban Collector	2	7,500	8,750	10,000	11,250	12,500
Urban Collector	4	14,460	16,870	19,280	21,690	24,100
Rural Collector	2	8,400	9,800	11,200	12,600	14,000
Rural Collector	4	16,440	19,180	21,920	24,660	27,400
Urban Arterial	2	10,320	12,040	13,760	15,480	17,200
Urban Arterial	4	20,700	24,150	27,600	31,050	34,500
Urban Arterial	6	31,020	36,190	41,360	46,530	51,700
Rural Road	2	10,800	12,600	14,400	16,200	18,000
Rural Road	4	21,600	25,200	28,800	32,400	36,000
Freeway	4	46,800	54,600	62,400	70,200	78,000
Freeway	6	76,680	89,460	102,240	115,020	127,800

Notes: ¹ Madera County Regional Transportation Plan, 2007

4.5 TRANSPORTATION AND CIRCULATION

Policy CI-23 from the City's General Plan Update Circulation Element sets forth LOS standards for the City. The policy states:

The City shall seek to maintain Level of Service (LOS) C at all times on all roadways and intersections in Madera, with the following exceptions:

- a) On arterial roadways or roadways with at-grade railroad crossings that were experiencing congestion exceeding LOS C during peak hour travel times as of the date this General Plan Update is adopted the City shall seek to maintain LOS D or better.*
- b) This policy does not extend to freeways (where Caltrans policies apply) or to private roadways.*
- c) In the Downtown District (as defined in the Land Use Element of this General Plan), the City shall seek to maintain LOS D.*

Caltrans prepares a Transportation Concept Report (TCR) for each of its facilities in the area. A TCR is a long-term planning document that each Caltrans district prepares for every state highway or portion thereof in its jurisdiction. This document usually represents the first step in Caltrans' long-range corridor planning process. The purpose of a TCR is to determine how a highway will be developed and managed so that it delivers the targeted LOS and quality of operations that are feasible to attain over a 20-year period. These are indicated in the "route concept." In addition to the 20-year route concept level, the TCR includes an "ultimate concept," which is the ultimate goal for the route beyond the 20-year planning horizon. Ultimate concepts should be used cautiously, however, because unforeseen changes in land use and other variables make forecasting beyond 20 years difficult. SR 99 in the project study area has a route concept LOS D. SR 145 in the project study area has a route concept LOS D.

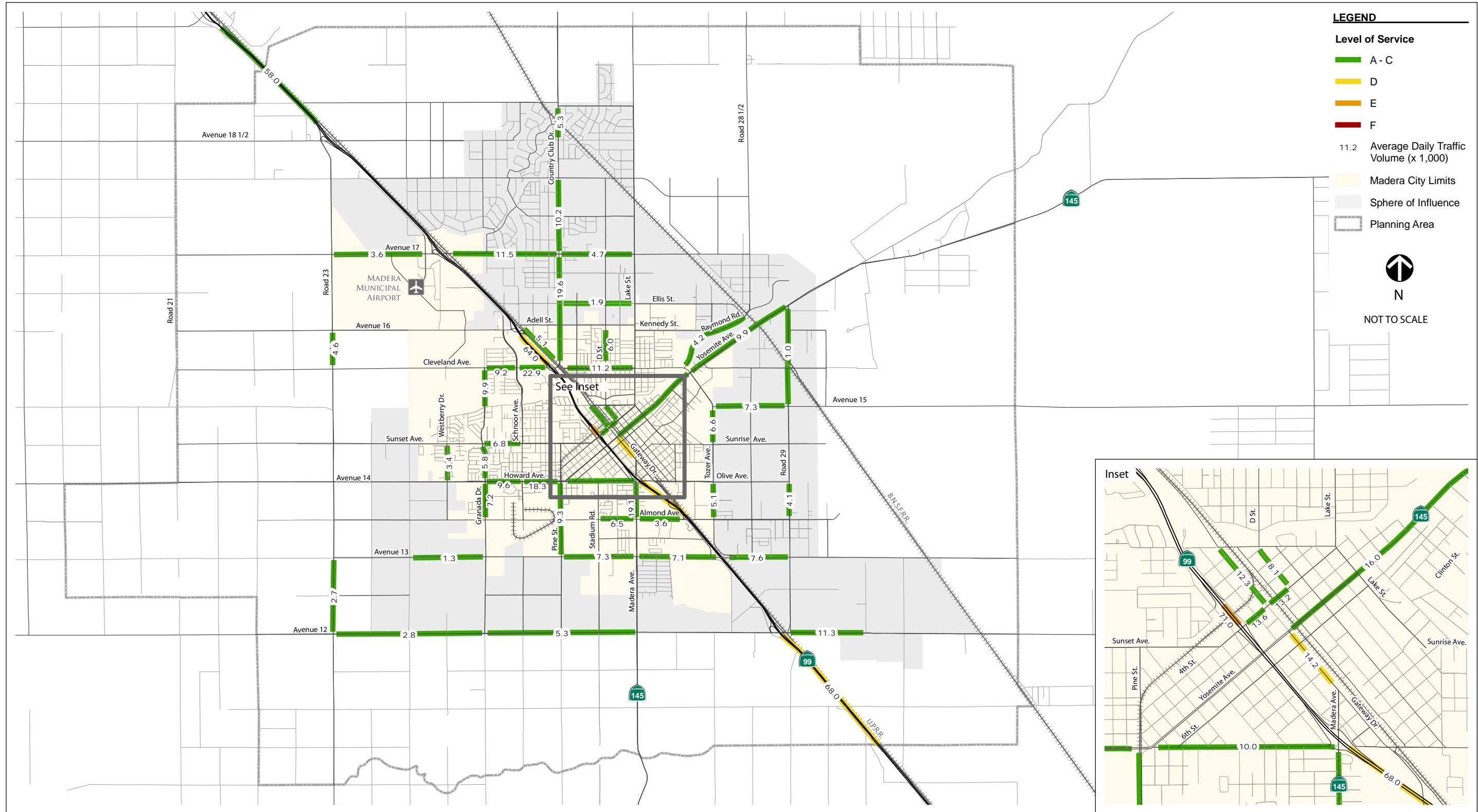
For the purposes of this assessment, the proposed City's LOS policy and the intent of the proposed General Plan Circulation Map shall be used to identify impacts to all roadway facilities (a worst-case approach for identifying significant impacts).

EXISTING TRAFFIC VOLUMES

Fehr & Peers assembled 24-hour roadway segment counts from traffic counts conducted in October 2008 and the Madera County Traffic Monitoring Program, 2008 Annual Report (Madera County Transportation Commission, September 2008). Existing daily traffic counts for SR 99 and SR 145 were obtained from Caltrans 2007 Traffic Volumes on California State Highways. **Figure 4.5-1** shows existing daily roadway segment traffic volumes for roadways in the Planning Area.

EXISTING TRAFFIC CONDITIONS

Existing operation of the study area roadways, freeways, transit system, and bicycle/pedestrian facilities are discussed below.



Source: Fehr & Peers Transportation Consultants

Figure 4.5-1
Average Daily Traffic Volumes and Roadway LOS – Existing Conditions

PMC

ROADWAY SEGMENTS

Table 4.5-2 presents the existing conditions analysis for roadway segments.

**TABLE 4.5-2
ROADWAY LEVEL OF SERVICE - EXISTING CONDITIONS**

Roadway Segment	Existing Conditions			
	Classification	Lanes	Volume	LOS
1. Avenue 12 - Road 23 to Granada Street	Rural Road	2	2,781	A
2. Avenue 12 - Granada Street to Pine Street	Rural Road	2	5,338	A
3. Avenue 12 - SR 99 to Road 30	Rural Road	2	11,291	B
4. Avenue 13 - Road 24 to Granada Street	Urban Collector	2	1,329	A
5. Avenue 13 - Pine Street to SR 145	Urban Arterial	2	7,326	A
6. Avenue 13 - SR 145 to SR 99	Urban Arterial	2	7,121	A
7. Tozer Avenue - Avenue 15 to Sunrise Avenue	Urban Arterial	2	6,567	A
8. Ellis Avenue - Country Club Drive to Lake Street	Urban Arterial	2	1,926	A
9. Avenue 17 - SR 99 to Country Club Drive	Urban Arterial	2	11,512	B
10. Avenue 17 - Country Club Drive to Lake Street	Urban Arterial	2	4,659	A
11. Cleveland Avenue - Granada Drive to Schnoor Street	Urban Arterial	4	9,202	A
12. Cleveland Avenue - Schnoor Avenue to SR 99	Urban Arterial	4	22,911	B
13. Cleveland Avenue - Sharon Road to D Street	Urban Arterial	2	11,160	B
14. Sunset Avenue - Granada Drive to Schnoor Avenue	Urban Collector	2	6,780	A
15. Howard Road - Granada Drive to Schnoor Street	Urban Arterial	4	9,634	A
16. Olive Avenue - Yosemite Avenue to Madera Avenue (SR 145)	Urban Arterial	4	9,964	A
17. Madera Avenue (SR 145) – Almond Avenue to SR 99	Urban Arterial	4	19,100	A
18. Gateway Drive (SR 145) - Madera Ave to Yosemite Avenue (SR 145)	Urban Arterial	2	14,200	D ¹
19. Yosemite Avenue (SR 145) - Gateway Drive to Cleveland Avenue/Tozer Street	Urban Arterial	4	16,000	A
20. Yosemite Avenue (SR 145) - Cleveland Ave/Tozer Street to Road 29	Rural Road	2	9,900	A
21. Westberry Boulevard - Sunset Avenue to Howard Road	Urban Arterial	2	3,381	A
22. Road 29 - SR 145 to Avenue 15	Rural Road	2	970	A
23. Road 29 - Olive Avenue to Almond Avenue	Rural Road	2	4,081	A
24. Raymond Road – Cleveland Avenue to BNSF Railway	Rural Road	2	4,211	A
25. Tozer Avenue - Olive Avenue to Almond Avenue	Urban Arterial	4	5,103	A
26. Country Club Drive - Cleveland Avenue to Ellis Avenue	Urban Arterial	4	19,584	A
27. Country Club Drive - Avenue 17 to Avenue 18	Rural Road	2	10,248	A
28. Pine Street - Howard Road to Avenue 13	Urban Arterial	2	9,329	C
29. Granada Drive - Howard Road to Avenue 13	Urban Collector	2	7,209	A

4.5 TRANSPORTATION AND CIRCULATION

Roadway Segment	Existing Conditions			
	Classification	Lanes	Volume	LOS
30. Road 23 - Avenue 17 to Sunset Avenue	Rural Road	2	4,614	A
31. Howard Road - Schnoor Street to Pine Street	Urban Arterial	4	18,335	A
32. Avenue 13 – SR 99 to Road 29	Urban Arterial	2	7,611	A
33. Avenue 15 – Tozer Avenue to Road 29	Rural Road	2	7,257	A
34. Avenue 17 – Road 23 to SR 99	Urban Arterial	2	3,557	A
35. Road 23 – Avenue 13 to Avenue 12	Rural Road	2	2,678	A
36. Country Club Drive – Club Drive to Avenue 18 ½	Rural Road	2	5,262	A
37. Granada Drive – Cleveland Avenue to Fresno River	Urban Collector	2	9,866	C
38. Granada Drive – Sunset Avenue to Avenue 14	Urban Collector	2	5,824	A
39. 4th Street – SR 99 to Gateway Drive	Urban Arterial	2	13,227	C
40. 4th Street – Gateway Drive to D Street	Urban Arterial	2	13,592	C
41. D Street – Cleveland Avenue to Adell Street	Urban Arterial	2	5,984	A
42. D Street – 4th Street to Central Avenue	Urban Arterial	2	8,058	A
43. Almond Avenue – East of SR 145	Urban Arterial	2	6,464	A
44. Almond Avenue – Stadium Road to SR 145	Urban Arterial	2	3,647	A
45. Gateway Drive – 4th Street to Central Avenue	Urban Arterial	2	12,326	C
46. Gateway Drive – Cleveland Avenue to SR 99	Urban Arterial	4	5,114	A

Notes: ¹Caltrans TCR for SR 145 identifies LOS D as the minimum acceptable LOS.

Source: Fehr & Peers, 2009.

All roadway segments shown in **Table 4.5-2** operate at LOS C or better except for Gateway Drive (SR 145) between Madera Avenue and Yosemite Avenue (LOS D). Caltrans TCR for SR 145 identifies a concept LOS D; therefore, this is considered acceptable.

From a driver's perspective, some segments may appear more congested than suggested by the calculations (see **Table 4.5-2**); for example, Cleveland Avenue between Schnoor Avenue and SR 99. This is because the actual source of the bottleneck occurs at the intersections where vehicle queues can affect upstream segments. This method of reporting is common practice and does not identify impacts on segments affected by downstream bottlenecks, but does identify the location where the bottleneck occurs and where mitigation is appropriate.

FREEWAY FACILITIES

Table 4.5-3 summarizes daily freeway segment LOS.

TABLE 4.5-3
FREEWAY SEGMENT LEVEL OF SERVICE - EXISTING CONDITIONS

Segment	Classification	Number of Lanes	Volume	LOS ¹
1. SR 99 – Avenue 20 to Avenue 18 ½	Freeway	4	58,000	C
2. SR 99 – Avenue 16 to Cleveland Avenue	Freeway	4	64,000	D
3. SR 99 – Second Street to Fourth Street	Freeway	4	71,000	E
4. SR 99 – SR-145 to Gateway Drive	Freeway	4	68,000	D
5. SR 99 – Avenue 12 to Avenue 9	Freeway	4	68,000	D

Notes: ¹ LOS = Level of Service.

Bold text identifies unacceptable operations.

Source: Fehr & Peers, 2009.

The analysis indicates that the segment of SR 99 between Second Street and Fourth Street operates at LOS E. Caltrans TCR for SR 99 identifies a concept LOS D; therefore, this is considered unacceptable.

ALTERNATIVE TRANSPORTATION SYSTEMS

Alternative transportation systems within the City of Madera include the bikeway system, transit system, pedestrians, and aviation facilities. Each of these facilities are discussed below.

Bikeway System

The Madera County 2004 Regional Bicycle Transportation Plan identifies the existing and planned bikeways in the City of Madera. The Transportation Plan also summarizes recommended bikeway standards, potential funding sources, and prioritized list future improvements.

The City of Madera's bikeway systems is comprised of Class I bike paths, Class II bike lanes, and Class III bike routes, which are defined as below:

- Class I Bike Path – Off-street bikeways contained in a separate right-of-way designated for the exclusive use of bicycles and pedestrians.
- Class II Bike Lane – On-street bikeways within the paved roadway designated for the exclusive or semi-exclusive use of bicycles by pavement markings and signage. Class II bike routes provide connectivity between bikeways.
- Class III Bike Route – On-street bikeways that share the road with motorized vehicles.

Class I bike paths are currently located along the Fresno River from Tulare Street to just west of Granada Drive. Class II bike lanes are currently located along portions of Cleveland Avenue, Sunset Avenue, and Almond Avenue. Class III bike routes are currently located along portions of Lake Street, Stadium Road, and Sunset Avenue.

Many of the planned Class II Bike Lanes and several of the Class I Bike Paths have not yet been implemented. Additional facilities will be added as funds become available, and as

4.5 TRANSPORTATION AND CIRCULATION

opportunities arise in conjunction with the related street improvements. **Figure 4.5-2** identifies the existing and proposed bikeways per the Regional Bicycle Transportation Plan.

Pedestrian System

Pedestrian facilities in the City of Madera are comprised of paths, sidewalks, and pedestrian crossings. Although pedestrian sidewalks are provided in many parts of the City, some areas lack sidewalks, while other pedestrian connections are discontinuous.

Transit System

The City of Madera operates the following three bus services within the City:

- Madera Area Express (MAX) provides fixed route service within the City limits.
- Jobs, Education, and Training (JET) Express provides express bus service between the Intermodal Center and Madera state Center Community College.
- Madera Dial-A-Ride (DAR) provides demand responsive paratransit. The Madera DAR provides door-to-door transportation for the elderly and disabled passengers.

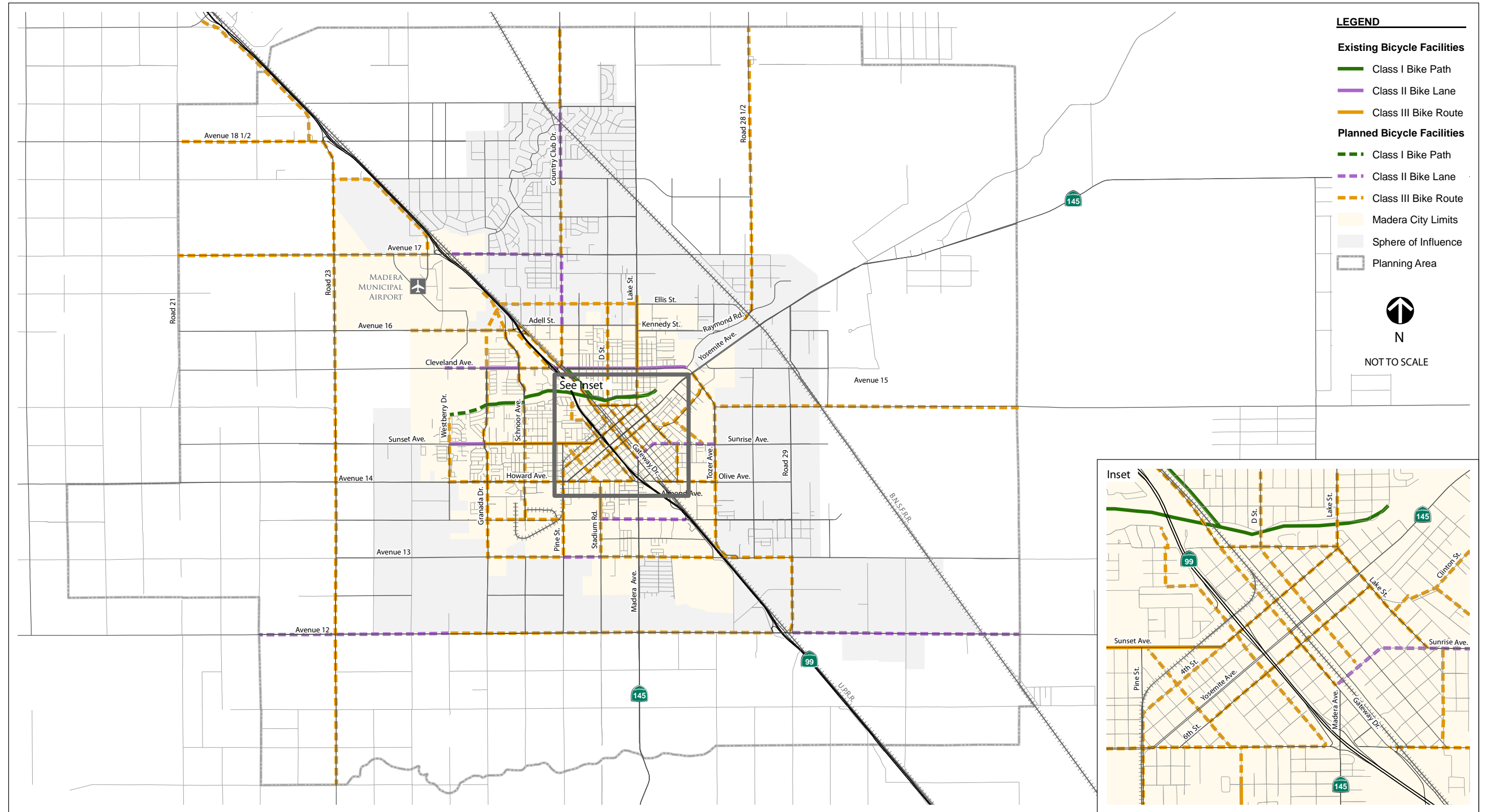
The Unmet Transit Needs Within Madera County Notice of 2008-09 Findings (MCTC 2008) identified that following needs were voiced by the public constituted unmet needs, but were not determined as reasonable to meet at this time.

- Expansion of transit services to regions outside the City, such as to the Madera State Center Community College.
- Extension of DAR operating hours on the weekends and evenings

In January 2009, the City initiated the JET Express service to provide a quick and direct transit service to the Madera state Center Community College.

Madera County operates the Madera County Connection which provides intra-city bus service between the Cities and unincorporated portions of the County.

Existing fixed-route bus is described below.



Source: Fehr & Peers Transportation Consultants

Figure 4.5-2
Existing and Planned Bikeways
PMC®

Fixed-Route Bus Service

MAX fixed-route bus service consists of three routes using four buses within the City. Weekday services runs between 7:00 AM and 6:30 PM and while Saturday services runs between 9:00 AM and 4:00 PM. Specific Routes are described below.

- *Route 1 - Operates on 35 minute headways connecting the northeastern portion of the City to major shopping centers, the Pan-American Center, the Intermodal Center, and the Department of Motor Vehicles. (There are two Route 1's).*
- *Route 1 - Operates on 70 minute headways connecting the southwestern portion of the City to the County Center, Madera Community Hospital, the Department of Motor Vehicles, major shopping centers, Madera High School, and Madera South High School. (There are two Route 1's).*
- *Route 2 - Operates on 70 minute headways connecting the southwestern and northwestern portions of the City to the Madera Community Hospital, Madera High School, and major shopping centers.*

JET Express service fixed-route bus service operates three daily round trips on two routes between the Madera Intermodal Center and the Madera Center campus of the State Center Community College District. Weekday service operates between the hours of 6:45 AM and 6:45 PM. Specific Routes are described below.

- *JET Express West - Operates three times daily leaving the Intermodal Center at 6:45 AM, 11:45 and arriving at the Madera Center campus of the State Center Community College District within one hour of departure.*
- *JET Express East - Operates three times daily leaving the Intermodal Center at 6:45 AM, 11:45 and arriving at the Madera Center campus of the State Center Community College District within one hour of departure.*

Figure 4.5-3 identifies the existing Madera Area Express and Madera County Connection transit systems.

Aviation System

The Madera Municipal Airport (MAE) is owned and operated by the City of Madera. The airport is located approximately three miles northwest of Downtown to the west of SR 99 between Avenue 17 and Avenue 16. A brief summary of physical and operational conditions of the airport is provided below and is based on data provided by <http://www.airnav.com>.

The MAE consists of two runways, a primary runway that is approximately 5,544 feet long and 150 feet wide and a secondary runway that is approximately 3,700 feet long and 150 wide. About 97 aircraft are based at the field and consist of: 65 single engine aircraft, eight multi-engine aircraft, nine jet airplanes, seven helicopters, and eight ultralights. Aircraft operations average about 139 per day with 24% for transient general aviation, 75% for local general aviation, and less than 1% for air taxi and military purposes.

4.5 TRANSPORTATION AND CIRCULATION

Rail/Highway Freight

The City of Madera is served by the Union Pacific Railway, Burlington Northern Santa Fe (BNSF) Railway, and several smaller spur lines. The Union Pacific Railway runs parallel to and just east of SR 99 while the BNSF Railway is located approximately 2.5 miles east of town. Union Pacific Railroad serves 23 states in the western two-thirds of the United States. Burlington Northern Santa Fe serves 28 states in the west, Midwest, and sunbelt states. Both railways transport commodities such as chemicals, coal, food and food products, truck trailers and containers, forest products, grain and grain products, metals and minerals, and automobiles and parts. Amtrak service is also provided on the BNSF Railway. A platform only stop (i.e., no station, ticket counter, etc.) is located near the intersection of Avenue 15 ½ and Road 29.

Goods are also transported via the state highway system and local routes. SR 99 is designated as a National Network Surface Transportation Assistance Act (STAA) Route that is comprised of the Interstate system plus the non-Interstate Federal-aid Primary System. SR 145 is designated as a STAA Terminal Access Route that permits access between National Network routes, to reach the truck's operating facility, or to a goods facility.

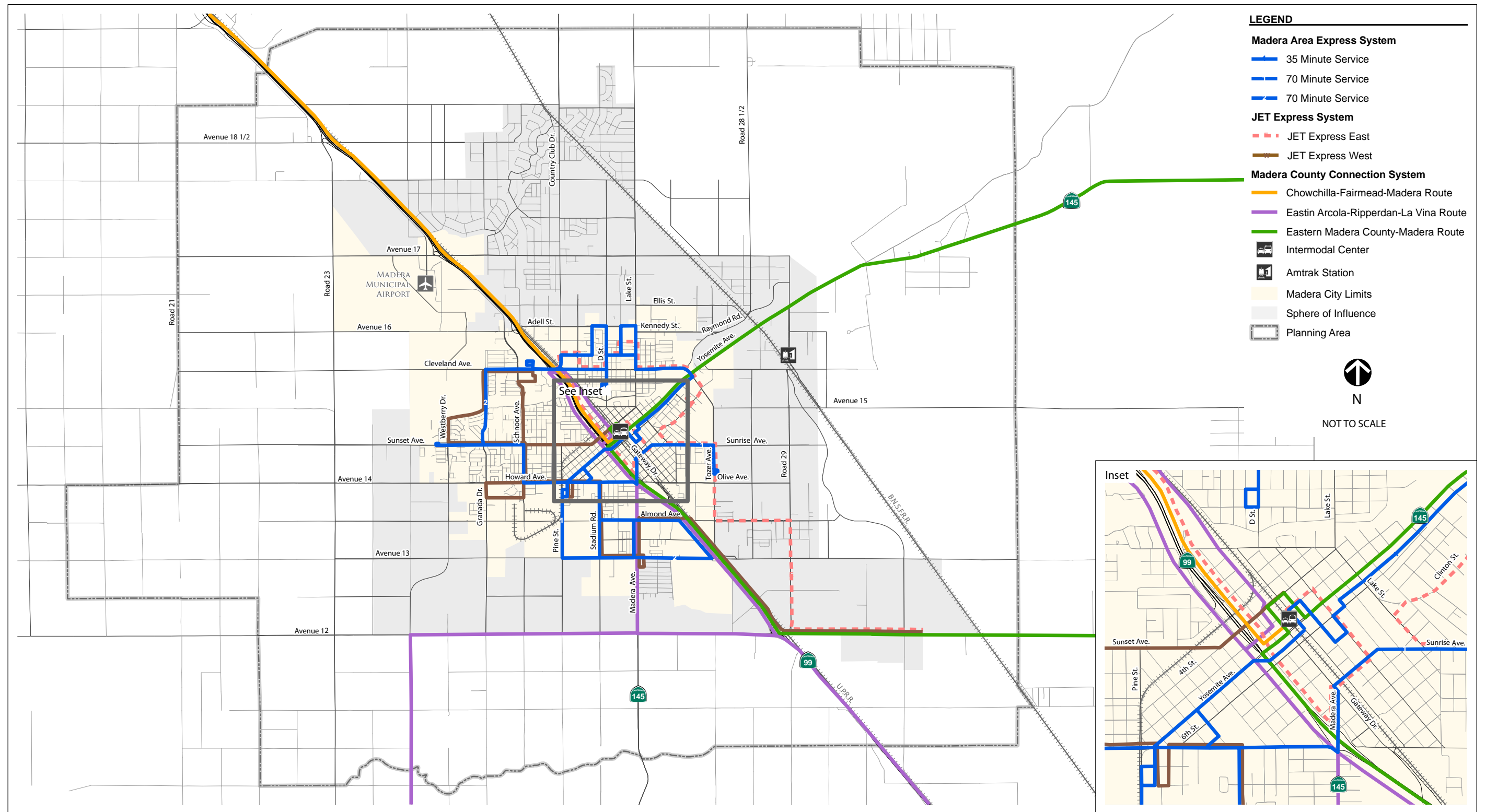
Figure 4.5-4 identifies the existing rail and highway freight systems in Madera.

4.5.2 REGULATORY FRAMEWORK

STATE

State of California Transportation Concept Reports

As described previously, Caltrans prepares a Transportation Concept Report (TCR) for each of its facilities in the area. The TCR is a long-term planning document that each Caltrans district prepares for every state highway or portion thereof in its jurisdiction. The TCR usually represents the first step in Caltrans' long-range corridor planning process. The purpose of a TCR is to determine how a highway will be developed and managed so that it delivers the targeted LOS and quality of operations that are feasible to attain over a 20-year period. These are indicated in the "route concept." In addition to the 20-year route concept level, the TCR includes an "ultimate concept," which is the ultimate goal for the route beyond the 20-year planning horizon.



Source: Fehr & Peers Transportation Consultants

Figure 4.5-3
Existing Transit Facilities
PMC®

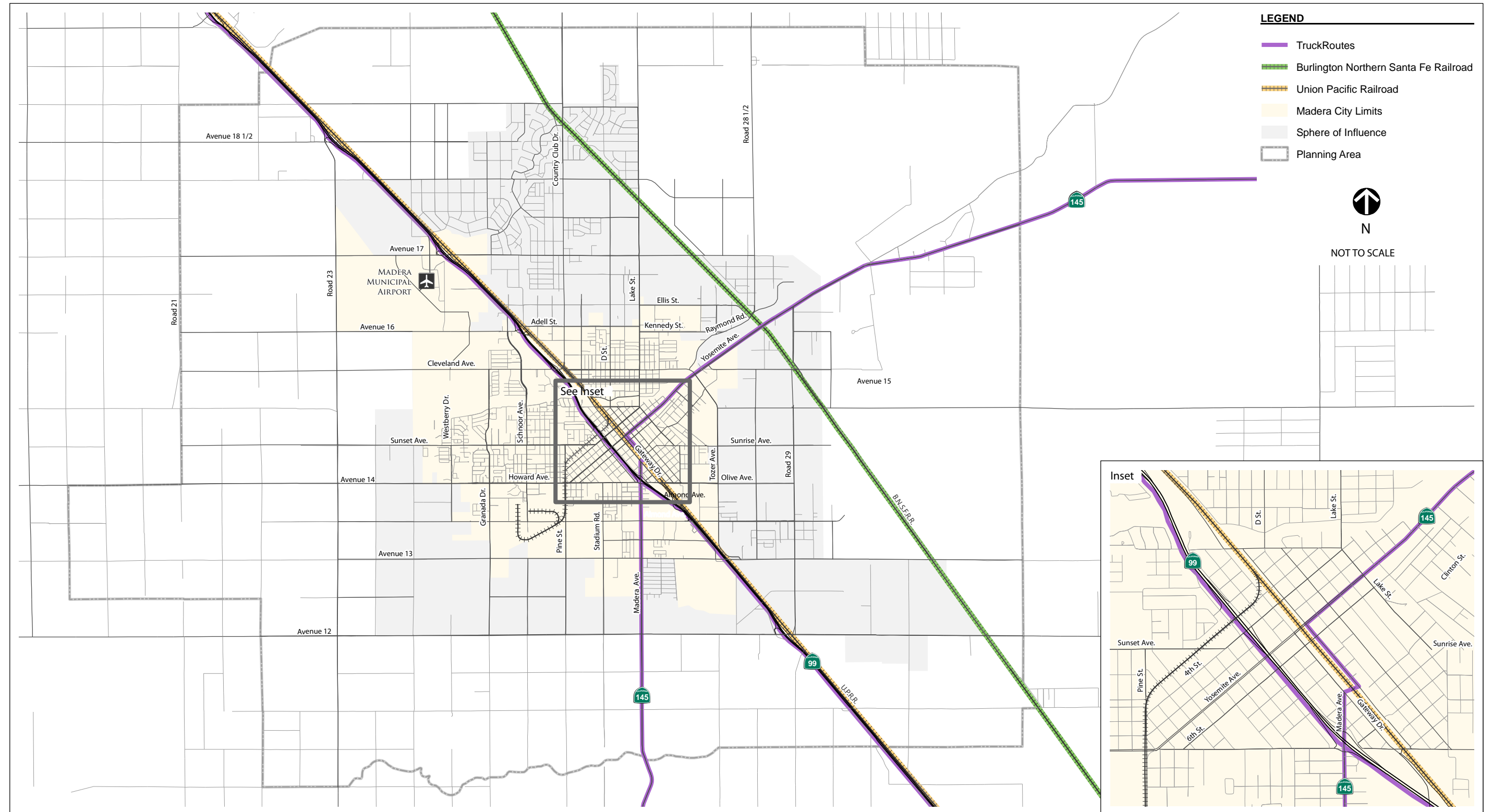


Figure 4.5-4
Existing Goods Movement and Aviation Facilities
PMC®

SR 99 in the City has a route concept LOS D. The ultimate concept for SR 99 is a six-lane facility with auxiliary lanes (Caltrans 2003). SR 145 in the City has a route concept level of LOS D. The ultimate concept for SR 145 is a four-lane conventional highway (Caltrans 2006).

LOCAL

Madera County General Plan

The existing Madera County General Plan was adopted in October of 1995. The County's General Plan identifies the goals and policies for addressing future growth within the horizon of the General Plan. The General Plan Circulation Plan Diagram designates roadways within the County as freeways, highways, arterials, and collectors. Policy 2.A.8 states that the County shall develop and manage its roadway system to maintain a minimum level of service D on all State and County Roadways.

2004 Madera County Bikeway Master Plan

As previously discussed, the *Madera County 2004 Bicycle Transportation Plan* identifies existing and planned bikeways within Madera County and the incorporated Cities. The Transportation Plan suggests short-term (5-year), mid-term (10-year), and long-term (20-year) priorities for projects. Within the City, a total of 43 bikeway projects are identified. Most notably, two new segments of the Class I Fresno River Trail are proposed and approximately 37 miles of on-street bikeways are identified.

Madera County Regional Transportation Plan for 2030

The Madera County Regional Transportation Plan (RTP) for 2030 (MCTC, 2007) is a long-range planning document for identifying and programming roadway improvements throughout Madera County. The RTP includes programs and policies for congestion management, transit, bicycles and pedestrians, roadways, freight and finances. The RTP must be revised at least every four years, since the County is designated as non-attainment for federal air quality standards.

The RTP's primary use is as a regional long-range plan for federally funded transportation projects, and it also serves as a comprehensive, coordinated transportation plan for all the governmental jurisdictions within the region. Different jurisdictions have different transportation implementation responsibilities under the plan. These include Caltrans, the County of Madera, and the cities of Chowchilla and Madera.

City of Madera Capital Improvement Program (CIP)

The City of Madera 2008/09 to 2012/13 Capital Improvement Program (CIP) identifies major capital improvement projects. The CIP sets priorities for the following nine areas:

- | | |
|---------------------------|-----------------------------------|
| 1. Airport Projects | 6. Sewer and Waste Water Projects |
| 2. Miscellaneous Projects | 7. Transportation Projects |
| 3. Park & Trail Projects | 8. Water Projects |
| 4. Redevelopment Projects | 9. Community Development |
| 5. Storm Drain Project | |

4.5 TRANSPORTATION AND CIRCULATION

Funding sources associated with the current CIP include utility rates, federal funding, state gas tax, sales tax, grants, Development Impact Fees and donations. The five-year CIP contains more than \$113 million in CIP projects.

Measure T

Measure T is a half-cent Transportation Sales Tax approved by voters to implement \$213 million in transportation improvements in Madera County over the next 20 years. The Measure consists of the following programs:

- Commute Corridors/Farm To Market Program – 51%
- Safe Routes to Schools and Jobs Program – 44%
- Transit Enhancement Program – 2%
- Environmental Health Program – 2 %
- Administration and Planning – 1%

The measure provides for maintenance of local roads, reconstruction of various SR 99 interchanges, and various roadway capacity improvement projects. Specific roadway improvements in the planning area include the SR 99/Gateway Avenue reconstruction/widening project, SR 99/4th Street reconstruction/widening project, SR 99/Avenue 12 reconstruction/widening project, SR 99/Avenue 16/Ellis Avenue Interchange, Gateway Avenue widening, 4th Street widening, Avenue 12 widening, Road 29 widening, Cleveland Avenue widening.

4.5.3 IMPACTS AND MITIGATION MEASURES

This subsection describes the transportation analysis of the General Plan and identifies potential impacts and mitigation measures that would be associated with the adoption of the proposed General Plan. Quantitative transportation/traffic impact analyses were conducted for the Year 2030 scenarios (the “analysis scenarios”) as described below:

- **Year 2030 Conditions** – This development scenario is based on expected development levels within the Madera Planning Area, as proposed by the General Plan Update, and corresponding development within the Madera region by year 2030. The analysis incorporates the roadway and freeway system identified in the proposed General Plan Circulation Element as being implemented by year 2030 (see **Figure 4.5-5**), which includes the Madera Loop improvements. The Madera Loop is composed of a series of arterials to facilitate intra-city travel along the perimeter of town and provide access to SR 99. Some of the arterials are existing, while other segments of the Madera Loop are not yet constructed.

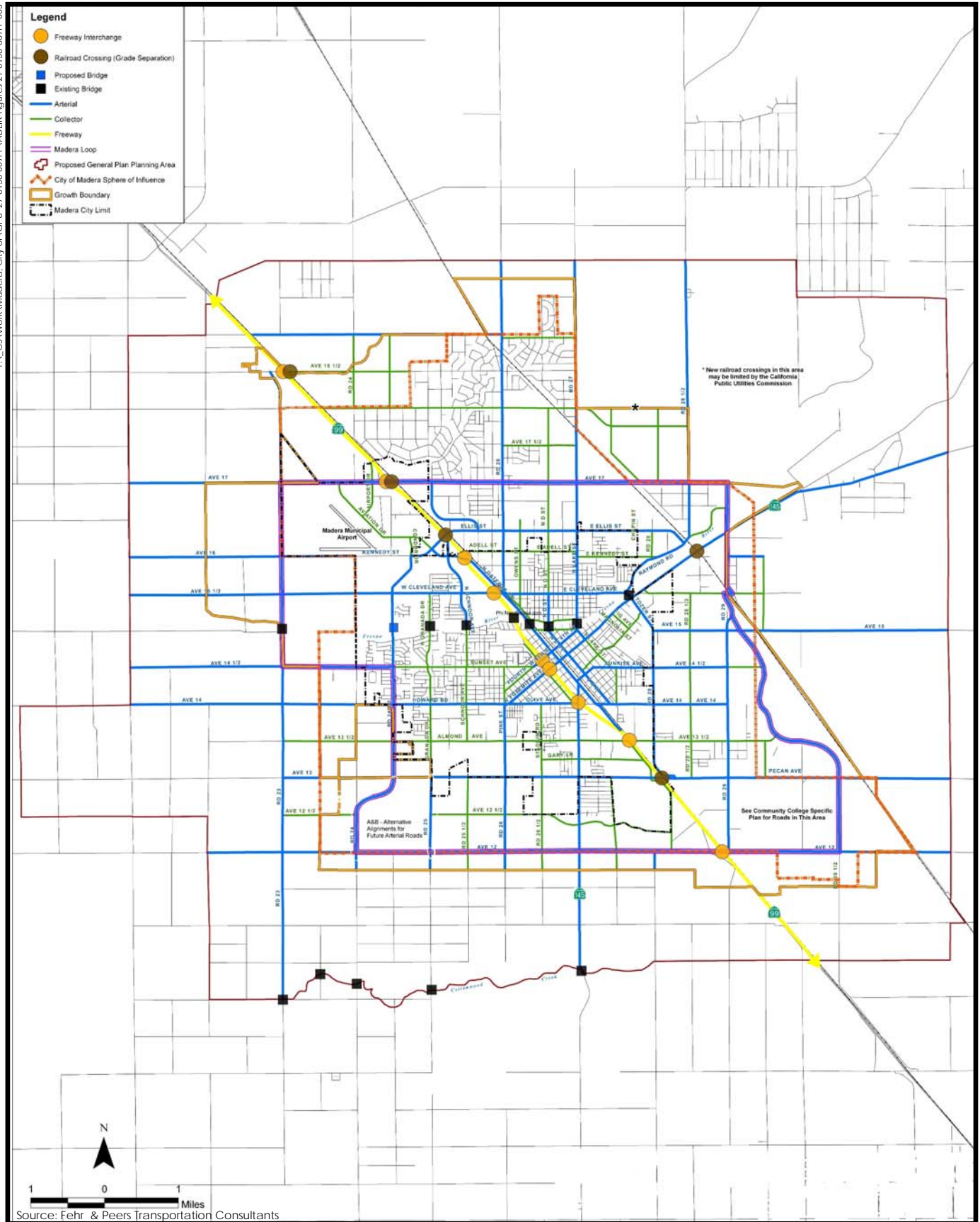


Figure 4.5-5
Proposed Transportation System

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G. A transportation/traffic impact is considered significant if implementation of the proposed General Plan would result in the following:

1. 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 volume-to-capacity ratio on roads, or congestion at intersections).
2. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways.
3. 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.
4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
5. Result in inadequate emergency access.
6. Conflict with adopted policies, plans or programs supporting alternative transportation.

Impacts associated with potential conflicts with air traffic (threshold of significance [3] above) is addressed in Section 4.1 (Land Use) and Section 4.4 (Hazards and Human Health). The proposed General Plan is not expected to result in further expansion given the airport's primarily local use.

Significant impacts of the proposed General Plan were identified according to the following:

- 1) Conflict with circulation provisions or standards of the City and Caltrans that would result in physical effect to the environment (threshold of significance [1], [2] and [6]). This would include conflicts with Caltrans facilities (SR 99 and SR 145), a significant impact would include causing a facility to operate at an unacceptable level (based on the Route Concept Report).
- 2) Degrade LOS based on the following criteria for significance (threshold of significance [1])
 - a. Degrade LOS below LOS C for City roadways, which is minimum acceptable threshold
 - b. Degrade LOS below LOS D for roadways in the Downtown District, which is minimum acceptable threshold
 - c. Degrade LOS below LOS D for State Highways, which is the minimum acceptable threshold
- 3) Conflict with policies, plans, or programs supporting alternative transportation or increase demands for transit facilities greater than planned capacity (e.g., transit service, carpooling, bicycling, walking) (threshold of significance [6])
- 4) The project is considered to have a significant effect on bike and pedestrian facilities if it would result in adverse effects to existing bikeways or pedestrian facilities that would discourage their use and result in safety issues (thresholds of significance [4] and [7] above).

4.5 TRANSPORTATION AND CIRCULATION

- 5) Cause an increase in traffic that increases conflicts at Union Pacific Railway and Burlington Northern Santa Fe Railway at-grade crossings.

METHODOLOGY

The transportation impact analysis is focused on potential LOS impacts that would occur from increased travel demand associated with new land development under the proposed General Plan. The traffic impact analysis for the proposed project is based on a planning horizon of the year 2030, which does not assume buildout of the Planning Area. Buildout is not expected to occur within the 2030 planning horizon. As stated in Section 4.0 (Introduction to the Environmental Analysis and Assumptions Used), buildout of the proposed General Plan is not expected to occur until roughly 2065, based on a projected growth rate of around 2.65% per year. This growth rate is a compilation of several sources, including past growth (which includes previous downturns in the housing market) and projections produced as part of an ongoing regional planning effort. The reader is referred to the cumulative analysis for a discussion of buildout as it relates to transportation and circulation impacts. Detailed models of land use and traffic were not available past the year 2030 so the cumulative analysis is qualitative in nature. The reader is referred to Section 4.0 regarding assumed land uses and development conditions in this area.

Analysis Methodology

Madera County Transportation Commission (MCTC) travel demand forecasting (TDF) was used to forecast future traffic volumes for the City of Madera General Plan. The MCTC TDF model is a four county regional model consisting of Madera, Merced, Stanislaus, and Fresno Counties. The MCTC TDF model is used to determine the appropriate number of lanes for major roadway segments based on anticipated future growth.

Preparation of the transportation analysis for the roadway system followed the steps described below. For other components of the transportation system, the policies and implementation measures were evaluated against the significance thresholds.

TDF Model Development

The MCTC TDF model was used to develop Year 2030 daily traffic volume forecasts for select roadway and freeway segments. The TDF model was calibrated within the City of Madera. The calibration effort consisted of adding detail to the MCTC base year (2000) and future year (2030) TDF models by disaggregating TAZs and updating roadway connectivity in the area to reflect existing conditions. The calibration also included a comparison of existing (2000) traffic counts and forecast base year (2000) model volumes at four screenline locations around the City and on 28 City roadway segments. The results were then compared to Caltrans TDF model validation standards¹. The screenline locations met the minimum TDF model standards. However, the minimum requirements for percent of roadway within the maximum allowable deviation were not met. As stated earlier, the City of Madera's roadway network is a modified grid system. Highly detailed grid based transportation networks, such as the City of Madera, provide multiple route choices to motorists and because of this is difficult to validate. The disaggregation of TAZs, improved connectivity, and refinements to the roadway network resulted in a 20 percent

¹ JHK & Associates. *Travel Forecasting Guidelines*. California Department of Transportation. November 1992.

improvement in the validation criteria (i.e., accuracy of the travel demand forecasts) over the “off the shelf” TDF model.

Land Use Data

Land use data (dated February 4, 2009) was provided by traffic analysis zone (TAZ) within the planning area for Year 2030 conditions by Pacific Municipal Consultants (PMC). TAZs are geographic polygons used to organize land use data for input into a travel demand forecasting (TDF) model. The TAZs are defined by natural borders such as roads, waterways, and topography that typically represent areas of homogenous travel behavior. Land use data outside the planning area was provided by MCTC.

Roadway Network Modifications

Roadway improvements within the City limits are based on roadway network connectivity identified in the City’s Circulation Plan.

Daily Traffic Volume Forecast Development

Year 2030 daily traffic volume forecasts were developed by running the base year (2000) and future year (2030) TDF models. The resulting traffic volumes were analyzed through a postprocessor developed specifically for the City of Madera General Plan Update. This postprocessor is a spreadsheet based tool that reads raw traffic volumes from the TDF model and then adjusts these volumes to account for under- or overestimates that may have occurred in the base year model.

Figure 4.5-6 shows the future 2030 forecast daily traffic volumes and LOS for roadways in the planning area.

Impact Identification

The postprocessor also calculates roadway segment LOS based on the LOS capacity thresholds as shown in **Table 4.5-1**. The postprocessor uses the daily LOS to determine whether a LOS deficiency occurs. Deficiencies occur when projected traffic volumes on a roadway segment exceed the LOS threshold established in the General Plan Circulation and Infrastructure Element.

Environmental Effects of Proposed General Plan Circulation Improvements

As noted above and in Section 3.0 (Project Description), the proposed General Plan includes roadway expansion and capacity improvements (see **Figure 4.5-5**), bikeway and trail improvements and transit system improvements. The anticipated environmental effects of these circulation improvements are programmatically considered in this EIR based on available environmental documentation, field review at a reconnaissance level and review of aerial photography. The anticipated environmental effects are listed below. Subsequent site-specific environmental review of circulation improvements would be conducted once the improvements have been designed and exact alignments have been established.

- Temporary construction-related land use conflicts on adjacent uses associated with noise, construction traffic/access conflicts and visual impacts.
- Conversion of agricultural land from roadway extension and widening.

4.5 TRANSPORTATION AND CIRCULATION

- Temporary construction traffic impacts from construction vehicles and construction traffic control.
- Hazardous material exposure impacts from construction of facilities (roadways, trails and transit).
- Air quality impacts from construction and operation of facilities (roadways, trails and transit).
- Noise impacts from construction and operation of facilities (roadways, trails and transit).
- Soil erosion and geologic stability impacts from construction and operation of facilities (roadways, trails and transit).
- Water quality (surface and groundwater) and drainage impacts from construction and operation of facilities (roadways, trails and transit).
- Biological resource impacts associated with construction and operation of facilities (roadways, trails and transit). This would include direct and indirect impacts to special-status species, vernal pools and wildlife corridors.
- Cultural and paleontological resource impacts associated with construction activities that could impact undiscovered resources.
- Conflicts with existing and planned alignments of infrastructure facilities (water supply, wastewater conveyance, electrical distribution, natural gas, telephone and cable).
- Visual impacts with the construction of urban-type circulation improvements (e.g., 4-lane and larger roadways, transit facilities, urban interchanges).

Mitigating policies and action items in the proposed General Plan Update identified in Sections 4.1 through 4.13 of this EIR would be applied (where applicable) to minimize these environmental effects.

Analysis Results

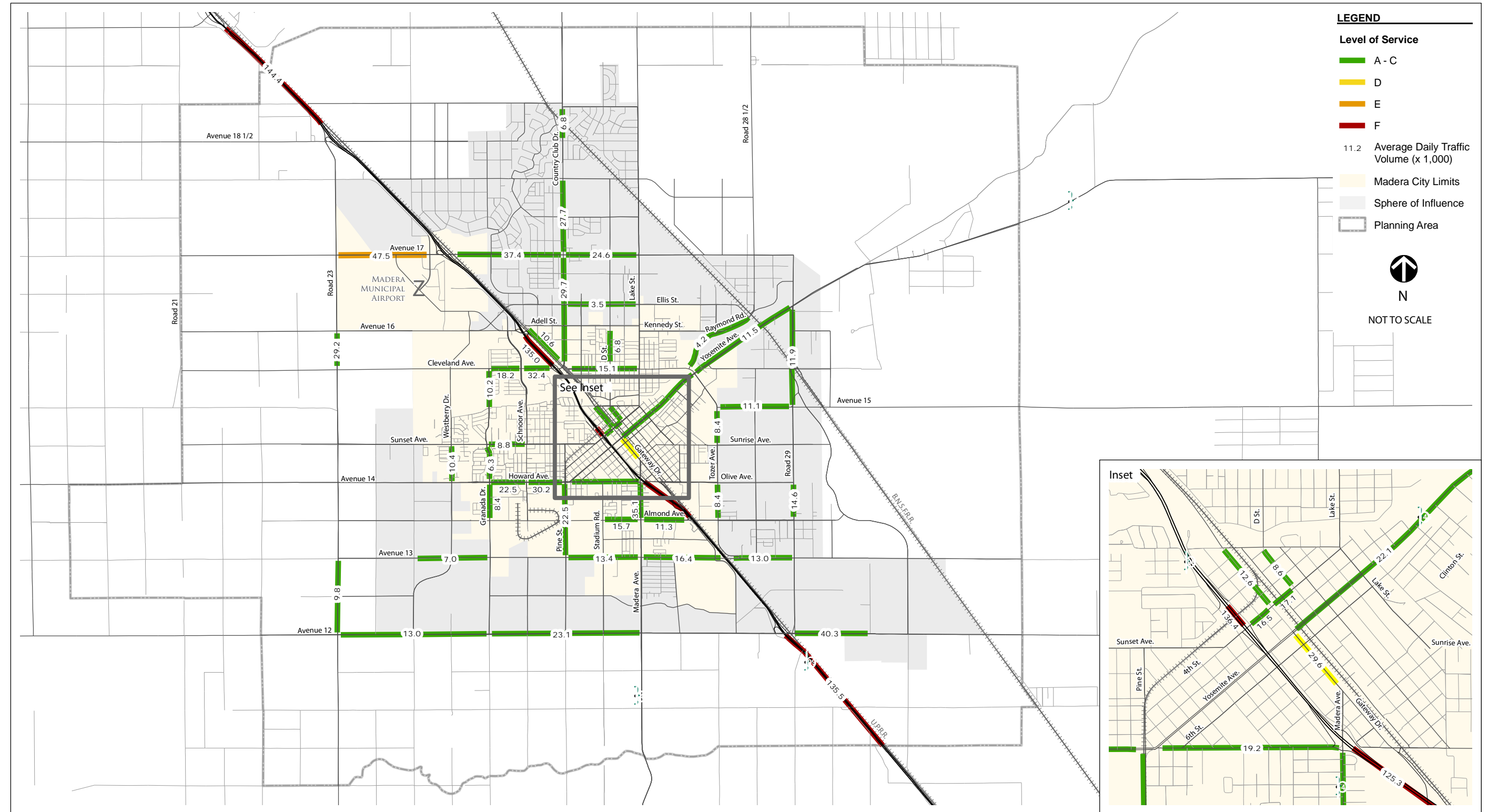
Operations of the study area roadways, freeway facilities, transit system, and bicycle/pedestrian facilities are discussed below.

PROJECT IMPACTS AND MITIGATION MEASURES

Study Roadway Segments

Impact 4.5.1 Implementation of the proposed General Plan Update would result in an increase in traffic volumes that would result in deficient level of service conditions in year 2030. This would be a **significant** impact.

The daily roadway segments traffic volumes shown on **Figure 4.5-1** were compared to the roadway segment thresholds summarized in **Table 4.5-1** to analyze traffic operations on the study area roadway segments. **Tables 4.5-4** through **4.5-6** summarize significant operation impacts to roadway segments using the proposed City of Madera LOS C standard (with exceptions per Policy CI-21). In addition, significant traffic impacts would also likely occur prior to year 2030 as development proceeds under the General Plan.



Source: Fehr & Peers Transportation Consultants

Figure 4.5-6
Average Daily Traffic Volumes and Roadway Level of Service 2030 Conditions

TABLE 4.5-4
ROADWAY LEVEL OF SERVICE – PROPOSED GENERAL PLAN YEAR 2030 CONDITIONS

Roadway Segment	Year 2030 Conditions			
	Classification	Lanes	Volume	LOS
1. Avenue 12 - Road 23 to Granada Street	Urban Arterial	4	13,010	A
2. Avenue 12 - Granada Street to Pine Street	Urban Arterial	4	23,090	B
3. Avenue 12 - SR 99 to Road 30	Urban Arterial	6	40,310	C
4. Avenue 13 - Road 24 to Granada Street	Urban Collector	4	6,970	A
5. Avenue 13 - Pine Street to SR 145	Urban Arterial	4	13,370	A
6. Avenue 13 - SR 145 to SR 99	Urban Arterial	4	16,390	A
7. Tozer Avenue - Avenue 15 to Sunrise Avenue	Urban Arterial	4	8,400	A
8. Ellis Avenue - Country Club Drive to Lake Street	Urban Arterial	4	3,490	A
9. Avenue 17 - SR 99 to Country Club Drive	Urban Arterial	6	37,390	C
10. Avenue 17 - Country Club Drive to Lake Street	Urban Arterial	4	24,640	C
11. Cleveland Avenue - Granada Drive to Schnoor Street	Urban Arterial	4	18,220	A
12. Cleveland Avenue - Schnoor Avenue to SR 99	Urban Arterial	6	32,360	B
13. Cleveland Avenue - Sharon Road to D Street	Urban Arterial	4	15,070	A
14. Sunset Avenue - Granada Drive to Schnoor Avenue	Urban Arterial	4	8,790	A
15. Howard Road - Granada Drive to Schnoor Street	Urban Arterial	4	22,540	B
16. Olive Avenue - Yosemite Avenue to Madera Avenue (SR 145)	Urban Arterial	4	19,240	A
17. Madera Avenue (SR 145) – Almond Avenue to SR 99	Urban Arterial	4	35,090	F
18. Gateway Drive (SR 145) - Madera Avenue to Yosemite Avenue (SR 145)	Urban Arterial	4	29,630	D ¹
19. Yosemite Avenue (SR 145) - Gateway Drive to Cleveland Avenue/Tozer Street	Urban Arterial	4	22,130	B
20. Yosemite Avenue (SR 145) - Cleveland Avenue/Tozer Street to Road 29	Rural Road	4	11,480	A
21. Westberry Boulevard - Sunset Avenue to Howard Road	Urban Arterial	4	10,410	A
22. Road 29 - SR 145 to Avenue 15	Urban Arterial	4	11,910	A
23. Road 29 - Olive Avenue to Almond Avenue	Urban Arterial	4	14,590	A
24. Raymond Road – Cleveland Avenue to BNSF Railway	Urban Arterial	4	4,220	A
25. Tozer Avenue - Olive Avenue to Almond Avenue	Urban Arterial	4	8,420	A
26. Country Club Drive - Cleveland Avenue to Ellis Avenue	Urban Arterial	6	29,660	A
27. Country Club Drive - Avenue 17 to Avenue 18	Urban Arterial	6	27,680	A
28. Pine Street - Howard Road to Avenue 13	Urban Arterial	4	22,520	B
29. Granada Drive - Howard Road to Avenue 13	Urban Collector	4	8,350	A
30. Road 23 - Avenue 17 to Sunset Avenue	Urban Arterial	6	29,170	A

4.5 TRANSPORTATION AND CIRCULATION

Roadway Segment	Year 2030 Conditions			
	Classification	Lanes	Volume	LOS
31. Howard Road - Schnoor Street to Pine Street	Urban Arterial	6	30,200	A
32. Avenue 13 – SR 99 to Road 29	Urban Arterial	4	12,970	A
33. Avenue 15 – Tozer Avenue to Road 29	Urban Arterial	4	11,050	A
34. Avenue 17 – Road 23 to SR 99	Urban Arterial	6	47,460	F
35. Road 23 – Avenue 13 to Avenue 12	Urban Arterial	4	9,770	A
36. Country Club Drive – Club Drive to Avenue 18 1/2	Urban Arterial	4	6,790	A
37. Granada Drive – Cleveland Avenue to Fresno River	Urban Collector	4	10,150	A
38. Granada Drive – Sunset Avenue to Avenue 14	Urban Collector	4	6,260	A
39. 4th Street – SR 99 to Gateway Drive	Urban Arterial	4	17,090	A
40. 4th Street – Gateway Drive to D Street	Urban Arterial	4	16,490	A
41. D Street – Cleveland Avenue to Adell Street	Urban Collector	4	6,790	A
42. D Street – 4th Street to Central Avenue	Urban Arterial	4	8,570	A
43. Almond Avenue – East of SR 145	Urban Collector	4	15,730	B
44. Almond Avenue – Stadium Road to SR 145	Urban Collector	4	11,340	A
45. Gateway Drive – 4th Street to Central Avenue	Urban Arterial	4	12,550	A
46. Gateway Drive – Cleveland Avenue to SR 99	Urban Arterial	4	10,550	A

Notes: ¹Caltrans TCR for SR 145 LOS D is the minimum acceptable LOS.

Bold text indicates unacceptable operations.

Source: Fehr & Peers, 2009.

TABLE 4.5-5
FREEWAY SEGMENT LEVEL OF SERVICE – PROPOSED GENERAL PLAN YEAR 2030 CONDITIONS

Segment	Classification	Number of Lanes	Volume	LOS ¹
SR 99 – Avenue 20 to Avenue 18 ½	Freeway	6	144,350	F
SR 99 – Avenue 16 to Cleveland Avenue	Freeway	6	135,040	F
SR 99 – Second Street to Fourth Street	Freeway	6	136,410	F
SR 99 – SR-145 to Gateway Drive	Freeway	6	125,330	E
SR 99 – Avenue 12 to Avenue 9	Freeway	6	135,510	F

Notes: ¹LOS = Level of Service.

Bold text identifies unacceptable operations.

Source: Fehr & Peers, 2009.

TABLE 4.5-6
SUMMARY OF ROADWAY AND FREEWAY SEGMENTS PROJECTED TO OPERATE AT A DEFICIENT LEVEL OF SERVICE BY 2030

Impacted Segment	Proposed General Plan Year 2030 Conditions
Roadway Segments	
17. Madera Avenue (SR 145) – Almond Avenue to SR 99	LOS F
34. Avenue 17 – Road 23 to SR 99	LOS F
Total Number of Impacts:	2
Freeway Segments	
1. SR 99 – Avenue 20 to Avenue 18 ½	LOS F
2. SR 99 – Avenue 16 to Cleveland Avenue	LOS F
3. SR 99 – Second Street to Fourth Street	LOS F
4. SR 99 – SR-145 to Gateway Drive	LOS F
5. SR 99 – Avenue 12 to Avenue 9	LOS F
Total Number of Impacts:	5

In addition to these LOS impacts, the required mitigation to meet Caltrans LOS D standard on SR 145 would require widening to six lanes. The widening of SR 145 to six lanes conflicts with the SR 145 Transportation Concept Report (Caltrans, 2006) which identifies SR 145 as a four-lane conventional highway.

Timing of Development and Planned Roadway Improvements

As noted in the above tables, implementation of the proposed General Plan would provide service levels consistent with the City's LOS "C" standard with few exceptions. However, potential issues with funding, the effect of regional traffic through the City, timing of required permits and coordination with Madera County and Caltrans could result in delays in delivering roadway improvements prior to deficient LOS conditions having developed in the interim. As noted in the proposed General Plan policies and action items below, the General Plan does include provisions that attempt to keep similar timing for development and the provision of roadway improvements. However, the City cannot ensure these improvements will be timely in all circumstances (for the reasons noted above).

Proposed General Plan Policies and Action Items That Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this impact to study roadway segments. The following list contains those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Policy CI-1: Figure CI-1 shows the Circulation Master Plan of the City of Madera. The City will implement this Master Plan through the policies contained in this and other Elements of the Madera General Plan.

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Action Item CI-1.1: Require the dedication of right of way and the installation of roadway improvements as part of the review and approval of development projects including requests for changes of land use designations.

Policy CI-5: The City shall require the dedication or irrevocable offer of dedication of right of way for all arterials and collectors at the earliest opportunity in the development process in order to implement the Roadway Master Plan. Generally, the earliest opportunity to implement this policy will be the first of the following discretionary approvals which is available:

- Change of Zoning or General Plan Land Use Designation;*
- Approval of a Comprehensive Plan, Specific Plan, or other master plan;*
- Any subdivision map (such as a parcel map or tentative tract map);*
- Conditional Use Permit;*
- Site plan or design approval*

Policy CI-6: The City shall protect future right-of-way needed for arterial and collector streets from encroachment by development or other incompatible uses or structures.

Policy CI-7: In order to ensure adequate circulation capacity of collectors, arterials and larger streets, turning movements and driveway approaches to adjoining properties and onto local streets shall be limited so through traffic speeds are not reduced by more than 10 (ten) miles per hour based on the street design speed. This policy will not be applied where existing land use patterns and unique site constraints make it impossible. Direct access to sites along arterial and larger streets should typically be provided from adjacent local streets or signalized shared access points. This should be implemented as early as possible in development when zoning and parcels are established.

Action Item CI-7.1: Amend the City standards to limit the spacing of driveway approaches and turn lanes as called for in Policy CI-7.

Policy CI-8: Priority will be given to upgrades on those streets where any of the following exist:

- High current and projected traffic volumes are involved;*
- Joint funding is possible;*
- Significant contributions of private or assessment district funds are involved as part of the cost of developing adjacent lands; or*
- Where the rate of serious accidents has been high and where hazards to public safety are great.*

- *Where circulation improvements can help stimulate economic growth consistent with this General Plan.*

Policy CI-9: The City will work cooperatively with Caltrans to implement improvements to the state highway system in Madera.

Policy CI-11: Development projects shall be required to provide funding or to construct roadway/intersection improvements to implement the City's Circulation Master Plan. The payment of established traffic impact or similar fees shall be considered to provide compliance with the requirements of this policy with regard to those facilities included in the fee program, provided that the City finds that the fee adequately funds all required roadway and intersection improvements. If payment of established fees is used to provide compliance with this policy, the City may also require the payment of additional fees if necessary to cover the fair share cost of facilities not included in the fee program.

Policy CI-12: New development shall provide funding acceptable to the City for the construction and permanent maintenance of all roadway facilities. Potential funding mechanisms may include assessment districts, community facility districts, or other methods.

Policy CI-23: The City shall seek to maintain Level of Service (LOS) C at all times on all roadways and intersections in Madera, with the following exceptions:

- a) On arterial roadways or roadways with at-grade railroad crossings that were experiencing congestion exceeding LOS C during peak hour travel times as of the date this General Plan Update is adopted the City shall seek to maintain LOS D or better.*
- b) This policy does not extend to freeways (where Caltrans policies apply) or to private roadways.*
- c) In the Downtown District (as defined in the Land Use Element of this General Plan), the City shall seek to maintain LOS D.*

Action Item CI-23.1: Consider, during the review of proposed development projects, how to shift travel demand away from the peak period, especially in those situations where peak traffic problems result from a few major generators (e.g. outlying employment locations).

Action Item CI-23.2: Perform routine, ongoing evaluation of the efficiency of the urban street traffic control system, with emphasis on traffic signal timing, phasing and coordination to optimize traffic flow along arterial corridors. Use traffic control systems to balance arterial street utilization (e.g., timing and phasing for turn movements, peak period and off-peak signal timing plans).

Mitigation Measures

Implementation of the above proposed General Plan Policies and Action items would reduce significant impacts to transportation and circulation by ensuring level of service standards are

4.5 TRANSPORTATION AND CIRCULATION

maintained (Policy CI-23), adequate roadway right-of-way is provided and protected (Action Item CI-1.1 and CI-6) and adequate funding for roadway improvements (Policy CI-11 and CI-12). However, there are no feasible mitigation measures to fully mitigate impacts to the Madera Avenue (SR 145) – Almond Avenue to SR 99 and Avenue 17 – Roadway 23 to SR 99 roadway segments in the Planning Area as discussed in further detail below. Because of the infeasibility of mitigation measures, this impact is considered **significant and unavoidable**.

Madera Avenue (SR 145) – Almond Avenue to SR 99

Widening this portion of Madera Avenue (SR 145) from 4 to 6 lanes would improve the operations of this roadway segment. However, a six-lane facility is inconsistent with the SR 145 TCR. The feasibility of this mitigation measure is dependent on whether the SR 145 TCR would be amended to allow six lanes. Action Item CI-43.1 under proposed Policy CI-43 identifies the potential rerouting of SR 145 outside of downtown. Implementation of this Policy and Action Item would provide the City the opportunity to implement this mitigation measure if SR 145 TCR can be amended. At this time, rerouting SR 145 is considered infeasible.

Avenue 17 – Road 23 to SR 99

Widening this portion of Avenue 17 from six to eight lanes would improve the operations of this roadway segment. However, during the development of the future roadway sizing needs, the City staff identified that no local roadway would be designed larger than a six-lane facility, given that large roadway facilities (eight lanes and greater) conflicts with pedestrian and bicycle use and results in the “barrier effect” of such roadways dividing portions of the City. This direction is also consistent with Caltrans preliminary designs of the SR 99 / Avenue 17 Interchange Project Study Report (PSR). During the development of the PSR, Caltrans identified that more than six lanes on the Avenue 17 overcrossing was not reasonable. Therefore, implementation of the mitigation measure is considered infeasible, since it is in conflict with the proposed General Plan.

Study Freeway Segments

Impact 4.5.2 Implementation of the proposed General Plan Update would exacerbate unacceptable operations on northbound and southbound SR 99. This is considered a **significant** impact.

The results of the freeway segment analysis are summarized in **Table 4.5-5** and **Table 4.5-6**. As shown in these tables, the proposed General Plan increases in traffic volumes to the freeway would contribute to deficient operation of SR 99. The Madera County Regional Transportation Plan (MCTC, 2007) and Route 99 Corridor Enhancement Master Plan (Caltrans) acknowledges future SR 99 deficiencies with the implementation of the Ultimate Transportation Concept (six lanes plus auxiliary lanes) and identifies the regional importance of future improvements. However, funding to implement the Ultimate Transportation Concept has not been identified.

Proposed General Plan Policies and Action Items That Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this impact to study freeway segments. The following list contains those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Policy CI-9: The City will work cooperatively with Caltrans to implement improvements to the state highway system in Madera.

Policy CI-10: The City will maintain a high level of coordination with the County of Madera and Caltrans, through the Madera County Transportation Commission, in implementing the Circulation Master Plan. The City will participate in the planning of regional roadway and transportation facilities, particularly those that indirectly or directly affect Madera, including the State Route 152- East/ Freeway 65 corridor.

Mitigation Measures

Pursuant to General Plan Policy CI-9, the City should coordinate with Caltrans to identify funding sources and implement the Ultimate Transportation Concept for SR 99 to minimize traffic impacts prior to 2030. Given SR 99 is outside of the City's jurisdiction and the City cannot ensure the timely implementation of these improvements, this impact is considered **significant and unavoidable**.

Roadway Safety and Emergency Access

Impact 4.5.3 Implementation of the proposed General Plan Update would result in an increase in traffic volumes, which could increase the potential opportunities for safety conflicts as well as potential conflicts with emergency access. This is considered a **less than significant** impact.

While implementation of the proposed General Plan would increase the amount of vehicle traffic and the number of potential safety and emergency access conflicts, implementation of the proposed roadway system under the General Plan would provide for multiple roadway connections that offer more escape route and emergency access options, as well as new north-south and east-west evacuation/emergency routes throughout the Planning Area.

Proposed General Plan Policies and Action Items That Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this impact to roadway safety and emergency access. The following list contains those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Policy CI-1: Figure CI-1 shows the Circulation Master Plan of the City of Madera. The City will implement this Master Plan through the policies contained in this and other Elements of the Madera General Plan.

Action Item CI-1.1: Require the dedication of right of way and the installation of roadway improvements as part of the review and approval of development projects including requests for changes of land use designations.

Policy CI-5: The City shall require the dedication or irrevocable offer of dedication of right of way for all arterials and collectors at the earliest opportunity in the development process in order to implement the Roadway Master Plan. Generally, the earliest opportunity to implement this policy will be the first of the following discretionary approvals which is available:

- *Change of Zoning or General Plan Land Use Designation;*

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- *Approval of a Comprehensive Plan, Specific Plan, or other master plan;*
- *Any subdivision map (such as a parcel map or tentative tract map);*
- *Conditional Use Permit;*
- *Site plan or design approval*

Policy CI-6: The City shall protect future right-of-way needed for arterial and collector streets from encroachment by development or other incompatible uses or structures.

Policy CI-7: In order to ensure adequate circulation capacity of collectors, arterials and larger streets, turning movements and driveway approaches to adjoining properties and onto local streets shall be limited so through traffic speeds are not reduced by more than 10 (ten) miles per hour based on the street design speed. This policy will not be applied where existing land use patterns and unique site constraints make it impossible. Direct access to sites along arterial and larger streets should typically be provided from adjacent local streets or signalized shared access points. This should be implemented as early as possible in development when zoning and parcels are established.

Action Item CI-7.1: Amend the City standards to limit the spacing of driveway approaches and turn lanes as called for in Policy CI-7.

Policy CI-8: Priority will be given to upgrades on those streets where any of the following exist:

- *High current and projected traffic volumes are involved;*
- *Joint funding is possible;*
- *Significant contributions of private or assessment district funds are involved as part of the cost of developing adjacent lands; or*
- *Where the rate of serious accidents has been high and where hazards to public safety are great.*
- *Where circulation improvements can help stimulate economic growth consistent with this General Plan.*

Policy CI-9: The City will work cooperatively with Caltrans to implement improvements to the state highway system in Madera.

Policy CI-11: Development projects shall be required to provide funding or to construct roadway/intersection improvements to implement the City's Circulation Master Plan. The payment of established traffic impact or similar fees shall be considered to provide compliance with the requirements of this policy with regard to those facilities included in the fee program, provided that the City finds that the fee adequately funds all required roadway and

intersection improvements. If payment of established fees is used to provide compliance with this policy, the City may also require the payment of additional fees if necessary to cover the fair share cost of facilities not included in the fee program.

Policy CI-12: New development shall provide funding acceptable to the City for the construction and permanent maintenance of all roadway facilities. Potential funding mechanisms may include assessment districts, community facility districts, or other methods.

Policy CI-17: Proposals to allow left turn lanes from collector and arterial streets shall be evaluated on a case-by-case basis, and allowed only where an engineering analysis confirms that traffic operations and safety conditions are not negatively impacted.

Policy CI-18: Shared driveways, driveway consolidation, reciprocal access easements, and cross access easements to commercial centers shall be required along arterials and collector roads in new development projects and in the redevelopment or redesign of existing development to minimize traffic hazards associated with driveways and curb cuts.

Policy HS-29: The City shall initiate, and collaborate in safety and design improvements at existing railroad-at-grade crossings. This may include construction of grade-separated crossings and other appropriate safety features. Priority will be given to crossings at major traffic corridor crossings such as Cleveland Avenue.

Policy HS-30: The City shall take appropriate measures to ensure that railroad crossings in Madera are safe.

Action Item HS-30.1: Work with "Operation Lifesaver" or other organizations to educate the public about the dangers of railroad tracks and crossings and how to safely cross them.

Action Item HS-30.2: Continue to refer projects with the potential to affect existing or proposed railroad crossings to the California Public Utilities Commission. As necessary, impose requirements on projects to implement appropriate CPUC recommendations.

As implementation of the proposed roadway system within the General Plan Update would improve city roadway connectivity, allowing for better emergency vehicle access to residences as well as evacuation routes for area residents, this impact is considered **less than significant**. Policies and action items specifically address the prioritization of improvement of roadways with safety issues (Policy CI-8) and driveway and left-turn design provisions (Policy CI-17 and CI-18). In addition, construction of facilities to City design standards would also result in the provision of facilities without unacceptable safety conflicts. Please refer to Impact 4.5.6 below for a discussion of safety-related impacts at-grade railway crossings.

Mitigation Measures

None required.

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Transit System

Impact 4.5.4 Implementation of the proposed General Plan Update would not conflict with public transit service (e.g., bus service). This is considered a **less than significant** impact.

The project would increase demand for transit services in the Planning Area beyond what is currently provided. The proposed General Plan promotes options for movement beyond the use of motor vehicles providing a mix of residential densities, commercial uses, and pedestrian and bicycle facilities. While the proposed General Plan Update does not specifically address contributions to the maintenance and operational requirements of public transit service, these components of public transit are funded mainly through a portion of sales tax revenue. The sales tax revenue is returned to each county through the Transportation Development Act for the purpose of providing transit service. Therefore, the proposed General Plan Update would contribute towards maintenance and operational requirements of public transit service in the same way as existing development. Furthermore, no conflicts with current transit provisions or plans are expected as a result of implementation of the proposed General Plan Update. Therefore, this impact is less than significant.

Proposed General Plan Policies and Action Items That Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this impact to the transit system. The following list contains those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Policy CI-24: Projects contributing traffic to the roadways listed in Policy C-23 may be required to fund system wide traffic improvements, including cumulative traffic mitigation at off-site locations (as applicable), and to assist in promoting non-vehicular transportation as a condition of project approval.

Policy CI-29: New development areas shall include pedestrian and bicycle facilities and connections to public transit systems, commercial centers, schools, employment centers, community centers, parks, senior centers and residences, and high-density residential areas.

Policy CI-32: The City's roadway cross-sections shall incorporate "complete streets" concepts and be designed to safely accommodate vehicles, cyclists, pedestrians, diverse and disabled users, and transit. "Complete streets" are defined as streets that are designed for a variety of users rather than having a focus on the automobile.

Action Item CI-32.1: Develop "Complete Street" standards for new arterial, collector, and local street construction. "Complete street" standards should include options for narrower travel way widths (on existing streets only, where needed to fit all uses into the existing right of way) and curb return radii, bike lanes, landscape strips, sidewalks that complement adjacent land uses, bus turnouts, and similar features.

Policy CI-42: Circulation planning for all modes of travel (vehicle, transit, bicycle, pedestrian, etc.) shall be coordinated with efforts to reduce air pollution and greenhouse gases.

As implementation of the General Plan Update would not conflict with transit services and would promote transit use, this impact is considered **less than significant**. Policies and action items specifically address the provision of transit connections with new development areas (Policy CI-29) and street design provisions (Policy CI-32 and CI-42).

Mitigation Measures

None required.

Bicycle and Pedestrian System

Impact 4.5.5 Implementation of the proposed General Plan Update would result in an increase in the demand for pedestrian and bicycle infrastructure. This is considered a **less than significant** impact.

The project would increase pedestrian and bicycle use in the Planning Area. However, the proposed General Plan accommodates a mix of residential densities, commercial uses, and pedestrian and bicycle facilities to promote options for movement other than the use of motor vehicles. The *Madera County 2004 Regional Bicycle Transportation Plan* includes proposed new bikeways and trails that would connect with existing trails (see **Figure 4.5-2**). Therefore, this impact is less than significant.

Proposed General Plan Policies and Action Items That Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this impact to the bicycle and pedestrian system. The following list contains those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Policy CI-28: The City shall encourage pedestrian circulation and access around the City and at the neighborhood level through the design of roadways and pedestrian facilities.

Action Item CI-28.1: Expand the availability and visibility of bicycle infrastructure such as bike racks and bike storage facilities.

Action Item CI-28.2: Consider opportunities for lower-income individuals to have access to bicycles, through community-sponsored programs such as "bicycle sharing" or bicycle giveaways to children.

Policy CI-29: New development areas shall include pedestrian and bicycle facilities and connections to public transit systems, commercial centers, schools, employment centers, community centers, parks, senior centers and residences, and high-density residential areas.

Policy CI-30: The City shall create a connected system of on- and off-street trails and paths for pedestrians and bicycles throughout Madera in both existing and new development areas, with a focus on on-street bike trails on

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collector roads, and off-street trails in parkways and along the Fresno River and other waterways.

Policy CI-32: The City's roadway cross-sections shall incorporate "complete streets" concepts and be designed to safely accommodate vehicles, cyclists, pedestrians, diverse and disabled users, and transit. "Complete streets" are defined as streets that are designed for a variety of users rather than having a focus on the automobile.

Action Item CI-32.1: Develop "Complete Street" standards for new arterial, collector, and local street construction. "Complete street" standards should include options for narrower travel way widths (on existing streets only, where needed to fit all uses into the existing right of way) and curb return radii, bike lanes, landscape strips, sidewalks that complement adjacent land uses, bus turnouts, and similar features.

Policy CI-34: The needs of pedestrians and bicyclists shall be routinely considered and, where practical, accommodated in all roadway construction and renovation projects.

Action Item CI-35.1: The City shall implement the Bicycle Master Plan through repaving, restriping, providing additional paving for bicycle lanes, or other methods as appropriate.

As implementation of the General Plan Update would improve bicycle and pedestrian facilities, this impact is considered **less than significant**. Policies and action items specifically address the provision of bicycle and pedestrian connections with new development areas (Policy CI-29) and street design provisions (Policy CI-32 and CI-42).

Mitigation Measures

None required.

At-Grade Railway Conflicts

Impact 4.5.6 Implementation of the proposed General Plan Update would result in an increase in traffic volumes that could result in the greater potential for conflicts with at-grade railway crossings. This is considered **less than significant** impact given policy provisions of the proposed General Plan Update.

The implementation of the proposed General Plan would increase the amount of vehicle traffic and the number of potential conflicts with at-grade railway crossings of Union Pacific and Burlington Northern Santa Fe. Modern construction design standards such as double arm gates and grade separated crossings would reduce the number of potential conflicts. However, no current projects or funding have been identified to reduce potential conflicts.

Proposed General Plan Policies and Action Items That Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this at-grade railway conflict impact. The following list contains those policies

and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Policy HS-29: The City shall initiate, and collaborate in safety and design improvements at existing railroad-at-grade crossings. This may include construction of grade-separated crossings and other appropriate safety features. Priority will be given to crossings at major traffic corridor crossings such as Cleveland Avenue.

Policy HS-30: The City shall take appropriate measures to ensure that railroad crossings in Madera are safe.

Action Item HS-30.1: Work with "Operation Lifesaver" or other organizations to educate the public about the dangers of railroad tracks and crossings and how to safely cross them.

Action Item HS-30.2: Continue to refer projects with the potential to affect existing or proposed railroad crossings to the California Public Utilities Commission. As necessary, impose requirements on projects to implement appropriate CPUC recommendations.

The proposed policies identified above would require safety improvements at railroad-at-grade crossings and commits the City to ensuring that the crossings are safe. Thus, this impact is **less than significant**.

Mitigation Measures

None required.

4.5.4 CUMULATIVE SETTING, IMPACTS AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for the proposed General Plan as it relates to transportation and circulation includes buildout of the Planning Area (anticipated to occur beyond year 2030), roadway and transit projects in Madera as described in the proposed General Plan policies and action items, future road improvements by Caltrans on State highways including SR 99 and SR 145 including the possible relocation of SR 145 outside of Downtown Madera, road improvement projects in Madera County, as well as existing, proposed and approved projects including those listed in Table 4.0-1 in Section 4.0 of this EIR. Cumulative traffic associated with regional growth in Madera and Fresno counties is also included.

Additionally, the cumulative setting for transportation and circulation may include improvements and changes to the transportation system in the region as envisioned in the San Joaquin Valley Blueprint. The San Joaquin Valley Blueprint depicts a way (in terms of land uses and transportation improvements) for the region to grow through the year 2050. While only advisory, the Blueprint will provide the most comprehensive policy guidance in the San Joaquin Valley for long-term regional land use and transportation planning.

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CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Impacts to Study Roadway Segments and Freeway Segments

Impact 4.5.7 When considered with existing, proposed, approved and planned development in the region, implementation of the proposed Madera General Plan Update has the potential to contribute to an increase in traffic volumes that would result in deficient level of service conditions under cumulative conditions (including buildout of the Planning Area). This is considered a **cumulatively considerable** and a **significant and unavoidable** impact.

As discussed under Impact 4.5.1 and 4.5.2, implementation of the proposed General Plan Update would provide service levels consistent with the City's LOS "C" standard with few exceptions. The proposed General Plan would result in LOS F within the General Plan planning horizon of 2030 on Madera Avenue (SR 145) – Almond Avenue to SR 99, Avenue 17 – Road 23 to SR 99, and all freeway segments in the Planning Area. With full buildout of the Planning Area and regional growth in traffic, these impacts are anticipated to worsen.

Proposed General Plan Policies and Action Items That Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this cumulative impact to study area roadway and freeway segments. Impact 4.5.1 and 4.5.2 list those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Mitigation Measures

Implementation of the above proposed General Plan Policies and Action items would reduce the project's cumulative contribution to study area roadway segment impacts. However, there are no feasible mitigation measures to fully mitigate impacts to the Madera Avenue (SR 145) – Almond Avenue to SR 99 and Avenue 17 – Roadway 23 to SR 99 roadway segments in the Planning Area as discussed under Impact 4.5.1. Pursuant to General Plan Policy CI-9, the City should coordinate with Caltrans to identify funding sources and implement the Ultimate Transportation Concept for SR 99 to minimize traffic impacts prior to buildout of the General Plan and cumulative impacts to freeway segments. Given SR 99 is outside of the City's jurisdiction, the City cannot ensure the timely implementation of these improvements. Because of the infeasibility of mitigation measures, this impact is considered **cumulatively considerable** and **significant and unavoidable**.

REFERENCES

Highway Capacity Manual. Transportation Research Board, 2000.

Transportation Concept Report (TCR) for SR-99. Caltrans District 6, November 2003.

Transportation Concept Report (TCR) for SR 145. Caltrans District 6, October 2006.

Route 99 Corridor Enhancement Master Plan.

<http://www.dot.ca.gov/dist6/99masterplan/index.html>

Madera County 2007 Regional Transportation Plan. MCTC, May 2007.

Unmet Transit Needs Within Madera County Notice of 2008-09 Findings. MCTC May, 2008.

Madera County 2004 Regional Bicycle Transportation Plan. Madera County Transportation Commission, January, 2004.

Caltrans Design Information Bulletin 77, January 1995.

<http://www.dot.ca.gov/hq/oppd/dib/dib77.htm>

California Government Code Section 65089. State of California

Assembly Bill (AB) 2419. State of California

4.6 AIR QUALITY

This section addresses potential air quality impacts of the proposed General Plan Update under year 2030 conditions and buildout of the Planning Area (post-2030 conditions). This section also identifies anticipated greenhouse gas emissions and associated effects of climate change.

4.6.1 EXISTING SETTING

AIR BASIN CHARACTERISTICS

The City of Madera is located in the central portion of the San Joaquin Valley Air Basin (SJVAB), whose geographic boundary is defined by the Sierra Nevada in the east, the Coast Ranges in the west, and the Tehachapi mountains in the south. The SJVAB has an "inland Mediterranean" climate, averaging over 260 sunny days per year. The valley floor is characterized by warm, dry summers and cooler winters. Summer highs 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 (SJV), high daily temperature readings in summer average 95 °F. Over the last 30 years, the SJV averaged 106 days a year 90 °F or hotter, and 40 days a year 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 decidedly maritime influence to the SJV. The high mountains to the east prevent the cold, continental air masses of the interior from influencing the valley. Thus, 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.

During the summer, wind speed and direction data indicate that summer wind usually originates at the north end of the San Joaquin Valley and flows in a south-southeasterly direction through the San Joaquin Valley, through Tehachapi pass, into the Southeast Desert Air Basin. In addition, the Altamont Pass also serves as a funnel for pollutant transport from the San Francisco Bay Area Air Basin into the region.

Temperature and solar radiation are particularly important in the chemistry of ozone formation. Ozone is formed in a photochemical reaction requiring sunlight. Generally, the higher the temperature, the more ozone formed, since reaction rates increase with temperature. However, extremely hot temperatures can "lift" or "break" the inversion layer. Typically, if the inversion layer doesn't lift to allow the build up of contaminants to be dispersed into the Southeast Desert, the ozone levels will peak in the late afternoon, sometimes as late as 3 to 7 p.m. If the inversion layer breaks and the resultant afternoon winds occur, the ozone will peak in the early afternoon and decrease in the late afternoon as the contaminants are transported to the Southeast Desert.

AIR POLLUTANTS OF CONCERN AND HEALTH EFFECTS

Ambient air quality in the City of Madera is similar to that of the larger San Joaquin Valley Air Basin. Because of the unique geography and meteorology of the San Joaquin Valley, the City has air pollution issues for several pollutants that the federal government regulates. In particular, there are six pollutants with health-based standards that identify pollutant levels of air quality for that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect public health and welfare. These six "criteria pollutants" include ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter 10 microns in size and smaller (PM₁₀), and lead.

4.6 AIR QUALITY

Ozone

Ground level ozone, commonly referred to as smog, is greatest on warm, windless, sunny days. Ozone is not emitted directly into the air from point sources (e.g., mobile or stationary); rather, they are formed through a complex series of chemical reactions between reactive organic gases (ROG) and nitrogen oxides (NOx). These reactions occur over time in the presence of sunlight.

Ozone is a public health concern because it is a respiratory irritant that increases susceptibility to respiratory infections and diseases, and because it can harm lung tissue at high concentrations. In addition, ozone can cause substantial damage to leaf tissues of crops and natural vegetation, and can damage many natural and manmade materials by acting as a chemical oxidizing agent.

The principal sources of the ozone precursors (ROG and NOx) are the combustion of fuels and the evaporation of solvents, paints, and fuels.

Particulate Matter (PM)

Particulate matter can be divided into several size fractions. Coarse particles are between 2.5 and 10 microns in diameter, and arise primarily from natural processes, such as wind-blown dust or soil. Fine particles are less than 2.5 microns in diameter and are produced mostly from combustion, or burning activities. Fuel burned in cars and trucks, power plants, factories, fireplaces and wood stoves produces fine particles.

The level of fine particulate matter in the air is a public health concern because it can bypass the body's natural filtration system more easily than larger particles, and can lodge deep in the lungs. The health effects vary depending on a variety of factors, including the type and size of particles. Research has demonstrated a correlation between high PM concentrations and increased mortality rates. Elevated PM concentrations can also aggravate chronic respiratory illnesses such as bronchitis and asthma.

Carbon Monoxide (CO)

Carbon monoxide (CO) is an odorless, colorless gas that is formed by the incomplete combustion of fuels. Motor vehicle emissions are the dominant source of CO in the Madera area. At high concentrations, CO reduces the oxygen-carrying capacity of the blood and can cause dizziness, headaches, unconsciousness, and even death. CO can also aggravate cardiovascular disease. Relatively low concentrations of CO can significantly affect the amount of oxygen in the bloodstream because CO binds to hemoglobin 220–245 times more strongly than oxygen.

CO emissions and ambient concentrations have decreased significantly in recent years. These improvements are due largely to the introduction of cleaner burning motor vehicles and motor vehicle fuels. The San Joaquin Valley area has attained the state and national CO standard. CO is still a pollutant that must be closely monitored, however, due to its severe effect on human health.

Nitrogen Oxides

Nitrogen oxides (NO_x) refer to a family of nitrogen-based compounds, including nitric oxide, nitrogen dioxide (NO₂), and other oxides of nitrogen. NO oxides are produced from burning

fuels, including gasoline, diesel, and coal. Nitrogen oxides react with volatile organic compounds to form ozone. Nitrogen oxides are also major components of acid rain.

Sulfur Oxides

Sulfur oxides (SO_x) are composed mainly of sulfur dioxide (SO₂) and sulfates. Sulfur oxides are pungent, colorless gases (sulfates are solids) formed primarily by combustion of sulfur-containing fossil fuels, especially coal and oil. Some industrial processes, such as production of paper and smelting of metals, produce sulfur dioxide. Sulfur dioxide is closely related to sulfuric acid and plays an important role in the production of acid rain.

In addition to the criteria pollutants discussed above, there are other pollutants for which there are no explicit criteria that are often air pollution issues of concern for communities. These include toxic air contaminants, odors, and wood smoke, which can produce localized health risks or nuisances for sensitive nearby land uses, also known as "sensitive receptors."

Sensitive receptors include facilities that house or attract children, the elderly, and people with illnesses or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors. The proximity of sensitive receptors to existing or potential sources of localized air pollution can result in land use conflicts that expose people to unhealthy air quality.

Lead (Pb)

Lead is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Lead was used until recently to increase the octane rating in auto fuel. Since gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels and the use of leaded fuel has been mostly phased out, the ambient concentrations of lead have dropped dramatically. In fact, the SJVUAPCD no longer monitors lead in the ambient air of the SJVAB.

TOXIC AIR CONTAMINANTS (TACs)

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. Unlike criteria pollutants, no safe levels of exposure to TACs have been established. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. Two types of risk are usually assessed: chronic non-cancer risk and acute non-cancer risk. There are many different types of TACs, with varying degrees of toxicity.

Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations, such as gasoline stations and dry cleaners, and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage and death.

It is important to understand that TACs are not considered criteria air pollutants and thus are not specifically addressed through the setting of ambient air quality standards. Instead, EPA and ARB regulate Hazardous Air Pollutants (HAPs) and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology (MACT and BACT) to limit emissions. These, in conjunction with additional rules set forth by SJVUAPCD, establish the regulatory framework for TACs.

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Based on data from the Air Toxics "Hot Spots" Information and Assessment Act, there are numerous stationary sources in the Planning Area that have the potential to emit TACs, as illustrated in **Table 4.6-1**.

TABLE 4.6-1
FACILITY EMISSIONS AND TOXIC PLUS RISK DATA FOR MADERA

Facility ID	Facility Name	TOG (tons/year)	ROG (tons/year)	CO (tons/year)	NOx (tons/year)	SOx (tons/year)	Total PM (tons/year)	PM ₁₀ (tons/year)
2496	28th Aero Squadron Industrial	-	0	0	0.1	0	0	0
936	Armstrong Petroleum Corporation	0	0	0	0	0	0	0
73	Baltimore Aircoil Of Cal		0	0	0.9	0	0.3	0.3
2498	Bullet Fiberglass	0.1	0.1	0	0	0	0	0
1353	C W Us Inc dba Paul Masson Cellars	28.8	28.8	0.3	0.4	0	0.1	0.1
628	Canandaigua West, Inc	38.5	37.8	0.4	0.3	0.3	1.1	1
4110	Carl's Jr.	-	0	0	0.1	0	0.2	0
4111	Carl's Jr.	-	0	0	0.1	0	0.2	0
5222	Cellco Partnership, Db a Verizon Wireless	-	0	0	0	0	0	0
29	Cemex Construction Materials L P	0	0	0	0	0	6.6	6

Source: Air Resources Board, 2008.

<http://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php?dd=y>

Diesel exhaust is a TAC of growing concern in California. In 1998, ARB identified diesel engine particulate matter as a TAC. The exhaust from diesel engines contains hundreds of different gaseous and particulate components, many of which are toxic, but are not considered to have acute non-cancer risks.

Mobile sources, such as trucks, buses, automobiles, trains, ships and farm equipment are by far the largest source of diesel emissions. Studies show that diesel particulate matter concentrations are much higher near heavily traveled highways and intersections. Land uses where individuals could be exposed to high levels of diesel exhaust include:

- Warehouses
- Schools with high volume of bus traffic
- High volume highways
- High volume arterials and local roadways with high level of diesel traffic.

The state has begun a program of identifying and reducing risks associated with particulate matter emissions from diesel-fueled vehicles. In September 2000, the Air Resources Board approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled engines and vehicles. The goal of the Plan is to reduce diesel PM emissions and the associated health risk by 75 percent in 2010 and 85 percent by 2020. The Plan consists of new regulatory standards for all new on road, off-road and stationary diesel-fueled engines and vehicles, new retrofit requirements for existing on-road, off-road and stationary diesel-fueled engines and vehicles, and new diesel fuel regulations to reduce the sulfur content of diesel fuel as required by advanced diesel emission control systems.

ODORS

Odors are typically regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

PESTICIDES

Most pesticides are designed to harm or kill pests, and because some pests have systems similar to the human system, some pesticides also can harm or kill humans (EPA, 2009). The hazards associated with pesticides depend on the toxicity of the pesticide and the exposure a human will receive in any situation.

The effects, or symptoms, of pesticide poisoning can be defined as either topical or systemic. Topical effects generally develop at the site of pesticide contact and are a result of either the pesticide's irritant properties or an allergic response by the victim. Dermatitis, or inflammation of the skin, is the most commonly reported topical effect associated with pesticide exposure. Symptoms of dermatitis range from reddening of the skin to rashes and/or blisters. Other symptoms include coughing, wheezing and sneezing when exposed to pesticide sprays (Penn State, 2007).

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Systemic effects often occur away from the original point of contact as a result of the pesticide being absorbed into and distributed throughout the body. Systemic effects often include nausea, vomiting, fatigue, headache, and intestinal disorders. In advanced poisoning cases, the individual may experience changes in heart rate, difficulty breathing, convulsions, and coma, which could lead to death (Penn State, 2007).

Common locations for pesticide use are agricultural land uses, where they are often used to prevent insect damage to crops. Because of this, the proximity of sensitive receptors to agricultural land uses could expose people to the hazards listed above.

WOOD SMOKE

Wood smoke has long been identified as a significant source of pollutants in urban and suburban areas. Wood smoke contributes to particulate matter and carbon monoxide concentrations, reduces visibility and contains numerous toxic air contaminants. Present controls on this source include the adoption of emission standards for wood stoves and fireplace inserts. Interest in wood smoke is likely to increase with the recent adoption of a PM_{2.5} (particulate matter less than 2.5 microns in diameter) national standard.

AMBIENT AIR QUALITY STANDARDS

Both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) have established ambient air quality standards for common pollutants. The national ambient air quality standards ("NAAQS", or "federal standards") and California ambient air quality standards ("CAAQS", or "state standards") for important pollutants are summarized in **Table 4.6-2**. These ambient air quality standards are levels of contaminants that represent levels that protect public health and welfare, and avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called "criteria" pollutants because the health and other effects of each pollutant are described in criteria documents. EPA and ARB have focused on the following air pollutants as indicators of ambient air quality: ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM), and lead. The federal and state ambient standards were developed independently with differing purposes and methods, although both processes attempted to avoid health related effects. As a result, the federal and state standards differ in some cases. In general, the California standards are more stringent. This is particularly true for ozone and PM₁₀.

A geographical area identified to have air quality as good as, or better than, the national or California ambient air quality standard is referred to as being in attainment of these standards. An area may be an attainment area for one pollutant and a nonattainment area for others.

The federal standard for ozone ground-level ozone is 0.075 ppm, measured over an 8-hour averaging period. This standard replaces the previous 1-hour ozone standard that U.S. EPA had enforced for decades. National standards for fine particulate matter (diameter 2.5 microns or less) have also been established for 24-hour and annual averaging periods. The current PM₁₀ standards were retained, but the method and form for determining compliance with the standards were revised. Implementation of the new ozone and particulate matter standards was delayed by a lawsuit. On February 27, 2001 the U.S. Supreme Court unanimously ruled in favor of the U.S. EPA, clearing the way for implementation of the new standards.

ARB has developed recommended designations for California air basins, designating the San Joaquin Valley as non-attainment for the new 8-hour ozone standard. On April 28, 2005, the ARB approved the 8-hour average standard at 0.070 ppm.

**TABLE 4.6-2
AMBIENT AIR QUALITY STANDARDS**

Pollutant	Averaging Time	California Standards ^(a, c)	National Standards ^(b, c)	
			Primary ^(d)	Secondary ^(e)
Ozone (O ₃)	1-hour	0.09 ppm (180 µg/m ³)	- -	Same as Primary
	8-hour	0.070 ppm (137 µg/m ³)	0.08 ppm ^(g)	
Particulate Matter (PM ₁₀)	AAM	20 µg/m ³	(Revoked) ^(f)	
	24-hour	50 µg/m ³	150 µg/m ³	
Fine Particulate Matter (PM _{2.5})	AAM	12 µg/m ³	15 µg/m ³	
	24-hour	No Separate Standard	35 µg/m ³ ^(f)	
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	None
	8-hour	9 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	
	8-hour (Lake Tahoe)	6 ppm (7 mg/m ³)	-	
Nitrogen Dioxide (NO ₂)	AAM	-	0.053 ppm (100 µg/m ³)	Same as Primary
	1-hour	0.25 ppm (470 µg/m ³)	-	
Sulfur Dioxide (SO ₂)	AAM	-	0.03 ppm (80 µg/m ³)	-
	24-hour	0.04 ppm (105 µg/m ³)	0.14 ppm (365 µg/m ³)	-
	3-hour	-	-	0.5 ppm (1,300 µg/m ³)
	1-hour	0.25 ppm (655 µg/m ³)	-	-
Lead	Rolling 3-Month Average	-	0.15 µg/m ³	Same as Primary
	30-day Average	1.5 µg/m ³	-	-
	Quarterly Average	-	1.5 µg/m ³	Same as Primary
Sulfates	24-hour	25 µg/m ³	No Federal Standards	
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m ³)		
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m ³)		

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Pollutant	Averaging Time	California Standards ^(a, c)	National Standards ^(b, c)	
			Primary ^(d)	Secondary ^(e)
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer—visibility of 10 miles or more (0.07—30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70%.		

a California standards for O₃, CO (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, PM (PM₁₀ and PM_{2.5}), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

b National standards (other than O₃, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The O₃ standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For PM_{2.5}, the 24-hour standard is attained when 98 percent of daily concentrations, average over three years, are equal to or less than the standard.

c Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr.

d The levels of air quality necessary to protect the public health.

e The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

f Based on revised particulate standards adopted by the US EPA on September 21, 2006. Due to lack of evidence linking health problems to long-term exposure to coarse particulate pollution, the US EPA has revoked the annual PM₁₀.

g The federal primary ozone standard, as averaged over an 8-hour period, was revised in 2008 to 0.075 ppm.

AAM = Annual Arithmetic Mean

Source: ARB 2008a; US EPA 2008a.

AMBIENT AIR QUALITY

The ARB maintains several air quality monitoring sites in and around Madera. The three years of data provided in **Table 4.6-3** show the number of days standards were exceeded for each year, as well as the concentration of pollutants in the given area. The nearest air quality monitoring site in relation to the project for Ozone and Nitrogen Dioxide is the Madera Pump monitoring station. The Fresno Clovis N. Villa monitoring station is the nearest for Inhalable Particulates (PM₁₀), and Ultra-Fine Particulates (PM_{2.5}). For 8 hour Carbon Monoxide, the nearest air monitoring station is Fresno Sierra Skypark #2. The nearest station for Sulfur Dioxide is the Fresno 1st Street monitoring station, although it should be noted that only 2007 data is available, and the number of total days exceeding California standards is not available. Data for the study years is not available for 1 hour CO, or 2005-2006 SO₂.

**TABLE 4.6-3
AIR MONITORING STATION ANNUAL SUMMARY**

Pollutant/Standard	2006	2007	2008
O₃ (8-hour) ^A			
Maximum Concentration (ppm)	0.095	0.083	0.107
Days > CAAQS (0.070 ppm)	35	12	46
Days > NAAQS (0.08 ppm)	15	5	24
PM_{2.5} (24-hour) ^B			
Maximum Concentration (µg/m ³)	65.8	64.7	49.7
Days > NAAQS (65 µg/m ³)	28	51.5	N/A
PM₁₀ (24-hour) ^B			
Maximum Concentration (µg/m ³)	106.0	116.0	80.5
Days > CAAQS (50 µg/m ³)	12	8	13
Days > NAAQS (150 µg/m ³)	0	0	0
CO (8-hour) ^C			
Maximum Concentration (ppm)	2.08	1.39	1.03
Days > CAAQS (9.0 ppm)	0	0	0
Days > NAAQS (9.0 ppm)	0	0	0
CO (1-hour)			
Maximum Concentration (ppm)	N/A	N/A	N/A
Days > CAAQS (20 ppm)	N/A	N/A	N/A
Days > NAAQS (35 ppm)	N/A	N/A	N/A
SO₂ (24-hour) ^D			
Maximum Concentration (ppm)	N/A	0.067	0.030
Days > CAAQS (0.04 ppm)	N/A	N/A	N/A
Days > NAAQS (0.14 ppm)	N/A	N/A	N/A
NO₂ (1-hour) ^A			
Maximum Concentration (ppm)	0.051	0.047	0.053
Days > CAAQS (0.25 ppm)	0	0	0

Source: California Air Resources Board website, <http://www.arb.ca.gov/adam/cgi-bin/db2www/adamtop4b.d2w/Branch>. Accessed February 25, 2008.

^A Data taken from the Madera Pump Air Monitoring Station.

^B Data taken from the Fresno Clovis N. Villa Monitoring Station.

^C Data was taken from the Fresno Sierra Skypark #2 Monitoring Station.

^D Data taken from the Fresno 1st Street Monitoring Station.

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As shown in **Table 4.6-3**, the following criteria pollutants have exceeded state or federal standards between the years 2006-2008: PM₁₀, PM_{2.5}, 8 hour O₃ and 1 hour O₃.

Based on these monitoring data, **Table 4.6-4** shows the Federal and State attainment status for the San Joaquin Valley Air Basin. The region is non-attainment for federal ozone and PM_{2.5} standards.

TABLE 4.6-4
FEDERAL AND STATE ATTAINMENT STATUS FOR MADERA

Pollutants	Federal Classification	State Classification
Ozone	Non-attainment	Non-attainment
PM _{2.5}	Non-attainment	Non-attainment
PM ₁₀	Attainment	Non-attainment
CO	Unclassified/Attainment	Unclassified
NO ₂	Unclassified/Attainment	Attainment
SO ₂	Unclassified	Attainment

Source: California Air Resources Board, <http://www.arb.ca.gov/desig/adm/adm.htm>, accessed February 25, 2009.

CO = carbon monoxide; NO₂ = nitrogen dioxide; SO₂ = sulfur dioxide; PM_{2.5} = particulate matter less than 2.5 micrograms in diameter PM₁₀ = particulate matter less than 10 micrograms in diameter.

4.6.2 REGULATORY FRAMEWORK

Air quality in the Basin is regulated through the efforts of federal, State, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies primarily responsible for improving the air quality in Madera are discussed below, along with their individual responsibilities.

FEDERAL

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) is responsible for enforcing the Federal Clean Air Act and the 1990 amendments to it ("Federal CAA"), and the national ambient air quality standards (federal standards) that the EPA establishes. These standards identify levels of air quality for six "criteria" pollutants, which are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect public health and welfare. The U.S. EPA also has regulatory and enforcement jurisdiction over emission sources beyond state waters (outer continental shelf), and sources that are under the exclusive authority of the federal government, such as aircraft, locomotives, and interstate trucking.

Federal Hazardous Air Pollutant Program

Title III of the CAA requires EPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP may differ for major sources than for area sources of HAPs (major sources are defined as stationary sources with potential to emit more than 10 tons per year [TPY] of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered area sources).

The emissions standards are to be promulgated in two phases. In the first phase (1992–2000), EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), EPA was required to promulgate health risk-based emissions standards where deemed necessary to address risks remaining after implementation of the technology based NESHAP standards.

The CAAA required EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1, 3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected U.S. cities (those with the most severe ozone nonattainment conditions) to further reduce mobile-source emissions.

STATE

California Air Resources Board

The California Air Resources Board, a department of the California Environmental Protection Agency (Cal EPA), oversees air quality planning and control throughout California. It is primarily responsible for ensuring implementation of the 1989 amendments to the California Clean Air Act (CCAA), responding to the federal CAA requirements, and for regulating emissions from motor vehicles and consumer products within the State. ARB has established emission standards for vehicles sold in California and for various types of equipment available commercially. It also sets fuel specifications to further reduce vehicular emissions.

The amendments to the CCAA establish ambient air quality standards for the State (state standards) and a legal mandate to achieve these standards by the earliest practical date. These standards apply to the same six criteria pollutants as the Federal CAA, and also include sulfate, visibility, hydrogen sulfide, and vinyl chloride. They are more stringent than the federal standards and, in the case of PM₁₀ and SO₂, far more stringent.

Tanner Air Toxics Act

California regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs and has adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to the ARB list of TACs.

Once a TAC is identified, ARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions.

The AB 2588 requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures. ARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g.,

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tractors, generators). In February 2000, ARB adopted a new public-transit bus-fleet rule and emission standards for new urban buses. These rules and standards provide for (1) more stringent emission standards for some new urban bus engines, beginning with 2002 model year engines; (2) zero-emission bus demonstration and purchase requirements applicable to transit agencies; and (3) reporting requirements under which transit agencies must demonstrate compliance with the urban transit bus fleet rule. Current and upcoming milestones include the low-sulfur diesel-fuel requirement, and tighter emission standards for heavy-duty diesel trucks and off-road diesel equipment (2011) nationwide.

Air Quality and Land Use Handbook

As part of its Community Health Program, ARB has developed an Air Quality and Land Use Handbook, which is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. ARB is also developing related information and technical evaluation tools for addressing cumulative air pollution impacts in a community. Any recommendations or considerations contained in the Handbook are voluntary and do not constitute a requirement or mandate for either land use agencies or local air districts.

The primary goal in developing this document was to provide information that will help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution. Recent air pollution studies have shown an association between respiratory and other non-cancer health effects and proximity to high traffic roadways. Other studies have shown that diesel exhaust and other cancer-causing chemicals emitted from cars and trucks are responsible for much of the overall cancer risk from airborne toxics in California.

ARB community health risk assessments and regulatory programs have produced important air quality information about certain types of facilities that should be considered when siting new residences, schools, day care centers, playgrounds, and medical facilities (i.e., sensitive land uses). Sensitive land uses deserve special attention because children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the non-cancer effects of air pollution. There is also substantial evidence that children are more sensitive to cancer-causing chemicals.

The Handbook identifies ARB's recommendations regarding the siting of new sensitive land uses near freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and gasoline dispensing facilities. This list consists of the air pollution sources that have been evaluated from the standpoint of the proximity issue. It is based on available information and reflects ARB's primary areas of jurisdiction – mobile sources and toxic air contaminants.

AB 170

AB (Assembly Bill) 170, which created Government Code Section 65302.1, requires cities and counties in the San Joaquin Valley to amend appropriate elements of their general plans to include data, analysis, comprehensive goals, policies, and feasible implementation strategies to improve air quality. Specifically, the bill recommends that the following be included in the general plan:

- (A) Determine and mitigate project level and cumulative air quality impacts under the California Environmental Quality Act (CEQA) (Division 13 (commencing with Section 21000) of the Public Resources Code).

- (B) Integrate land use plans, transportation plans, and air quality plans.
- (C) Plan land uses in ways that support a multimodal transportation system.
- (D) Local action to support programs that reduce congestion and vehicle trips.
- (E) Plan land uses to minimize exposure to toxic air pollutant emissions from industrial and other sources.
- (F) Reduce particulate matter emissions from sources under local jurisdictions.
- (G) Support district and public utility programs to reduce emissions from energy consumption and area sources.

Based upon the schedule outlined in the bill, jurisdictions in Fresno and Kern counties are required to comply with this requirement by June 30, 2009. Jurisdictions in Stanislaus, San Joaquin, Merced, Kings, Tulare, and Madera counties are required to comply by June 30, 2010.

REGIONAL AND LOCAL

San Joaquin Valley Unified Air Pollution Control District

Air Quality Plans

The SJVUAPCD has adopted several attainment plans to achieve State and federal air quality standards to comply with the CCAA and Federal CAA. The SJVUAPCD must continuously monitor its progress in implementing attainment plans and must periodically report to the ARB and the EPA. It must also periodically revise its attainment plans to reflect new conditions and requirements in accordance with schedules mandated by the CCAA and Federal CAA. Following are descriptions and the current status of the District's various air quality attainment plans.

Ozone Plans

Federal 1-Hour Ozone: 2004 Extreme Ozone Attainment Demonstration Plan

After passage of the Federal CAA, the SJVAB was classified "serious" nonattainment for the federal 1-hour ozone standard. Accordingly, the district prepared and submitted the 1994 *Ozone Attainment Demonstration Plan* which projected attainment of the federal ozone standard by 1999. This goal was not achieved by the deadline and the SJVAB was reclassified from "serious" to "severe" nonattainment with a new attainment deadline of November 15, 2005. The district began preparing a Severe Ozone Attainment Demonstration Plan in 2001 and determined that attainment could not be achieved by the 2005 deadline. The district requested reclassification from "severe" to "extreme" nonattainment with a new attainment deadline of November 15, 2010. ARB approved and submitted to EPA the district's 2004 Extreme Ozone Attainment Demonstration Plan for approval in November 2004.

The U.S. EPA has since revoked in full the federal 1-hour ozone ambient air quality standard, including associated designations and classifications, in all areas except 14 early action compact areas that do not include the SJVAB. As such, transportation conformity and de minimis thresholds for 1-hour ozone no longer apply, contingency measures are not needed, and EPA will not make a finding of a failure to attain. However, other requirements still apply,

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including anti-backsliding provisions, rate of progress reductions, reasonably available control technologies (RACT), and black box measures (provisions of an Extreme Area's implementation plan that anticipate development of new control techniques of improvement of existing control technologies) (SJVUAPCD, 2008).

State 1-Hour Ozone

In accordance with the CCAA, the District prepared the Air Quality Attainment Plan in 1991 which was subsequently approved by ARB in 1992. California Health and Safety Code requires that a report be prepared every three years that summarizes the progress made by the District in meeting the schedules for developing, adopting and implementing the air pollution control measures contained in the District's plan. The District's most recent progress report, the California Clean Air Act Triennial Progress Report and Plan Revision, 1997-1999 was prepared and submitted to ARB in March 2001 (SJVUAPCD, 2008).

Federal 8-Hour Ozone: 2007 Ozone Plan

The SJVAB was classified as "serious" nonattainment for the federal 8-hour ozone standard on April 15, 2004 and was given an attainment deadline of June 15, 2013. The District approved the 2007 Ozone Plan on April 30, 2007 and submitted it, on schedule, to the U.S. EPA on June 15, 2007. The plan was adopted in December 2008 (SJVUAPCD, 2008).

Carbon Monoxide Plan

The 1992 Federal Attainment Plan for Carbon Monoxide established the regulatory groundwork in order to bring the SJVAB into compliance with the NAAQS for carbon monoxide. The Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas (April 1996) demonstrated that the SJVAB was in compliance with the NAAQS for carbon monoxide and requested redesignation to attainment status. This plan was approved by the U.S. EPA on June 1, 1998. The SJVUAPCD revised this maintenance plan in 1998 and 2004 (SJVUAPCD, 2008).

PM₁₀ and PM_{2.5} Plans

PM₁₀

After passage of the Federal CAA, the SJVAB was classified nonattainment for PM₁₀ and was required to adopt a PM₁₀ plan by November 15, 1991. The District submitted a plan but was unable to demonstrate attainment by the deadline of December 31, 1994. This resulted in reclassification to "serious" nonattainment with a new attainment deadline of December 31, 2001. On May 15, 1997, the District submitted a PM₁₀ Attainment Demonstration Plan; however, the EPA indicated that it intended to disapprove the plan and the District withdrew. EPA approved the 2003 PM₁₀ Plan on May 26, 2004 and approved the 2005 Amendments to the 2003 PM₁₀ Plan on May 19, 2005. The District's most recent PM₁₀ plan is the 2006 PM₁₀ Plan. This plan sets forth the approach the SJVUAPCD will use to attain the NAAQS for PM₁₀ (SJVUAPCD, 2008).

PM_{2.5}

The U.S. EPA adopted the first NAAQS for PM_{2.5} in 1997 and classified the SJVAB as nonattainment. The District prepared and adopted the 2008 PM_{2.5} Plan in April 2008 which plans for attainment of the 1997 federal standards, the 2006 federal standards, and the state standard as soon as possible (SJVUAPCD, 2008).

Prevention of Significant Deterioration Consideration

Under federal regulations, areas designated as Class I airsheds are considered pristine, and require specific standards, such as Prevention of Significant Deterioration (PSD) requirements (SJVUAPCD 2002). Within the San Joaquin Valley Air Pollution Control District (SJVUAPCD), the Kings Canyon and Sequoia National Parks and Ansel Adams, Kaiser, John Muir, and Domeland Wilderness Areas are Class I areas. None of these Class I airsheds is within the vicinity of the City of Madera, as the nearest Class I airshed is the Kaiser Wilderness Area, approximately 60 miles away.

Rules and Regulations

There are several rules and regulations administered by the SJVUAPCD that would generally apply to the construction and operation of development projects that would be permitted under the General Plan Update.

Regulation VIII – Fugitive PM₁₀ Prohibitions

The SJVUAPCD has adopted a set of PM₁₀ Fugitive Dust Rules that are codified through Regulation VIII. Regulation VIII is comprised of District Rules 8011 through 8081 which are designed to reduce PM₁₀ emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, landfill operations, etc.

Rule 4002 – National Emission Standards for Hazardous Air Pollutants

In the event that any portion of an existing building will be renovated, partially demolished or removed, the project will be subject to District Rule 4002. Prior to any demolition activity, an asbestos survey of existing structures on the project site may be required to identify the presence of any asbestos containing building material (ACBM). Any identified ACBM having the potential for disturbance must be removed by a certified asbestos contractor in accordance with CAL-OSHA requirements.

Rule 4102 – Nuisance

This rule applies to any source operation that emits or may emit air contaminants or other materials. In the event that the project or construction of the project creates a public nuisance, it could be in violation and subject to District enforcement actions.

Rule 4601 – Architectural Coatings

This rule limits volatile organic compounds from architectural coatings by specifying architectural coatings storage, clean up and labeling requirements and applies to any person who supplies, sells, offers for sale, applies, or solicits the application of any architectural coating.

Rule 4641 – Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations

If asphalt paving will be used, then paving operations of the proposed project will be subject to Rule 4641. This rule applies to the manufacture and use of cutback asphalt, slow cure asphalt and emulsified asphalt for paving and maintenance operations.

Rule 8021 – Construction, Demolition, Excavation, and Other Earthmoving Activities

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District Rule 8021 requires owners or operators of construction projects to submit a Dust Control Plan to the District if at anytime the project involves non-residential developments of five or more acres of disturbed surface area or moving, depositing, or relocating of more than 2,500 cubic yards per day of bulk materials on at least three days of the project. The proposed project will meet these criteria and will be required to submit a Dust Control Plan to the District in order to comply with this rule.

Rule 9510 Indirect Source Review

District rule 9510 Indirect Source Review (ISR) was adopted on December 15, 2005. ISR was adopted to fulfill the District's emission reduction commitments in the PM₁₀ and Ozone Attainment Plans. ISR requires submittal of an Air Impact Assessment (AIA) application no later than the date on which application is made for final discretionary approval by the public agency. The AIA is used to determine the construction and operational impacts of a proposed development project. The proposed project qualifies as a development project under Rule 9510 because it contains more than 2,000 square feet of commercial space. Section 6.0 of the Rule outlines general mitigation requirements for construction equipment emissions, the rule specifies that exhaust emissions for construction equipment greater than 50 horsepower need to reduce NO_x exhaust emissions by 20 percent and PM₁₀ exhaust emissions by 45 percent. The alternative to achieving these onsite reductions is to pay a fee for the excess emissions of NO_x and/or PM₁₀.

4.6.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

This air quality analysis uses both the State CEQA Guidelines Appendix G significance criteria and recommended significance thresholds from the SJVUAPCD.

The Air Quality Section of Appendix G of the CEQA Guidelines contains a list of effects that may be deemed potentially significant. These are:

- 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 is non-attainment under applicable federal or state ambient air quality standards;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

Furthermore, the SJVUAPCD has developed the following recommended thresholds of significance for construction and operations:

Construction

The SJVUAPCD recommends that projects should be evaluated in terms of air pollution control thresholds established by the SJVUAPCD and that any determination of significance with respect to construction emissions should be based on a consideration of the control measures to be

implemented. As development projects that are allowed due to the proposed policies of the General Plan Update are constructed, compliance with Regulation VIII and implementation of the control measures required by the SJVUAPCD under Regulation VIII will constitute sufficient mitigation to reduce PM₁₀ impacts to a level considered less-than-significant (SJVUAPCD 2002).

Operational Carbon Monoxide Analysis

The General Plan Update would have a significant impact on localized CO concentrations if:

- A traffic study indicates that the Level of Service (LOS) on one or more streets or at one or more intersections will be reduced to LOS E or F; or
- A traffic study indicates that the General Plan Update will substantially worsen an already existing LOS F on one or more streets or at one or more intersections.

If either of the above criteria can be associated with any intersection affected by the project, a CO Protocol Analysis would be needed to determine significance. The SJVUAPCD has established a preliminary screening protocol that can be used to determine with fair certainty whether the proposed General Plan buildout would potentially cause a future CO exceedance of federal standards.

METHODOLOGY

This air quality analysis for the General Plan EIR is based on land use designations identified in the General Plan Land Use Element and the projected traffic. Construction-related emissions for potential future development projects were characterized using the ARB's URBEMIS 9.4.2 emissions model. Increases in long-term, regional criteria air pollutants from motor vehicles were calculated using the ARB's EMFAC 2007 emissions modeling software utilizing data from the Traffic Impact Analysis. In addition, emissions from stationary, area, and other mobile sources were calculated using technical air quality emission factors from ARB and other entities paired with activity data (e.g., household, population projections) from the General Plan update.

IMPACTS AND MITIGATION MEASURES

Contribute to an Existing Air Quality Violation or Result in a Cumulative Net Increase In Any Criteria Pollutant in Non-Attainment from Construction Emissions

Impact 4.6.1 Implementation of the General Plan Update may expose sensitive receptors to short-term particulate matter emissions resulting from construction. However, subsequent development would be subject to SJVUAPCD construction standards that address construction emissions. This would be a **less than significant** impact.

The proposed General Plan Update implementation would include new development that would allow for future construction of residential, commercial, industrial, and other projects. This will result in construction-related emissions from future projects that would generally be short-term in duration, but may still cause adverse air quality impacts. Inhalable PM₁₀ is the pollutant of greatest concern associated with construction activities. PM₁₀ emissions can result from construction activities facilitated by the proposed General Plan, including excavation, grading, demolition, vehicle travel on paved and unpaved surfaces, and vehicle and equipment exhaust. Particulate emissions from construction activities can lead to adverse health effects as well as nuisance concerns such as reduced visibility and soiling of exposed surfaces.

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Construction emissions of PM₁₀ can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. **Table 4.6-5** illustrates a profile of construction-related emissions from a hypothetical one-acre development site with moderate grading and construction activities. This table demonstrates that even a 43,560 square foot site can produce substantial emissions of PM₁₀ and other criteria pollutants, though there can be great variability in emissions depending upon the amount of earthmoving activities that are necessary.

Despite this variability in emissions, there are a number of feasible control measures that can be reasonably implemented to significantly reduce PM₁₀ emissions from construction. SJVUAPCD's approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions. SJVUAPCD has identified a set of feasible PM₁₀ control measures for construction activities. Implementation of the control measures required by the SJVUAPCD under Regulation VIII constitutes sufficient mitigation to reduce PM₁₀ impacts during construction to a level considered **less than significant** (SJVUAPCD 2002).

TABLE 4.6-5
CONSTRUCTION EMISSIONS FROM HYPOTHETICAL ONE-ACRE CONSTRUCTION SITE (POUNDS/DAY)

	ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}	CO ₂
Construction Emissions (2025)							
Fine Grading	2	11	9	0	5	1.5	2,350
Paving	1	6	7	0	0.5	0.4	1,163
Construction	1	4	5	0	0.2	0.2	1,379
Coating	7	0	0	0	0	0	8
Total	10.4	21	21	0	6	2	4,900

Source: URBEMIS 2007 v. 9.2.4 Outputs

The following mitigation measures typically used to address construction air quality impacts consistent with SJVUAPCD Rule VIII. Additional air quality mitigation measures for construction activities are listed in Tables 6-3 and 6-4 of the SJVUAPCD's Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI).

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.

- When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday (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).
- 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 utilizing sufficient water or chemical stabilizer/suppressant.
- Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan Update includes the following mitigation requirements that include specific performance standards.

Policy CON-28: The creation of dust during construction/demolition activities should be reduced to the extent feasible.

Action Item CON-28.1: Work with the San Joaquin Valley Air Pollution Control District to reduce particulate emissions from construction, grading, excavation, and demolition through standard and/or special conditions on these activities.

Policy CON-28 and Action Item 28.1 specifically requires that the City work with SJVACD on reduction measures, which would include compliance with SJVUAPCD Rule VIII. Thus, this impact would be **less than significant**.

Mitigation Measures

None required

Create Objectionable Odors or Expose Sensitive Receptors to Substantial Pollutant Concentrations

Impact 4.6.2 Implementation of the General Plan Update may create objectionable odors or expose sensitive receptors to toxic air contaminants. This impact is **less than significant** given current SJVUAPCD, State and proposed General Plan Update provisions.

The SJVUAPCD's CEQA Guidelines classify several types of projects that could create objectionable odors, including: wastewater treatment plant, sanitary landfill, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing, fiberglass manufacturing, auto body shops, rendering plants, and coffee roasters. Impacts

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resulting from odors can occur when sensitive receptors are located near the odor sources listed above, or vice-versa.

To avoid significant impacts, the SJVUAPCD's CEQA Guidelines require that buffer zones be established around existing and proposed land uses that would emit odors and toxic air contaminants to avoid adverse impacts and should be reflected in local plan policies. It should also be noted that stationary sources of TACs are required to obtain permitting from SJVUAPCD, which considers the health and risk associated with emissions on sensitive receptors. The largest sources of TACs in the City of Madera are shown in **Table 4.6-1**.

In addition to these sources, agricultural land also represents a potential source of toxics and odors (depending on the agricultural operation). The City's Right to Farm Ordinance (Chapter 10-3.418 of the Madera Municipal Code) protects and encourages agricultural operations in the City, as long as proper and accepted customs and standards are met. The Ordinance states that residents of property in or near agricultural districts should be prepared to accept the inconveniences and discomfort associated with normal farm activities. The policy establishes that no agricultural operation conducted in a manner consistent with proper and accepted customs and standards shall be or become a nuisance due to any changed condition after the operation has been in operation for more than one year, if it was not a nuisance at the time it began. The Ordinance also includes a provision to record a right to farm notice in conjunction with rezoning and subdivision applications for all such applications within 300 feet of agricultural lands.

Implementation of the General Plan may locate sensitive receptors near potential existing and future sources of odors or TACs. For example, in the Planning Area, there is proposed heavy industrial land use designation adjacent to schools as well as varying densities of residential development. In addition to possible processes which will emit toxics and odors, heavy industrial land uses also tend to have diesel truck traffic. In the northwest and northeast areas of the planning area, residential land uses are placed near agricultural land uses. In addition, the project proposes policies that may result in new or expanded transportation improvement projects which could generate additional sources of toxic air contaminants and odors that may affect surrounding land uses.

As previously identified above, AB 2588 requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures. ARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators). In February 2000, ARB adopted a new public-transit bus-fleet rule and emission standards for new urban buses. These rules and standards provide for (1) more stringent emission standards for some new urban bus engines, beginning with 2002 model year engines; (2) zero-emission bus demonstration and purchase requirements applicable to transit agencies; and (3) reporting requirements under which transit agencies must demonstrate compliance with the urban transit bus fleet rule. Current and upcoming milestones include the low-sulfur diesel-fuel requirement, and tighter emission standards for heavy-duty diesel trucks and off-road diesel equipment (2011) nationwide.

Implementation and enforcement of SJVUAPCD Rule 4102 for subsequent projects would ensure that adverse odor impacts do not occur. Specifically, Rule 4102 states "A person shall not discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such person or the

public or which cause or have a natural tendency to cause injury or damage to business or property."

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan Update includes the following mitigation requirements that include specific performance standards.

Policy CON-26: Residential development projects and projects categorized as sensitive receptors shall be located an adequate distance from existing and potential sources of toxic emissions such as freeways, major arterials, industrial sites, and hazardous material locations. "Adequate distance" will be based on site-specific conditions, on the types and amounts of potential toxic emissions, and other factors.

Policy CON-27: The City shall require new air pollution point sources (such as, but not limited to, industrial, manufacturing, and processing facilities) to be located an adequate distance from residential areas and other sensitive receptors. "Adequate distance" will be based on site-specific conditions, the type and location of sensitive receptors, on the types and amounts of potential toxic emissions, and other factors.

As identified above, SJVUAPCD requirements (e.g., Rule 4102), implementation of AB 2588, and proposed Policy CON-26 CON-27 (placement of sensitive receptors in relation to air pollutant sources) would ensure that sensitive receptors are not exposed to inappropriate levels of TACs or odors. Thus, this impact is **less than significant**.

Mitigation Measures

None required.

Expose Sensitive Receptors to Substantial Pollutant Concentrations

Impact 4.6.3 The General Plan Update would allow continued growth in population, housing, and jobs in the City of Madera that would increase traffic volumes on local roadways. This would result in elevated CO emissions from motor vehicle congestion that could expose sensitive receptors to elevated CO concentrations. However, based on the projections of traffic congestion, this is not expected to result in exceedances of CO standards. As a result, this is considered to be a **less than significant** impact.

Local mobile-source carbon monoxide emissions near roadway intersections are a function of traffic volume, speed, and delay. Transport of CO is extremely limited because it disperses rapidly with distance from the source under normal meteorological conditions. Under specific meteorological conditions, CO concentrations near roadways and/or intersections may reach unhealthy levels. These concentrations are also impacted by vehicle delay associated with roadways or intersections. As vehicles speeds slow to LOS E or F, or worsen from a LOS F, CO concentrations are increased, creating a scenario in which localized CO could possibly cause a hotspot (SJVUAPCD, 1998).

The proposed General Plan update would have a significant impact on localized CO concentrations if:

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- A traffic study indicates that the Level of Service (LOS) on one or more streets or at one or more intersections will be reduced to LOS E or F; or
- A traffic study indicates that the project will substantially worsen an already existing LOS F on one or more streets or at more or more intersections.

If either of the above criteria can be associated with any intersection affected by the project, a CO Protocol Analysis would be needed to determine significance. The SJVUAPCD has established a preliminary screening protocol that can be used to determine with fair certainty whether the proposed General Plan buildout would potentially cause a future CO exceedance of federal standards. According to the SJVUAPCD recommended Caltrans protocol, a project which does not involve or lead directly to construction, such as the General Plan Update, is considered exempt from CO hotspot analyses (Caltrans, 1997).

In addition, the Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas (April 1996) demonstrated that the SJVAB was in compliance with the NAAQS for carbon monoxide and requested redesignation to attainment status. This plan was approved by the U.S. EPA on June 1, 1998. As shown in **Table 4.6-3**, monitoring station data has not identified any exceedance of state or federal CO standards

As a result, this impact is considered **less than significant**.

Mitigation Measures

None required.

Conflict With or Obstruct Air Quality Plan or Result in a Cumulative Net Increase in Any Criteria Pollutant in Non-Attainment

Impact 4.6.4 Implementation of the General Plan Update would allow for population growth that may exceed projections assumed in the 2007 Ozone Plan and potentially conflict with particulate matter reduction measures. This inconsistency could obstruct the SJVUAPCD's ozone attainment strategy and particulate matter (PM₁₀ and PM_{2.5}) attainment efforts. This impact is considered to be **significant and unavoidable**.

Implementation of the General Plan update will result in long-term emissions from a variety of sources, including motor vehicles and area source emissions from energy use associated with future growth. As illustrated in **Table 4.6-6**, emissions from motor vehicles citywide are generally decreasing over time, despite the growth in population, housing, and employment associated with the General Plan update. This is largely due to advancements in motor vehicle engine technology.

TABLE 4.6-6
AVERAGE DAILY VEHICLE EMISSIONS IN THE YEAR 2030 (TONS/DAY)

Pollutant	2008	2030	Change in Emissions from 2008 to 2030	Percent Change in Emissions from 2008 to 2030
VMT	1,592,588	2,981,260	-	-
CO	11.74	4.75	-6.99	-60%
NO _x	4.83	1.85	-2.98	-62%
SO _x	0.01	0.02	+0.01	+100%
ROG	1.13	0.53	-0.6	-53%
PM ₁₀	0.23	0.2	-0.03	-13%
PM _{2.5}	0.19	0.13	-0.06	-32%

Source: Emfac 2007 model outputs. 2030 VMT data provided by the traffic impact analysis. 2008 VMT data extrapolated from the data provided in the traffic impact analysis.

The General Plan Update would also allow more growth that would result in emissions from energy use that would challenge the region's ability to meet ozone and PM standards. As shown in **Table 4.6-7** and **4.6-8**, emissions from electricity and natural gas use associated with planned growth would increase, primarily from residential heating in the winter, landscaping activity in the summer, consumer products, and architectural coatings.

TABLE 4.6-7
AREA SOURCE EMISSIONS FROM ENERGY USE (TONS/DAY)

Pollutant	2008	2030	Change in Emissions from Existing to 2030	Percent Change in Emissions from Existing to 2030
ROG	1.2	2.9	+1.6	+142%
NO _x	0.2	0.5	+0.3	+150%
CO	2.9	6.2	+3.3	+114%
SO _x	0.01	0.02	+0.01	+100%
PM ₁₀	0.4	0.9	+0.5	+125%
PM _{2.5}	0.4	0.9	+0.5	+125%

Source: URBEMIS 2007 v. 9.2.4 Outputs

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TABLE 4.6-8
TOTAL LONG-TERM EMISSIONS (TONS/DAY)

Pollutant	2008	2030	Change in Emissions from Existing to 2030	Percent Change in Emissions from Existing to 2030
ROG	2.4	3.4	+ 1	+ 44%
NO _x	5.0	2.3	-2.7	-54%
CO	14.6	10.9	-3.6	-25%
SO _x	0.02	0.04	+0.02	+ 108%
PM ₁₀	0.7	1.1	+0.5	+ 71%
PM _{2.5}	0.6	1.0	+0.4	+ 69%

Source: Emfac 2007 and URBEMIS 2007 v. 9.2.4 Outputs

Ultimately, the General Plan Update's impact on cumulative air quality in the region is determined by comparing proposed population growth accommodated by the General Plan update with the projected population for the City that was assumed by both MCTC and the SJVUAPCD in the 2007 Ozone Plan. **Table 4.6-9** shows the estimated increase in housing resulting from implementation of the proposed General Plan Update. **Table 4.6-10** shows the population estimates from Madera County Transportation Commission's (MCTC) 2007 RTP. These were incorporated into the SJVUAPCD's 2007 Ozone Plan. **Table 4.6-11** compares the data from **Tables 4.6-9** and **4.6-10**.

TABLE 4.6-9
SUMMARY OF EXISTING AND GENERAL PLAN BUILDOUT CONDITIONS

Land Uses	City Limits Only (2008)			Entire Planning Area		
	Existing	2030	Buildout	Existing	2030	Buildout
Residential Units	16,418	19,072	24,788	22,071	47,739	73,747
Population	56,710	68,088	88,495	78,368	170,431	263,278
Total Employment ¹	11,624	18,199	18,593	19,491	35,315	67,648

Note: Buildout projections under the Entire Planning Area include the City.

¹ Total employment also includes jobs that are not included under commercial, office and industrial, such as public school employment.

Total Square Footage totals only include commercial, office and industrial and do not include other square footage from other uses, such as public and quasi-public uses (e.g., schools and churches).

TABLE 4.6-10
SUMMARY OF 2007 MCTC RTP POPULATION FORECASTS

Land Uses	Entire Planning Area		
	2010	2020	2030
Households	24,061	30,853	38,647
Population	77,139	98,914	123,903
Total Employment	26,583	34,086	42,698

Source: MCTC 2007 RTP.

Note: The totals from the MCTC 2007 RTP were incorporated in the 2007 RTP and 2007 FTIP Air Quality Conformity Analysis.

TABLE 4.6-11
COMPARISON OF GENERAL PLAN UPDATE 2030 POPULATION FORECASTS WITH REGIONAL AIR PLAN FORECASTS

Land Uses	MCTC RTP	General Plan Update	Difference
Households	38,647	47,739	+ 9,092
Population	123,903	170,431	+ 46,528
Total Employment	42,698	50,364	+ 7,666

Although there will be a general reduction in long-term vehicle emissions, the General Plan Update may have a significant and unavoidable impact on regional ozone air quality, given that it would accommodate more growth through 2030 than is planned for in the 2007 Ozone Plan.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan Update includes the following mitigation requirements that include specific performance standards.

Policy CON-28: The creation of dust during construction/demolition activities should be reduced to the extent feasible.

Action Item CON-28.1: Work with the San Joaquin Valley Air Pollution Control District to reduce particulate emissions from construction, grading, excavation, and demolition through standard and/or special conditions on these activities.

Policy CON-29: The City seeks to reduce the urban heat island effect in the City, which causes increased temperatures and increases in ground level ozone formation through methods such as:

- Increasing the amount of tree coverage in the city.*
- Green roofs and rooftop gardens.*
- The use of reflective treatments on roofs (such as those which qualify for the EPA/DOE's Energy Star rating).*
- The use of cool pavements such as permeable and light colored and reflective pavements.*

Action Item CON-29.1: Develop and adopt a Tree Ordinance that protects existing trees in the public right of way and promotes the establishment of new tree resources in public areas. The tree ordinance could provide for the creation of a Master Tree Plan that would include an inventory of the City Forest including tree type, condition and size, and a City-approved tree planting list.

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Action Item CON-29.2: Update or amend the City's building codes to address the construction of green roofs and provide training to the City's Building Department staff on this subject.

Policy CON-30: Where feasible, the City's vehicle fleet should include clean fuel, hybrid, electric, or other fuel-efficient vehicles, so long as their utility, durability, and cost meets the City's needs.

Action Item CON-30.1: Update the City's procurement policies to include criteria for vehicle purchases that implement this policy.

Policy CON-32: The City shall consider air quality when making changes to planned land uses and transportation systems.

Policy LU-10: The Growth Boundary is considered by the City to define the physical limits of development in Madera. The City shall direct all future growth in Madera and in the unincorporated area outside the city limits to occur inside the Growth Boundary shown on the Land Use Map in this General Plan. Within the City's Planning Area, the City encourages the County to assist the City in maintaining an agricultural green belt around the Growth Boundary by only allowing agricultural uses where land is designated for such use on the City's General Plan Land Use Map.

The following apply to the Growth Boundary:

- The Growth Boundary may only be revised as part of a comprehensive update of the General Plan involving, at a minimum, the Land Use and Circulation elements.
- Any revision to the Growth Boundary shall be accompanied by a statement of findings which demonstrate the following:
 - 1) That the revision is consistent with the intent of the Growth Boundary and all other applicable policies in this General Plan
 - 2) That the revision is necessary to accommodate planned growth in Madera

Policy LU-11: The City specifically envisions the establishment and maintenance of a greenbelt of agricultural and other open space lands around the urbanized portion of the Planning Area, outside the Growth Boundary, as shown on the Land Use Map. In addition to the maintenance of appropriate agricultural land use designations, the City encourages the use of Williamson Act contracts and similar mechanisms to ensure the maintenance of the greenbelt.

Along the west edge of the Planning Area, the Greenbelt is intended to be permanent, and the implementing mechanisms on the west edge should reflect that intent, including transfer of development rights, permanent conservation easements, etc. (See specific policies for Villages D & E for requirements to establish a permanent edge/buffer on the western boundary of these Villages)

Policy LU-35:**VILLAGE D: SPECIFIC POLICIES**

The following policies are intended to identify some of the unique issues for this area which will need to be addressed, and to guide development, as the area transitions to urban use.

- *All future development in this Village shall conform to the Building Blocks principles as described in this General Plan.*
- *In conjunction with village and neighborhood planning, a mechanism shall be established which creates a permanent agricultural buffer where the westerly edge of the Village abuts the Growth Boundary.*

Mitigation Measures

Implementation of the above policies and action items would include measures to reduce particulate matter and ozone emissions under the proposed General Plan Update at 2030. The Land Use Element, Circulation Element, and Conservation Element of the General Plan Update together provide integrated policies to address emissions, in compliance with AB 170. In particular, LU-10 and LU-11 establish a growth boundary around the City and greenbelt around portions of the City that coupled with the Building Block principles established in the General Plan Land Use Element (LU-35), will encourage more compact development, infill development, and a mix of land use types that will serve to reduce vehicle miles traveled, thereby reducing emissions. The Circulation Element also includes policies that will reduce emissions. CI-3, CI-4, and CI-5 provide for a multi-modal transportation system that will reduce the reliance on motor vehicles by providing viable biking, pedestrian, and transit systems. However, even with the implementation of the above policies, the General Plan Update at 2030 would exceed growth projections used in attainment plan development as well as result in substantial increase in emissions. There are no feasible mitigation measures to fully offset the General Plan Update's increase in emissions. Thus, this impact is **significant and unavoidable**.

4.6.4 CUMULATIVE SETTING, IMPACTS AND MITIGATION MEASURES**AIR QUALITY CUMULATIVE SETTING**

The cumulative setting regarding cumulative air quality impacts consists of the San Joaquin Valley Air Basin and associated growth and development anticipated in the Basin (regional anticipated development is described in Section 4.0). This includes consideration of attainment efforts for the Basin. The cumulative setting includes the consideration of the buildout of the Planning Area that would consist of a population of approximately 263,278 residents post year 2030 (see **Table 3.0-1** and **4.6-9** for detailed buildout projections).

AIR QUALITY CUMULATIVE IMPACTS AND MITIGATION MEASURES**Cumulative Air Quality Impacts**

Impact 4.6.5 Implementation of the proposed General Plan Update, in combination with cumulative development in the San Joaquin Valley Air Basin, would contribute to a cumulative air quality impacts and could conflict with ozone and particulate matter attainment efforts. This is considered a **cumulatively considerable** and **significant and unavoidable** impact.

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As described under Impact 4.6.4, subsequent development under the proposed General Plan Update would exceed growth projections used in regional air quality planning and attainment efforts under year 2030 conditions. Buildout of the Planning Area would generate additional emissions beyond 2030 and could further conflict with attainment efforts.

Proposed General Plan Policies, Objectives and Actions That Provide Mitigation

The proposed General Plan Update contains policies and action items that would assist in reducing this air quality impact. Those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact are listed under Impact 4.6.4.

Mitigation Measures

While implementation of the above policies and action items would include measures to reduce particulate matter and ozone emissions, buildout anticipated under the proposed General Plan Update would exceed growth protections used in attainment plan development as well as result in substantial increase in emissions. There are no feasible mitigation measures to fully offset the General Plan Update's increase in emissions. Thus, this impact is **cumulatively considerable and significant and unavoidable**.

GREENHOUSE GAS AND CLIMATE CHANGE SETTING

To fully understand global climate change it is important to recognize the naturally occurring "greenhouse effect" and to define the greenhouse gases (GHG) that contribute to this phenomenon. The temperature on Earth is regulated by this greenhouse effect, which is so named because the Earth's atmosphere acts like a greenhouse, warming the planet in much the same way that an ordinary greenhouse warms the air inside its glass walls. Like glass, the gases in the atmosphere let in light yet prevent heat from escaping.

GHG are naturally occurring gases such as water vapor, carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) that absorb heat radiated from the Earth's surface. Greenhouse gases – carbon dioxide, methane, nitrous oxide, and others – are transparent to certain wavelengths of the sun's radiant energy, allowing them to penetrate deep into the atmosphere or all the way to the Earth's surface. Clouds, ice caps, and particles in the air reflect about 30 percent of this radiation, but oceans and land masses absorb the rest (70 percent of the radiation received from the sun) before releasing it back toward space as infrared radiation. GHG and clouds effectively prevent some of the infrared radiation from escaping; they trap the heat near Earth's surface where it warms the lower atmosphere. If this natural barrier of atmospheric gases were not present, the heat would escape into space, and Earth's average global temperatures could be as much as 61 degrees Fahrenheit cooler (NASA, 2007).

In addition to natural sources, human activities are exerting a major and growing influence on climate by changing the composition of the atmosphere and by modifying the land surface. Particularly, the increased consumption of fossil fuels (natural gas, coal, gasoline, etc.) has substantially increased atmospheric levels of greenhouse gases. Measured atmospheric levels of certain GHG such as carbon dioxide, methane, and nitrous oxide have risen substantially in recent decades (Miller, 2000). This increase in atmospheric levels of GHG unnaturally enhances the greenhouse effect by trapping more infrared radiation as it rebounds from the Earth's surface and thus trapping more heat near the Earth's surface. Prominent GHGs contributing to the greenhouse effect and climate change include carbon dioxide (CO₂), methane (CH₄), ozone, nitrous oxide (N₂O), and chlorofluorocarbons (CFCs). Emissions of these gases are

attributable to human activities associated with the industrial/manufacturing, utilities, transportation, residential, and agricultural sectors (California Energy Commission, 2006a).

According to the U.S. Environmental Protection Agency (EPA), the Earth's average surface temperature has increased by about 1.2 to 1.4°F since 1900. The warmest global average temperatures on record have all occurred within the past 15 years, with the warmest two years being 1998 and 2005. Eleven of the last 13 years rank among the hottest years on record (since 1850, when reliable worldwide temperature measurements began) (IPCC, 2007). Most of the warming in recent decades is likely the result of human activities. Other aspects of the climate are also changing such as rainfall patterns, snow and ice cover, and sea level.

Many complex mechanisms interact within Earth's energy budget to establish the global average temperature. For example, a change in ocean temperature would be expected to lead to changes in the circulation of ocean currents, which in turn would further alter ocean temperatures. There is uncertainty about how some factors could affect global climate change because they have the potential to both enhance and neutralize future climate warming. For instance, aerosols, including particulate matter, reflect sunlight back to space. As particulate matter attainment designations are met and fewer emissions of particulate matter occur, the cooling effect of anthropogenic aerosols would be reduced and the greenhouse effect would be further enhanced. Similarly, aerosols act as cloud condensation nuclei, aiding in cloud formation and increasing cloud lifetime.

Clouds can efficiently reflect solar radiation back to space (see discussion of the cloud effect below). As particulate matter emissions are reduced, the indirect positive effect of aerosols on clouds would be reduced, potentially further amplifying the greenhouse effect. As global temperature rises, the ability of the air to hold moisture increases, facilitating cloud formation. If an increase in cloud cover occurs at low or middle altitudes, resulting in clouds with greater liquid water content such as stratus or cumulus clouds, more radiation would be reflected back to space, resulting in a negative feedback mechanism, wherein the side effect of more cloud cover resulting from global warming acts to balance further warming. If clouds form at higher altitudes in the form of cirrus clouds, however, these clouds actually allow more solar radiation to pass through than they reflect, and ultimately they act as a GHG themselves. This results in a positive feedback mechanism in which the side effect of global warming acts to enhance the warming process. This feedback mechanism, known as the "cloud effect," contributes to uncertainties associated with projecting future global climate conditions.

Other mechanisms include permafrost and polar and sea ice. As global temperature continues to rise, CH₄ gas currently trapped in permafrost would be released into the atmosphere when areas of permafrost thaw. Thawing of permafrost attributable to global warming would be expected to accelerate and enhance global warming trends. Additionally, as the surface area of polar and sea ice continues to diminish, the Earth's albedo, or reflectivity, is also anticipated to decrease. More incoming solar radiation will likely be absorbed by the Earth rather than being reflected back to space, further enhancing the greenhouse effect. The scientific community is still studying these and other positive and negative feedback mechanisms to better understand their potential effects on global climate change.

Global Implications

Recognizing the problem of global climate change, the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) established the Intergovernmental Panel on Climate Change (IPCC) in 1988. It is open to all members of the United Nations and WMO. The role of the IPCC is to assess on a comprehensive, objective,

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open, and transparent basis the scientific, technical, and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation. According to climate models, the IPCC projects that the Earth's average surface temperature should rise 1.8–6.3 °F before the year 2100. If the atmospheric concentration of CO₂ doubles from its late 1700s level of 280 parts per million to 560 parts per million, the most likely rise in temperature would be about 3.6 °F. This may not seem like a significant increase, yet even at the lowest projected increase of 1.8 °F, the Earth would be warmer than it has been for 10,000 years (Miller, 2000).

The IPCC Fourth Assessment Report's Working Group I Summary for Policymakers (Report) synthesizes current scientific understanding of global climate change and projects future climate change using the most comprehensive set of well-established global climate models. The Report incorporates findings of the current effects of global climate change. These findings include:

- The intensity of tropical cyclones (hurricanes) in the North Atlantic has increased over the past 30 years, which correlates with increases in tropical sea surface temperatures.
- Droughts have become longer and more intense and have affected larger areas since the 1970s, especially in the tropics and subtropics.
- Since 1900 the Northern Hemisphere has lost 7 percent of the maximum area covered by seasonally frozen ground.
- Mountain glaciers and snow cover have declined worldwide.
- Satellite data since 1978 show that the extent of Arctic sea ice during the summer has shrunk by more than 20 percent.
- Since 1961, the world's oceans have been absorbing more than 80 percent of the heat added to the climate, causing ocean water to expand and contributing to rising sea levels. Between 1993 and 2003, ocean expansion was the largest contributor to sea level rise.
- Melting glaciers and losses from the Greenland and Antarctic ice sheets have also contributed to recent sea level rise.

An enhanced greenhouse effect will generate new patterns of microclimate and will have significant impacts on the economy, environment, and transportation infrastructure and operations due to increased temperatures, intensity of storms, sea level rise, and changes in precipitation. Impacts may include flooding of tunnels, coastal highways, runways, and railways, buckling of highways and railroad tracks, submersion of dock facilities, and a shift in agriculture to areas that are now cooler. Such prospects will have strategic security as well as transportation implications.

Climate change affects public health and the environment. Increased smog and emissions, respiratory disease, reduction in the state's water supply, extensive coastal damage, and changes in vegetation and crop patterns have been identified as effects of climate change. The impacts of climate change are broad-ranging and interact with other market failures and economic dynamics, giving rise to many complex policy problems. The findings are the latest in a string of reports warning that the rate of carbon dioxide accumulating in the atmosphere is increasing at an alarming pace.

California Implications

Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Worldwide, California is the 12th to 16th largest emitter of CO₂ and is responsible for approximately 2 percent of the world's CO₂ emissions (CEC, 2006a, 2006b). In 2004, California produced 492 million gross metric tons of carbon dioxide-equivalent (CEC, 2006a).

Increased ocean temperature could result in increased moisture flux into the state; however, since this would likely increasingly come in the form of rain rather than snow in the high elevations, increased precipitation could lead to increased potential and severity of flood events, placing more pressure on California's flood control system. Sea level has risen approximately 7 inches during the last century and, according to the CEC report, it is predicted to rise an additional 22–35 inches by 2100, depending on the future GHG emissions levels (CEC, 2006c). If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion, and disruption of wetlands (CEC, 2006c). As the existing climate throughout California changes over time, mass migration of species, or worse, failure of species to migrate in time to adapt to the perturbations in climate, could also result.

According to the California Environmental Protection Agency, the climate changes for global warming could affect agriculture, the fishing industry, California's coastline, forests, and ecosystems, increase air pollution, and energy production (CalEPA, 2002).

Agriculture

Potential impacts, such as reduced water supply, more severe droughts, more winter floods, and drier growing seasons will affect California's agriculture. Many farms, especially in the fruit and nut business, require long-term investments, making fast adaptation difficult, and could thus experience serious losses if decisions continue to be made with no regard to expected climate changes.

Fishing

Studies found that as a result of changes in ocean conditions, the distribution and abundance of major fish stocks will change substantially. Impacts to fisheries related to El Niño/Southern Oscillation illustrate how climate directly impacts marine fisheries on short-term scales. Higher sea surface temperatures in 1997–1998 during the El Niño had a great impact on market squid, California's largest fishery by volume. The California Regional Assessment reports that landings fell to less than 1,000 metric tons in that season, down from 110,000 tons in the 1996–1997 season. Other unusual events also occurred such as poor salmon returns, a series of plankton blooms, and seabird die-offs.

Coastline

With climate changes, recreational facilities and developed coastlines will also be more vulnerable to hurricanes, storm surges, and flooding. Increasing population growth in coastal areas is a reason for further concern, since these areas could be more vulnerable to climate change impacts. Impacts of expected sea level rise and increased storm surges are numerous. Beachfront homes and harbors as well as wetlands may flood. Sewage systems may be overwhelmed by storm runoff and high tides. Jetties and seawalls may have to be raised and strengthened to protect harbors which are used for shipping, recreation, and tourism.

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Forests

The California Regional Assessment notes an increase in the number and extent of areas burned by wildfires in recent years, and modeling results under changing climate conditions suggest that fires may be hotter, move faster, and be more difficult to contain under future climate conditions. The factors which contribute to the risk of catastrophic fires (fuel loads, high temperatures, dry conditions, and wind) are typically present already in summer and fall seasons in California, but can exist at other times of the year, especially in drought conditions. Public safety is an issue as more home and tourism developments on coastal hills and mountains, and the foothills and higher elevations in the Sierra Nevada are highly susceptible to catastrophic wildfires.

Ecosystems

The current distribution, abundance, and vitality of species and habitats are strongly dependent on climatic (and microclimatic) conditions. Climate change is expected to result in warmer temperatures year-round, accompanied by substantially wetter winters. Rising sea level will significantly affect coastal wetlands because they are mostly within a few feet of sea level. As the sea rises, these wetlands will move inland. The overall acreage of wetlands will be reduced due to constraints by existing urban development and steeper slopes immediately inland of existing wetlands. Tidal rivers, estuaries, and relatively flat shoreline habitats will be more subject to damage by flooding and erosion. More severe storm surges from the ocean, due to higher sea levels, combined with higher river runoff could significantly increase flood levels by more than the rise in sea level alone. Erosion of beaches would decrease habitat for beach-dependent species, such as seals, shorebirds, and endangered species (for example, snowy plover and least tern). Aquatic habitats are also likely to be significantly affected by climatic changes. Most fish have limits to how hot or cold the water can be before they must either find more hospitable temperatures or die. As temperatures warm, many fish will have to retreat to cooler waters.

Changes in temperature and precipitation patterns would also shift California's current climate zones, and thus habitats associated with these zones, northward by approximately 100–400 miles, as well as upwards in elevation by 500–1,500 feet. Global climate change would alter the composition, structure, and arrangement of the vegetation cover of the state (forest and wildland). Species distribution would move geographically as the climate changes, with forest stands, woodlands, and grassland species predicted to move northward and higher in elevation. The entire vegetative community may be affected if non-native invasive species occupy sites and replace native plants. Outbreaks of insects and diseases could compromise forest health and the capability of the forest stands to reproduce and to store carbon on a landscape basis. Forest fires are likely to become more frequent and severe if soils become drier. Changes in pest populations could further increase the stress on forests.

Air Quality

Projected climate changes will impact the quality of California's air, public health, and environment. Higher temperatures increase the formation of ground-level ozone and particulate matter, making it more difficult to meet the health-based air quality standards for these pollutants. Ground-level ozone has been shown to aggravate existing respiratory illnesses such as asthma, reduce lung function, and induce respiratory inflammation. Ambient ozone also reduces agricultural crop yields and impairs ecosystem health.

The particulate matter of most concern – PM₁₀ – has a diameter smaller than 10 micrometers and can easily pass into the lungs, contributing to the development of lung tissue damage. PM₁₀ has been implicated in exacerbation of cardiovascular disease, asthma, and other respiratory diseases and associated with increased mortality. Air pollution is also made worse by increases in natural hydrocarbon emissions and evaporative emissions of fuels and solvents which lead to higher levels of ozone and PM₁₀ during hot weather. Warmer temperatures that cause increased use of air conditioners can cause increased air pollutants from power plants and from vehicle operation. In addition, warming, drying, and increased winds could mean hotter, harder-to-control wildfires. These wildfires could result in increased levels of fine particulate matter that could also exceed state and federal standards and harm public health.

Electricity Generation

California's electricity generation is currently relatively efficient when it comes to emissions of greenhouse gases. The national average for the electricity generation share of total greenhouse gas emissions is approximately 40 percent, while California electricity accounts for only 16 percent of statewide emissions. This is in part due to California's significant amount of imported electricity, mild climate, and lack of energy-intensive industry. Over the past two decades, California has developed one of the largest and most diverse renewable electricity generation industries in the world. However, changes in climate of the magnitude predicted by the Intergovernmental Panel of Climate Change would substantially affect electricity generation throughout California and the entire western states grid, particularly for hydroelectric facilities.

Less snowpack would result in lower levels of hydro-generation in the summer and fall seasons due to reduced runoff in those seasons. Additional hydropower may be available during the winter and the spring. However, on balance hydropower is more useful and valuable within the grid mix of generation sources when it is available throughout the peak summer and fall seasons. Flooding could also impact pipelines, wells, and related petroleum extraction equipment. Warmer weather would result in an increased demand for electricity for cooling appliances in homes and businesses.

Water Supply

While most climate model simulations project relatively moderate changes in precipitation over this century, rising global temperatures are expected to result in reductions in snowpack for the Sierra Nevada Mountains (i.e., precipitation changing in the form of rain from snow). By the 2035 to 2064 period, the Sierra Nevada snowpack could decrease from 12% to 40% as compared to historic levels (depending on the climate scenario) (Cal/EPA, 2006). The Sierra Nevada Mountains snowpack currently acts as a natural water storage (equal to approximately half of the storage capacity of California's major human-made reservoirs) by holding the winter precipitation and releasing it during the spring and early summer months as the snow melts. The reduction of this natural water storage during the winter could mean water shortages in the future and would require the alteration of the management of existing reservoirs (while not losing flood control capacity or hydropower generation capacity) and/or the construction of additional human-made reservoirs to compensate for this storage loss.

The Department of Water Resources (DWR) report, Progress of Incorporating Climate Change into Management of California's Water Resources, included an analysis of climate change impacts on the State Water Project (SWP) and the Central Valley Water Project (CVP) operations and on the Delta. Results presented in the report are preliminary and incorporate several assumptions, and the results reflect only a limited number of climate change scenarios and do not address the probability of each scenario occurring. The results of this analysis suggested

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several climate change impacts on overall SWP and CVP operations and deliveries. In three of the four climate scenarios simulated, CVP north-of-Delta reservoirs experienced shortages during droughts. The report recommends that future studies examine operational changes that could avoid these shortages. Based on this initial analysis, it is not clear whether operational changes required would be substantial in nature. The study also found that changes in annual average SWP south-of-Delta (Table A) deliveries ranged from an increase of approximately 1% for a wetter scenario to approximately a 10% reduction for one of the drier scenarios. Future studies are needed to address how north-of-Delta shortages could impact south-of-Delta CVP deliveries. (Placer County, 2007)

The California Environmental Protection Agency's "Scenarios of Climate Change in California: An Overview" identified that climate change will likely result in future storage and delivery issues for the Central Valley Water Project and the State Water Project. By the end of the century, the change in the volume and timing of runoff could reduce the ability to deliver water to agricultural users south of the Delta (15 to 50% reduction in deliveries depending on the climate scenario).

Minimal research has been conducted on the effects of climate change on specific groundwater basins, groundwater quality, or groundwater recharge characteristics. Changes in rainfall and changes in the timing of the groundwater recharge season would result in changes in recharge. Warmer temperatures could lead to higher evaporation as well as prolonged drought periods that would reduce the amount of water entering the ground that could further limit deficient water supply conditions. However, warmer and wetter winters could increase the amount of runoff available for groundwater recharge. Additional winter runoff, however, could be occurring at a time when groundwater basins are being recharged at their maximum capacity. However, the extent to which climate will change and the impact of that change on groundwater are both unknown at this time.

Increased Flooding

Currently, there is no accurate information to accurately assess the impact of climate change for flood frequency or severity, because of the absence of detailed regional precipitation information from climate models and because water-management choices can substantially influence overall flood risk. However, increased amounts of winter runoff could be accompanied by increases in flood event severity and warrant additional dedication of wet season storage space for flood control as opposed to water supply storage. This need to manage water storage facilities to handle increased runoff could in turn lead to water shortages during high water demand. It is recognized that these impacts would result in increased challenges for reservoir management and balancing the competing concerns of flood protection and water supply.

CLIMATE CHANGE REGULATORY FRAMEWORK

STATE

Assembly Bill 1493

Assembly Bill (AB) 1493 required that the California Air Resources Board (ARB) develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty truck and other vehicles determined by the ARB to be vehicles whose primary use is noncommercial personal transportation in the state."

Executive Order S-3-05

Executive Order S-3-05 proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total greenhouse gas emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

The Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce greenhouse gas emissions to the target levels. The Secretary will also submit biannual reports to the governor and state legislature describing (1) progress made toward reaching the emission targets, (2) impacts of global warming on California's resources, and (3) mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of the CalEPA created a Climate Act Team (CAT) made up of members from various state agencies and commission. CAT released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government and community actions, as well as through state incentive and regulatory programs.

Assembly Bill 32, the California Climate Solutions Act of 2006

Assembly Bill (AB) 32 requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. The gases that are regulated by AB 32 include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). The reduction to 1990 levels will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then ARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that ARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap, institute a schedule to meet the emissions cap, and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

Senate Bill 1368

SB 1368 is the companion bill of AB 32. SB 1368 requires the California Public Utilities Commission (CPUC) to establish a greenhouse gas emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The California Energy Commission (CEC) must establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

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LOCAL

San Joaquin Valley Air Pollution Control District Climate Change Action Plan

The District is developing its Climate Change Action Plan (CCPA). The CCPA consists of the following key components:

- Guidance on impact analyses for CEQA documents.
- Development of a greenhouse gas banking program.
- Reporting of greenhouse gas emissions as part of existing emission inventory process.
- Voluntary greenhouse emission reduction agreements (GHG-VERA)

Currently, technical workgroup are developing recommendations that will be considered by the District in summer 2009.

GREENHOUSE GAS AND CLIMATE CHANGE IMPACTS AND MITIGATION MEASURES

With regard to climate change impacts, no air district in California has identified a significance threshold for GHG emissions or a methodology for analyzing air quality impacts related to greenhouse gas emissions. The state has identified 1990 emission levels as a goal through adoption of AB 32. To meet this goal, California would need to generate lower levels of GHG emissions than current levels. However, no standards have yet been adopted quantifying 1990 emission targets. Consumption of fossil fuels in the transportation sector accounted for over 15 to 25 percent of the total GHG emissions in California. Current standards for reducing vehicle emissions considered under AB 1493 call for "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles," and do not provide a quantified target for GHG emissions reductions for vehicles.

For this analysis, the General Plan Update's contribution to global climate change would be considered significant if it would:

- Result in a substantial increase in greenhouse gas emissions;
- Be inconsistent with AB 32 and other applicable programs that are intended to reduce greenhouse gas emissions; or
- Expose future growth to significant environmental impacts associated with the effects of global climate change.

Substantial Increase in Greenhouse Gas Emissions and Environmental Effects

Impact 4.6.6 Implementation of the proposed General Plan Update could substantially increase emissions of CO₂e over existing (2008) conditions that could result in environmental effects to the Planning Area. This impact is considered to be **cumulatively considerable** and a **significant and unavoidable** impact.

Energy consumption in the City of Madera Planning Area was responsible for an estimated 340,841 metric tons of carbon dioxide equivalent (CO₂e) in calendar year 2007. Approximately 31% of these emissions were from the combustion of natural gas used in residential heating and

commercial/industrial processes. The remainder of the energy emissions were from the consumption of electricity by residents, businesses, and industry in the Planning Area.¹

The City of Madera sent approximately 49,194 tons of waste to landfills in calendar year 2007.² This amount of waste is estimated to produce approximately 12,307.35 metric tons of carbon dioxide equivalent (CO₂e), according to the US EPA Waste Reduction Model (WARM) tool.³ This estimate accounts for the methane released from waste and national average recovery practices for landfilled waste.

CO₂e emissions associated with growth in the Planning Area are projected to increase from 2008 to 2030. **Table 4.6-12** illustrates that most of these increases are likely to come from increases in housing associated with the city's population growth and from new commercial and industrial development. It should be noted that the emission estimates provided in **Table 4.6-12** consist of major emission sources and do not include emission sources such as agricultural operations and emissions from electrical generation by Pacific Gas & Electric Company, or airport operations. These increases would increase the carbon footprint of Madera in 2030. These stationary and mobile source emissions would further increase under buildout conditions (post 2030). Buildout emissions were not quantified given the lack of an accurate transportation model that can project vehicle miles traveled beyond year 2030.

TABLE 4.6-12
GREENHOUSE GAS CO₂ EMISSIONS (2008 AND 2030)
(TONS/DAY)

	2008 Existing Conditions	2030 General Plan Conditions	Change 2008 to 2030	
			Tons	Percentage
Vehicle CO ₂ e Emissions	25	11	-14	-56%
Energy CO ₂ Emissions	262	597	+335	+128%

CO₂e emissions rates are based on CARB Local Government Operations Protocol Table C.10, 2008.

Energy emissions based on Urbemis 9.2.4 outputs.

As projects from the General Plan Update are developed, carbon dioxide emissions from off-road heavy-duty vehicles and construction equipment would be emitted, contributing to global climate change. However, these emissions are expected to decrease over time, as low-carbon fuel standards and other climate change measures consistent with AB 32 and other similar mandates take hold. Based on an analysis of a conceptual one-acre construction site, **Table 4.6-13** illustrates that using current assumptions about engine technology advancements, construction emissions of CO₂, particularly from building of structures, are likely to decrease over time.

¹ Energy CO₂e estimate based on energy consumption for Madera County and adjusted for City of Madera Planning Area. Source: California Energy Consumption Data Management System, <http://ecdms.energy.ca.gov>, accessed April 9, 2009. County population estimates obtained from census.gov.

² California Integrated Waste Management Board (CIWMB) Disposal Reporting System (DRS), <http://www.ciwmb.ca.gov/LGCentral/Reports>.

³ EPA WARM, http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html

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TABLE 4.6-13
EXAMPLE OF TYPICAL EMISSIONS FROM CONSTRUCTION PROJECTS (LB/DAY CO₂)

Construction Phase	2008	2030	Difference
Grading	2,376	2,350	-26
Asphalt	1,175	1,163	-12
Building	1,415	1,379	-36
Coating	9	8	-1
Total (One Year)	4,975	4,940	-35.16

Source: CARB URBEMIS 9.2.4 model run. Example assumes one acre site, 12 months of construction activity, with equal phases of fine grading, asphalt, building, and coating.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan Update includes the following mitigation requirements that include specific performance standards that address climate change. In addition, the General Plan Update proposed urban growth boundary, in conjunction with the establishment of an average residential density that is higher for new development than existing residential development, as well as compact development form that will encourage pedestrian, bicycle and transit use, are also features of the proposed General Plan Update that are intended to minimize greenhouse gas emissions.

Policy CI-42: Circulation planning for all modes of travel (vehicle, transit, bicycle, pedestrian, etc.) shall be coordinated with efforts to reduce air pollution and greenhouse gases.

Policy CON-33: The City shall implement and enforce State and Regional regulations pertaining to greenhouse gas emissions and climate change.

Policy CON-34: The City supports local, regional, and statewide efforts to reduce the emission of greenhouse gases linked to climate change.

Action Item CON-34.1: Within one year of the adoption of this General Plan, the City will complete a Greenhouse Gas Inventory that provides an inventory of greenhouse gas emissions from manmade sources in the City.

Action Item CON-34.2: Within one year of the completion of the Greenhouse Gas Inventory, the City will prepare a Climate Action Plan (CAP) that identifies desired goals for reducing manmade greenhouse gas (GHG) emissions, establishes resiliency and adaptation programs to prepare for potential impacts of climate change, and provides a phased implementation plan to achieve these goals. The CAP will establish a greenhouse gas emissions reduction target of 15% percent below 2007 levels by 2020, consistent with California Assembly Bill 32, the Global Warming Solutions Act of 2006 (AB32) and the guidance provided in the associated California Air Resources Board Climate Change Scoping Plan approved in December 2008. The CAP will also outline a strategy to achieve 1990 GHG levels by 2020 and an 80% reduction from 1990 GHG levels by 2050 in accordance with California State Executive Order S-3-05.

- Policy CON-35: The City shall collaborate and coordinate with regional organizations and local jurisdictions within the City to reduce greenhouse gas emissions.*
- Policy CON-36: The City shall partner with local agencies and organizations to coordinate outreach and education regarding the effects of greenhouse gas emissions and climate change.*
- Action Item CON-37.3: City buildings and facilities will be operated in the most energy-efficient manner without endangering public health and safety and without reducing public safety or service levels.*
- Action Item CON-37.4: To the extent practical, integrate appropriate renewable energy and clean generation technologies into existing City facilities, such as solar, wind, biofuel, cogeneration, and fuel cells to power City facilities.*
- Action Item CON-38.1: Develop a voluntary, market-driven Green Building Program that includes performance standards, guidelines, review criteria, incentives, and implementation schedules for private sector development, with criteria tailored to project types (i.e., residential, commercial, retail), size, and location.*
- Action Item CON-38.2: Identify, evaluate, and provide incentives to encourage projects that incorporate green building practices and site design, including the potential for certification through the City's Building Department.*
- Action Item CON-38.4: Offer information, technical assistance, and training to promote green building to property owners, building, design, and planning professionals, school districts, and special districts.*
- Action Item CON-39.1: Evaluate and update the City's procurement processes to provide incentives to bidders who propose the use of green building practices in the construction of City buildings and facilities.*

Mitigation Measures

While implementation of the above policies and action items would include measures that would reduce greenhouse gas emissions (including the commitment to meeting state greenhouse gas reduction goals under AB 32 and SB S-3-05 – see Action Item CON-34.2), these emission reductions are not adequate to fully mitigate the environmental effects of climate change. As specifically noted in Section 4.9 (Hydrology and Water Quality), the Planning Area is already experiencing groundwater overdraft which could be further impacted from the effects of climate change. Thus, this impact is **cumulatively considerable** and **significant and unavoidable**.

Consistency with Greenhouse Gas Reduction Measures

Impact 4.6.7 Implementation of the proposed General Plan Update would implement a number of policies and action items that would complement and be consistent with the state's best practices measures for reducing GHG emissions. This impact is considered to be **less than cumulatively considerable**.

4.6 AIR QUALITY

Implementation of the proposed General Plan Update would implement a number of policies that would complement and be consistent with the current implementation and strategies for AB 32 and Executive Order S-3-05 as well as current efforts by the SJVUAPCD under its Climate Change Action Plan. These policy provisions are provided under the proposed Circulation Element (see Action Item CI-1.2 and policies and action items CI-28 through CI-39) and the proposed Conservation Element (see policies and action items CON-33 through CON-39). In addition, the General Plan Update proposed urban growth boundary, in conjunction with the establishment of an average residential density that is higher for new development than existing residential development, as well as compact development form that will encourage pedestrian, bicycle and transit use, are also features of the proposed General Plan Update that are intended to minimize greenhouse gas emissions.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The following policies and action items include specific performance standards that address climate change consistent with state measures to reduce greenhouse gas emissions, including a commitment to reduction goals under AB 32 and Executive Order S-3-05.

- | | |
|------------------------------|---|
| <i>Policy CI-42:</i> | <i>Circulation planning for all modes of travel (vehicle, transit, bicycle, pedestrian, etc.) shall be coordinated with efforts to reduce air pollution and greenhouse gases.</i> |
| <i>Policy CON-33:</i> | <i>The City shall implement and enforce State and Regional regulations pertaining to greenhouse gas emissions and climate change.</i> |
| <i>Policy CON-34:</i> | <i>The City supports local, regional, and statewide efforts to reduce the emission of greenhouse gases linked to climate change.</i> |
| <i>Action Item CON-34.1:</i> | <i>Within one year of the adoption of this General Plan, the City will complete a Greenhouse Gas Inventory that provides an inventory of greenhouse gas emissions from manmade sources in the City.</i> |
| <i>Action Item CON-34.2:</i> | <i>Within one year of the completion of the Greenhouse Gas Inventory, the City will prepare a Climate Action Plan (CAP) that identifies desired goals for reducing manmade greenhouse gas (GHG) emissions, establishes resiliency and adaptation programs to prepare for potential impacts of climate change, and provides a phased implementation plan to achieve these goals. The CAP will establish a greenhouse gas emissions reduction target of 15% percent below 2007 levels by 2020, consistent with California Assembly Bill 32, the Global Warming Solutions Act of 2006 (AB32) and the guidance provided in the associated California Air Resources Board Climate Change Scoping Plan approved in December 2008. The CAP will also outline a strategy to achieve 1990 GHG levels by 2020 and an 80% reduction from 1990 GHG levels by 2050 in accordance with California State Executive Order S-3-05.</i> |
| <i>Policy CON-35:</i> | <i>The City shall collaborate and coordinate with regional organizations and local jurisdictions within the City to reduce greenhouse gas emissions.</i> |

- Policy CON-36: The City shall partner with local agencies and organizations to coordinate outreach and education regarding the effects of greenhouse gas emissions and climate change.*
- Action Item CON-37.3: City buildings and facilities will be operated in the most energy-efficient manner without endangering public health and safety and without reducing public safety or service levels.*
- Action Item CON-37.4: To the extent practical, integrate appropriate renewable energy and clean generation technologies into existing City facilities, such as solar, wind, biofuel, cogeneration, and fuel cells to power City facilities.*
- Action Item CON-38.1: Develop a voluntary, market-driven Green Building Program that includes performance standards, guidelines, review criteria, incentives, and implementation schedules for private sector development, with criteria tailored to project types (i.e., residential, commercial, retail), size, and location.*
- Action Item CON-38.2: Identify, evaluate, and provide incentives to encourage projects that incorporate green building practices and site design, including the potential for certification through the City's Building Department.*
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- Action Item CON-39.1: Evaluate and update the City's procurement processes to provide incentives to bidders who propose the use of green building practices in the construction of City buildings and facilities.*

As identified above, implementation of the proposed General Plan Update would be consistent with state measures to reduce greenhouse gas emissions. Thus, this impact is **less than cumulatively considerable**.

Mitigation Measures

None required.

4.6 AIR QUALITY

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4.7 NOISE

This section describes terminology used to discuss noise and discusses and analyzes the ambient noise environment of the proposed City of Madera General Plan Update and the associated Planning Area. Construction noise, traffic noise, operational noise, and other noise impacts associated with implementation of the General Plan Update are analyzed.

4.7.1 SETTING

BACKGROUND AND TERMINOLOGY

Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound is mechanical energy transmitted in the form of a wave because of a disturbance or vibration. Sound levels are described in terms of both amplitude and frequency. Amplitude is defined as the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10-dB increase in amplitude with a perceived doubling of loudness and establish a 3-dB change in amplitude as the minimum audible difference perceptible to the average person.

The frequency of a sound is defined as the number of fluctuations of the pressure wave per second. The unit of frequency is the hertz (Hz). One Hz equals one cycle per second. The human ear is not equally sensitive to sound of different frequencies. For instance, the human ear is more sensitive to sound in the higher portion of this range than in the lower, and sound waves below 16 Hz or above 20,000 Hz cannot be heard at all. To approximate the sensitivity of the human ear to changes in frequency, environmental sound is usually measured in what is referred to as "A-weighted decibels" (dBA). On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA (EPA, 1971). The listed levels are typical, but it is possible that some events may be higher than listed.

Noise can be generated by a number of sources, including mobile sources, such as automobiles, trucks and airplanes, and stationary sources, such as construction sites, machinery, and industrial operations. Common community noise sources and associated noise levels, in dBA, are depicted in **Figure 4.7-1**. Noise generated by mobile sources typically attenuates (lessens or weakens) at a rate between 3.0 to 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Mobile transportation sources, such as highways, and hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3.0 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance from the source. Noise generated by stationary sources typically attenuates at a rate of approximately 6.0 to 7.5 dBA per doubling of distance from the source (EPA, 1971).

Noise Descriptors

The intensity of environmental noise fluctuates over time, and several descriptors of time-averaged noise levels are used. The three most commonly used descriptors are L_{eq} , L_{dn} , and CNEL. The energy-equivalent noise level, L_{eq} , is a measure of the average energy content (intensity) of noise over any given period. The L_{eq} metric is commonly applied to measure the impact of a series of events during a given time period. Many communities use 24-hour descriptors of noise levels to regulate noise. The day-night average noise level, L_{dn} , is the 24-hour

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average of the noise intensity, with a 10 dBA “penalty” added for nighttime noise (10:00 p.m. to 7:00 a.m.) to account for the greater sensitivity to noise during this period. CNEL, the Community Noise Equivalent Level, is similar to L_{dn} but adds an additional 5 dBA penalty for evening noise (7:00 p.m. to 10:00 p.m.) Another descriptor that is commonly used is the sound exposure level (SEL). The SEL is a composite metric that represents both the intensity of a sound and its duration. Individual time-varying noise events (e.g., aircraft overflights) have two main characteristics: a sound level that changes throughout the event and a period of time during which the event is heard. SEL provides a measure of the net impact of the entire acoustic event, but it does not directly represent the sound level heard at any given time. Noise analyses may also depend on measurements of L_{max} , the maximum instantaneous noise level during a specific period of time, and L_{min} , the minimum instantaneous noise level during a specific period. Common noise level descriptors are summarized in **Table 4.7-1**.

TABLE 4.7-1
COMMON ACOUSTICAL DESCRIPTORS

Descriptor	Definition
Energy Equivalent Noise Level (L_{eq})	The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value (in dBA) is calculated.
Minimum Noise Level (L_{min})	The lowest sound level measured during a single event (e.g., an aircraft overflight) in which the sound level changes value with time.
Maximum Noise Level (L_{max})	The highest sound level measured during a single event in which the sound level changes value with time.
Day-Night Average Noise Level (DNL or L_{dn})	The 24-hour L_{eq} with a 10 dBA “penalty” for noise events that occur during the noise-sensitive hours between 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is “added” to noise events that occur in the nighttime hours to account for increases sensitivity to noise during these hours.
Community Noise Equivalent Level (CNEL)	The CNEL is similar to the L_{dn} described above, but with an additional 5 dBA “penalty” added to noise events that occur between the hours of 7:00 p.m. to 10:00 p.m. The calculated CNEL is typically approximately 0.5 dBA higher than the calculated L_{dn} .
Sound Exposure Level (SEL)	SEL is a logarithmic measure of the total acoustic energy transmitted to the listener during the event. Mathematically, it represents the sound level of a constant sound that would, in one second, generate the same acoustic energy as the actual time-varying noise event.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and the threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 300m (1000 ft)	110	Rock Band
Gas Lawn Mower at 1 m (3 ft)	100	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)	90	Food Blender at 1 m (3 ft)
Noisy Urban Area, Daytime	80	Garbage Disposal at 1 m (3 ft)
Gas Lawn Mower, 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area		Normal Speech at 1 m (3 ft)
Heavy Traffic at 90 m (300 ft)	60	Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		Library
Quiet Rural Nighttime	30	Bedroom at Night, Concert Hall (Background)
	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: AMBIENT Air Quality and Noise Consulting

Figure 4.7-1
Typical Community Noise Levels

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted: referred to as the "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged. With regard to human response, the following relationships are often relied upon when evaluating noise levels and potential impacts:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans.
- Outside of the laboratory, a 3 dB change is considered a just-perceivable difference.
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial.
- A 10 dB change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Noise Reduction

Various methods can be employed to reduce noise levels, including enclosures, barriers, and sound-dampening materials. The methods employed are dependent on various factors, including source and receptor characteristics, as well as environmental conditions. With regard to typical community noise sources, noise-reduction techniques typically focus on the isolation or shielding of the noise source from nearby noise-sensitive receptors. The more common methods include the use of buffers, enclosures, and barriers. In general, these techniques contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver. Buildings, concrete walls, and berms can all act as effective noise barriers. Wooden fences or broad areas of dense foliage can also reduce noise but are less effective than solid barriers. Changes in design specifications and use of equipment noise control devices (e.g., mufflers and silencers) are also commonly employed to reduce stationary-source (i.e., non-transportation) noise levels. Additional noise control techniques commonly used for transportation noise sources include traffic control, such as prohibiting heavy-duty trucks and reducing speed limits along primarily affected corridors. However, an approximate 20 mile-per-hour reduction in speed would typically be required to achieve a noticeable decrease in noise levels. In some instances, the use of noise-reducing pavements, such as rubberized asphalt, has also been employed to reduce traffic noise.

Existing Noise Environment

Noise-Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses that would result in noise exposure that could cause health-related risks to individuals. Places where quiet is essential are also considered noise-sensitive uses. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other land uses such as parks, historic sites, cemeteries, and recreation areas are also considered sensitive to increases in exterior noise levels. School classrooms, places of

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assembly, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

Ambient Noise Environment

Several sources of noise were identified within the City of Madera. These sources include noise generated from non-transportation sources (e.g., commercial and industrial uses), aircraft operations, railroad operations, and vehicle traffic on area roadways and highways. Short-term (10-minute) noise level measurements were conducted on January 29, 2008, January 29, 2009, and February 7, 2009, for the purpose of documenting and measuring the existing noise environment at various noise sources and receptor locations located throughout the city. Ambient noise measurement locations and corresponding measured values (i.e., L_{eq} and L_{max}) are summarized in **Table 4.7-2** and depicted in **Figure 4.7-2**.

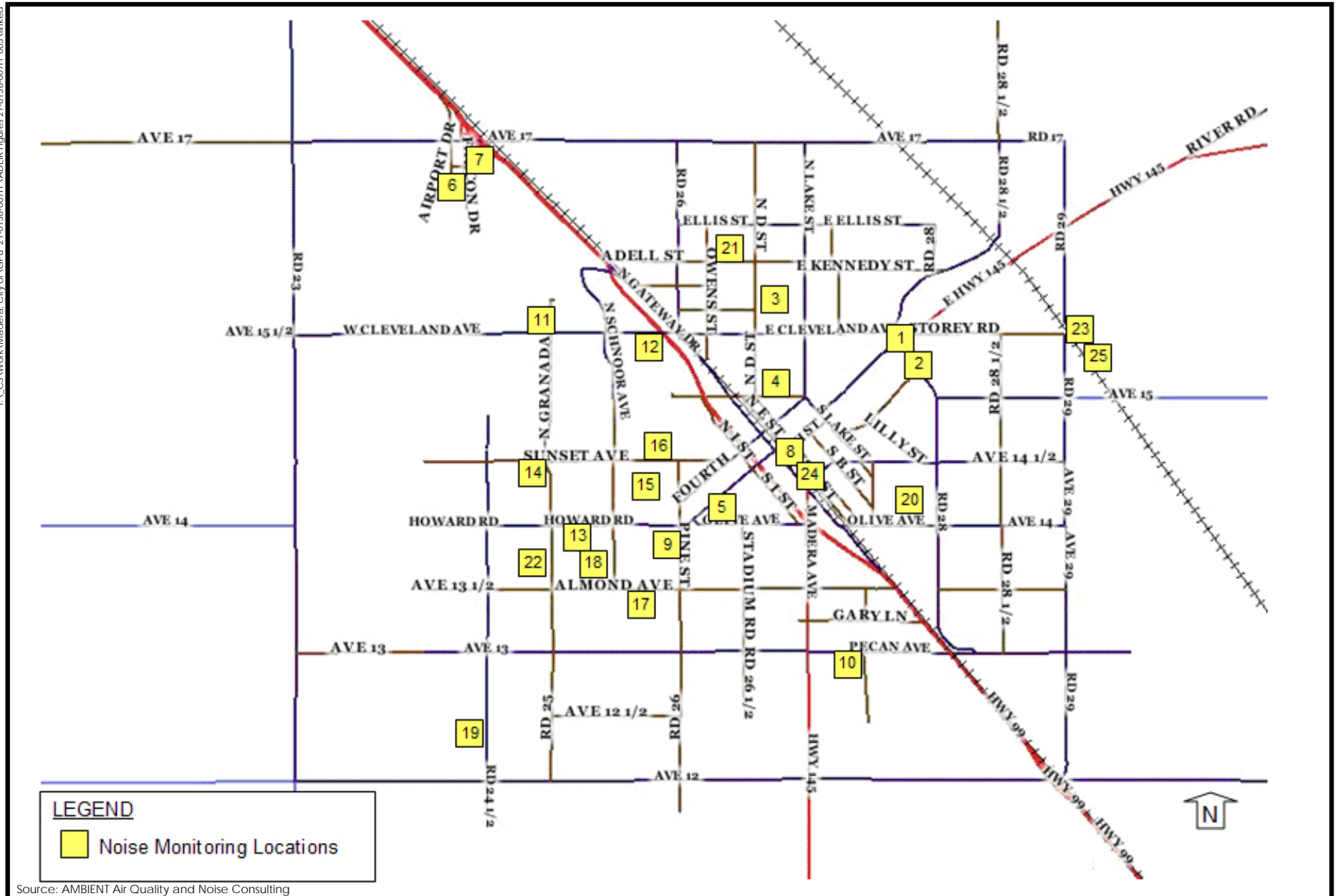


Figure 4.7-2
Ambient Noise Monitoring Locations

**TABLE 4.7-2
AMBIENT NOISE SURVEY RESULTS**

	Location	Monitoring Period	Primary Noise Source(s)	Noise Level (dBA)	
				Leq	Lmax
1	E. Yosemite Avenue and Storey Road, approximately 50 feet from roadway centerline	1/29/08 9:00–9:10	Vehicle Traffic	66.4	78.8
2	Millview School, 1609 Clinton Street, approximately 50 feet from roadway centerline	1/29/08 9:30–9:40	Vehicle Traffic	62.7	73.9
3	Pan American Community Center, 703 Sherwood Way, approximately 50 feet from roadway centerline	1/29/08 10:00–10:10	Vehicle Traffic	61.7	74.2
4	Community Bible Church, 333 E. Central Avenue, approximately 50 feet from roadway centerline	1/29/08 10:30–10:40	Vehicle Traffic	54.9	67.9
5	Madera High School, W. 6 th Street & S. N Street, approximately 25 feet from roadway centerline	1/29/08 11:00–11:10	Vehicle Traffic	63.8	81.4
6	Madera Airport Business Park, 2825 Falcon Drive, approximately 25 feet from roadway centerline	1/29/08 12:20–12:30	Vehicle Traffic; Occasional Aircraft Overflight	54.7	70.3
7	Madera Airport Business Park, Yeager Road & Condor Road, approximately 25 feet from roadway centerline	1/29/08 13:00–13:10	Vehicle Traffic; Occasional Aircraft Overflight	61.4	71.4
8	Courthouse Park, 6 th Street & S. Gateway Drive, approximately 50 feet from roadway centerline of Gateway Drive	1/29/08 13:30–13:40	Vehicle Traffic	59.3	76.2
9	Lee's Concrete Material, 200 S. Pine Street, eastern property line, approximately 50 feet from plant	1/29/08 14:20–14:50	Concrete Batch Plant Trucks, Front-end Loader	75.3	81.7
10	Madera South High School, 705 W. Pecan Avenue, approximately 40 feet from roadway centerline	1/29/08 15:10–15:20	Vehicle Traffic	57.2	69.8
11	W. Cleveland Avenue & N. Granada Drive, 50 feet from NTLCL	1/29/08 15:45–15:55	Vehicle Traffic	64.7	75.7
12	Madera Speedway, 1850 W. Cleveland Avenue, special event: "Fan Appreciation Night"; north parking lot, approximately 138 feet from track centerline	9/13/08 16:45–19:00	Race Vehicles, PA System, Spectator Crowd	68.8	86.9
13	Lions Town & Country Park, Howard Road, 50 feet from NTLCL	1/28/2009 10:15–10:25	Vehicle Traffic	58.3	66.1
14	Granada Drive & Sunset Avenue, approximately 35 feet from roadway centerline	1/28/2009 10:45–10:55	Vehicle Traffic	62.8	73.4
15	John Adams Elementary School, 1822 National Avenue, approximately 45 feet from roadway centerline	1/28/2009 11:15–11:25	Vehicle Traffic	53.4	65.9

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	Location	Monitoring Period	Primary Noise Source(s)	Noise Level (dBA)	
				Leq	Lmax
16	Thomas Jefferson Middle School, 1407 Sunset Avenue, approximately 30 feet from roadway centerline	1/28/2009 13:15–13:25	Vehicle Traffic	58.1	67.8
17	Evapco, 1900 W. Almond Avenue, northern property line	1/28/2009 14:00–14:10	Plant Noise, Onsite Trucks	58.3	68.9
18	FMC Corporation, Food Processing Division, 2300 W. Industrial Avenue, northern property line	1/28/2009 14:25–14:35	Plant Noise, Onsite Trucks	59.1	70.8
19	Madera Glass Company, 24441 Avenue 12				
	Road 24½, plant entrance/parking lot, approximately 500 feet from plant center	1/28/2009 14:55–15:05	Plant Noise	58.0	59.2
	Road 24½, approximately 150 feet from raw material storage yard center	1/28/2009 15:15–15:25	Front-end Loaders, Raw Material Handling Plant Noise	67.2	72.3
20	Knox Park, S. A Street	2/7/2009 13:25–13:35	Vehicle Traffic	54.6	67.3
21	James Madison Elementary School, 109 Stadium Road	2/7/2009 14:25–14:35	Vehicle Traffic	57.9	70.1
22	Georgia Pacific Color Box, 1275 S Granada Drive, property line, approximately 164 yards to plant	2/7/2009 15:45–15:55	Plant Noise, Onsite Trucks	55.0	59.0
23	Burlington Northern Santa Fe Railroad, Avenue 15½ near Santa Fe Drive, approximately 55 feet from track centerline	02/07/09 16:23–16:24	Freight Train Passby	NM	89.6
24	Union Pacific Railroad, 9 th Street, approximately 39 feet from track centerline	02/07/09 16:40–16:41	Freight Train Passby	NM	104.4
25	Burlington Northern Santa Fe Railroad, Avenue 15½ near Santa Fe Drive, approximately 69 feet from track centerline	02/07/09 16:56–16:57	Amtrak Train Passby	NM	86.7

Note: Monitoring locations correspond with those noted in **Figure 4.7- 2**. Noise measurements were conducted using a Larson Davis model 820 sound-level meter placed at a height of approximately 4.5 feet.

Non-Transportation Sources

Non-transportation noise sources within the community consist predominantly of commercial and industrial uses, as well as recreational events conducted at Madera Speedway and the high school sports stadium. To a somewhat lesser extent, other non-transportation noise sources include automotive/equipment repair and maintenance facilities and construction activities. Noise levels associated with non-transportation noise sources can vary depending on various factors, including site conditions, equipment operated, and the specific activities being conducted. As a result, actual noise levels at nearby noise-sensitive receptors will likely vary depending on the above-mentioned conditions and other influences, such as location, distance from source, shielding provided by intervening terrain and structures, and ground attenuation rates. Noise levels associated with some of the more common non-transportation noise sources located throughout the community are summarized in **Table 4.7-3** and discussed in more detail below. The noise levels presented in **Table 4.7-3** are intended to provide a range of typical noise levels generally associated with non-transportation noise sources and are not intended to

represent absolute noise levels. Actual noise levels would be dependent on various factors and may vary from those presented in this table. For this reason, noise generated by non-transportation noise sources and impacts to nearby noise-sensitive land uses should be evaluated on a project-by-project and site-specific basis.

TABLE 4.7-3
TYPICAL NOISE LEVELS
NON-TRANSPORTATION NOISE SOURCES

Source	Equivalent Average-Hourly Noise Level at 50 Feet (dBA Leq)	Distance to 60 dBA Leq Noise Contour (feet)
Concrete & Asphalt Batch Plants	65-80	94-525
Food Processing & Packaging	66-73	105-235
Glass Companies	77-78	350-420
Loading Docks (Non-Enclosed)	55-65	29-94
Motor Speedways	78	410
Recreational-Use Stadiums (Including Sports)	77-96	370-2,500
Automotive Repair (Non-Enclosed)	63-73	70-225

Represents noise levels at distance from primary noise sources/activities are based on a compilation of noise levels derived from measurement surveys conducted for this project (Table 4.7-2), measurements conducted at similar facilities, and existing environmental documentation. Noise levels are dependent on various factors and may vary from those presented in this table. For this reason, noise generated by non-transportation noise sources and impacts to nearby noise-sensitive land uses should be evaluated on a project-by-project and site-specific basis.

Commercial and Industrial Uses

Within the City of Madera, commercial and industrial land uses are located primarily along major roadway and railway corridors. Major industrial land uses are predominantly located within the southwestern portion of the city. Major industrial and commercial operations in the city include asphalt and concrete batch plants, food and agricultural products processing, packaging facilities, and glass/bottle manufacturing. Noise sources commonly associated with these land uses include truck traffic, loading dock activities, and heavy-equipment operation.

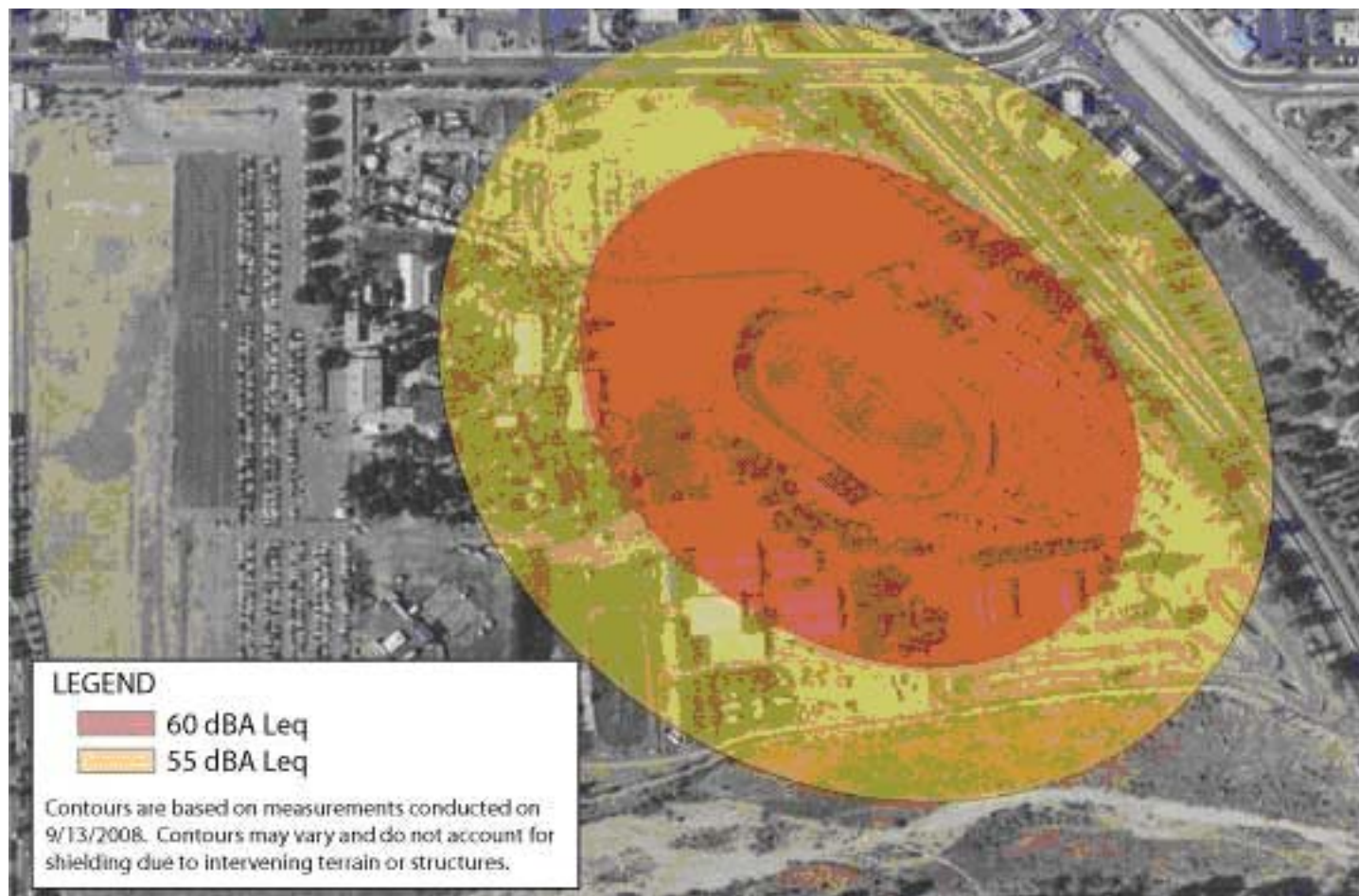
Based on the ambient noise measurements conducted (Table 4.7-2) and measurement data obtained from similar facilities, noise levels associated with industrial uses, such as asphalt and concrete batch plants, packaging plants, and manufacturing facilities, are often loudest during periods when heavy-duty trucks and off-road equipment are being operated within exterior areas of the facility. During periods when heavy-duty equipment and vehicles are being operated, noise levels at concrete and asphalt batch plants can reach combined noise levels of approximately 80 dBA Leq at 50 feet. Based on this noise level, the predicted 60 dBA Leq noise contour for batch plants would extend to approximately 525 feet. Other facilities involving extended use of heavy-duty equipment for material handling may also generated similar noise levels. Based on measurements conducted for this project, the projected 60 dBA Leq noise contours for glass companies, including Madera Glass Company, would extend to approximately 350 feet from onsite material handling areas and approximately 420 feet from the plant. The projected 60 dBA Leq noise contours for food and agricultural products processing facilities would extend to distances of approximately 105 to 235 feet from the facilities. Based on the measurements conducted (Table 4.7-2), the projected 60 dBA Leq noise contours for the Georgia Pacific Color Box packaging facility, Evapco, and FMC Corporation, do not extend beyond the property line of the facilities.

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Madera Speedway

The Madera Speedway is a 1/3-mile banked-oval track located on the west side of State Route (SR) 99, south of W. Cleveland Avenue. The track hosts various race divisions include Mini Dwarfs, Mini Stocks, American Stocks, Hobby Stocks, Street Stocks, IMCA Modifieds, and Late Model vehicles. Racing events typically occur on Friday through Sunday, during the months of March through November (Madera Speedway, 2009). The nearest existing noise-sensitive land uses consist of residential dwellings. The nearest residential land uses are located approximately 1,000 feet south of the track.

Noise levels associated with racing events can vary, depending primarily on the race division. A noise measurement survey was conducted at this facility on September 13, 2008. Based on the noise measurements conducted, predicted average-hourly noise levels associated with the various race divisions measured approximately 69 dBA L_{eq} at approximately 138 feet from the track centerline. Maximum intermittent noise levels at this same distance generally ranged from approximately 65 to 87 dBA L_{max} (**Table 4.7-2**). Based on the measurements conducted, the projected 60 dBA L_{eq} noise contour would extend to a distance of approximately 410 feet from the track centerline. Predicted average-hourly (in L_{eq}) noise contours are depicted in **Figure 4.7-3**.



Source: AMBIENT Air Quality and Noise Consulting

Figure 4.7-3
Projected Noise Contours

Schools and Parks with Play Fields

Noise sources generally associated with schools and parks with sports fields typically include the sound of voices, play-area activities (e.g., impulsive sound caused by contact between basketballs and hard-surface courts), mechanical building equipment (e.g., heating, ventilation, and air conditioning systems, and boilers), landscape maintenance equipment, and exterior intercom/speaker systems. School play field activities tend to generate more noise than those of neighborhood parks, as the intensity of school playground usage tends to be higher. At a distance of 100 feet from an elementary school playground, average noise levels are typically less than 60 dBA L_{eq} . At organized events such as high school football games with large crowds and public address systems, the noise generation is often significantly higher. Noise levels associated with such events can vary widely depending on various factors, including the type and number of outdoor events being conducted, whether a public address system is used, and the number of people in attendance.

Other Non-Transportation Noise Sources

Various other non-transportation noise sources can contribute to noticeable increases in ambient noise levels. Such sources would include, but are not limited to, recreational uses or events, particularly those that utilize amplified sound systems (e.g., sporting events, public actions, animal/vehicle exhibitions, etc.), automotive repair facilities, building mechanical systems, and landscape maintenance activities. Noise generated by such sources is often directional and can vary depending on site and operational characteristics.

Recreational and Exhibition Events

Recreational and exhibition events involving large spectator crowds, particularly those involving the use of amplified sound systems, can result in substantial increases in ambient noise levels. Outdoor events that include the use of an amplified sound system and involve relatively small spectator crowds (such as small amphitheaters, auctions, and vehicle/animal exhibitions) can generate noise levels of approximately 70 to 80 dBA L_{eq} at 50 feet from the stage area/speaker locations. Based on these noise levels, the predicted 60 dBA L_{eq} noise contour for such uses would extend to a distance of approximately 525 feet. Noise levels generated by such sources are primarily a function of the type of performance being provided and can vary substantially depending on the use.

For large stadiums that draw large spectator crowds and are equipped with multi-speaker amplified sound systems, predicted exterior noise levels can range from approximately 57 to 72 dBA L_{eq} at approximately 500 feet during recreational events. Outdoor musical and band performances, such as marching band performances during half-time and pregame shows, have measured approximately 57 to 76 dBA L_{eq} at 500 feet. Predicted noise levels at stadiums are dependent on various factors including stadium design and orientation, the activities conducted, spectator crowd size, and the type of public address (PA) amplification system installed, as well as speaker placement. Depending on such factors, the predicted 60 dBA L_{eq} noise contour for larger stadiums would extend to distances ranging from approximately 370 to 3,100 feet (SAUSD, 2005.)

Automotive Maintenance & Repair

Typical automotive maintenance and repair activities often include the use of pneumatic tools, air compressors, and power generators. Other equipment operations, such as the use of power hand tools (e.g., sanders, drills, grinders, pneumatic wrenches, etc.), typically generate a lesser

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degree of noise. The use of air compressors, power generators, and pneumatic tools can generate noise levels of up to approximately 85 dBA at 50 feet. Noise levels generated by the use of hand-held tools, such as sanders, drills, and grinders, typically average between 63 and 87 dBA at 3 feet. Simultaneous use of multiple hand tools, such as grinders being used on metal, can generate levels of 87 to 97 dBA L_{eq} at 3 feet (EPA, 1971). Noise levels associated with these facilities would be dependent on the specific activities performed and source/facility characteristics. Assuming an exterior operational noise level of 97 dBA L_{eq} at 3 feet, the 60 dBA L_{eq} noise contour would extend to a distance of approximately 225 feet.

Building Mechanical Systems

The majority of electrical and mechanical equipment in buildings is used for air circulation systems. In addition, pumping and piping systems are used for water and fluid circulation, elevators and escalators are used for movement of personnel, and various conveyance systems are used for moving material. Much of this equipment is located in mechanical equipment rooms or in areas that provide shielding from direct public/personnel exposure (i.e., above ceilings, in walls, or behind enclosures.) Equipment located within exterior areas can result in increases in ambient noise levels, particularly when located in unshielded areas and within line-of-sight of nearby receptors. Such equipment would include air-conditioning units, cooling towers, compressors, fans/turbines, electrical transformers, chillers, and pumps. Noise levels associated with these sources can vary depending on the specific equipment being operated, facility/equipment design, and operational characteristics. Typical noise levels associated with building mechanical equipment can range from less than 50 to 110 dBA at 3 feet, with the highest noise levels reaching approximately 85 dBA L_{eq} at 50 feet from the source (EPA, 1971.) Assuming an exterior operational noise level of 85 dBA L_{eq} at 50 feet, the 60 dBA L_{eq} noise contour would extend to a distance of approximately 930 feet.

Construction Activities

Construction noise typically occurs intermittently and varies depending upon the nature or phase (e.g., demolition/land clearing, grading and excavation, erection) of construction. Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. The U.S. Environmental Protection Agency (EPA) has found that the noisiest equipment types operating at construction sites typically range from 88 dBA to 91 dBA L_{eq} at 50 feet. Typical operating cycles may involve 2 minutes of full power, followed by 3 or 4 minutes at lower settings. Although noise ranges were found to be similar for all construction phases, the building construction phase tended to be less noisy (i.e., 79 dBA to 88 dBA L_{eq} at 50 feet), when compared to the initial site preparation and grading phases (EPA, 1971).

Transportation Sources

Aircraft

Madera Municipal Airport is a general aviation airport located within the city limits. The airport is owned and operated by the City of Madera. No private airstrips or heliports have been identified within the City of Madera.

Noise concerns typically associated with airports include increased levels of annoyance and interference with personal activities such as sleeping, conversing, relaxing, or watching television. While individual responses to noise can vary, various methods and noise descriptors have been developed in an attempt to correlate aircraft noise levels with land use compatibility

and community reaction. The CNEL descriptor is most commonly used to evaluate aircraft noise levels, with respect to land use compatibility.

Noise that emanates away from airports and airplane flight paths is typically represented by concentric noise contours around the airport. The contours help to define zones where land use is restricted to protect persons on the ground from the detrimental effects of exposure to excessive aircraft noise. The contours are constructed using noise samples from around the airport, combined with specific computer noise models which indicate the location of each contour line. These noise contours take into account the flight path, the number, time of day, and frequency of aircraft operations, as well as variations in monthly and seasonal flight schedules. The result is a 24-hour day-night average noise contour, depicted in CNEL. Because the CNEL noise metric is time weighted to take into account noise events that occur during the more noise-sensitive periods of the day, this metric is typically used for the analysis of land use compatibility with aircraft operations.

Predicted CNEL noise exposure contours for Madera Municipal Airport are depicted in **Figure 4.7-4**. The noise contours do not take into account shielding or reflection of noise from existing structures. As a result, the noise contours should be considered to represent bands of similar noise exposure, rather than absolute lines of demarcation. Actual noise levels will vary from day to day, dependent on a number of factors, including traffic volumes, shielding from existing structures, variations in attenuation rates due to changes in surface parameters, and meteorological conditions.

Depending on factors such as the proximity of nearby noise-sensitive land uses to aircraft overflight areas and the distribution or types of aircraft operated, use of the CNEL noise descriptor may be insufficient for the full assessment of noise impacts. For this reason, although CNEL contours are considered adequate for general land use planning purposes, they may not be adequate for review of individual land use projects. For the analysis of noise impacts of limited duration, such as aircraft overflights, the SEL descriptor is typically used. To date, criteria regarding acceptable SEL are typically based on physiological effects, such as speech or sleep interference, rather than land use compatibility. The Federal Aviation Administration (FAA) has suggested that the threshold for speech interference is 60 dBA. However, the FAA has not provided guidance indicating what number or duration of events exceeding this threshold should be considered significant. Similarly, studies prepared on behalf of the Federal Interagency Committee on Aviation Noise have provided estimates of the percentage of people expected to be awakened when exposed to specific single-event noise levels inside a home. However, no determination as to what frequency of disturbance would be considered acceptable has been made. The noise threshold at which sleep disruption occurs is considered higher than for speech interference, with only 10 percent of people awakened at 80 dBA SEL (Caltrans, 2002a).

Railroads

There are two primary rail corridors within Madera, which include the Union Pacific (UP) Railroad, generally located adjacent to and east of SR 99, and the Burlington Northern Santa Fe (BNSF) Railroad, located parallel to and approximately 1.7 miles east of SR 99. The UP Railroad is used exclusively for freight transport, whereas the BNSF Railroad is used for both freight transport and Amtrak passenger service. The number of freight trains traveling along these segments can vary from day to day, depending on demand, and there are currently no hourly restrictions pertaining to freight transport along these railroad corridors. The number of freight trains traveling along these corridors typically averages approximately 14 trains per day along the UP Railroad and approximately 35 trains per day along the BNSF Railroad (Smith, 2008; Kent, 2008).

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Based on site reconnaissance surveys, UP and BNSF freight trains are estimated to travel at speeds of up to approximately 60 miles per hour (mph). Amtrak passenger trains utilizing the BNSF Railroad typically run between the daytime hours of 7:00 a.m. and 10:00 p.m., and average approximately 12 trains per day (Amtrak, 2008). Average train lengths can vary from approximately 75 to 100 railcars for freight trains to approximately 4 to 5 passenger cars for Amtrak trains.

In addition to the UP and BNSF Railroad mainlines, the UP also operates a rail spur servicing industrial uses located within the southwestern portion of the city. The UP rail spur extends from the UP mainline in a southwesterly direction along W. 3rd Street to N. Pine Street, south along N. Pine Street to Gill Avenue, and then in a general southwest direction to various industrial uses. Based on information provided by UP, a maximum of approximately one train per day would typically be required for the transport of railcars to and from the various industrial facilities. Use of the UP rail spur can vary, depending on demand, and may not occur on a continuous daily basis. Train lengths along these spurs can vary from approximately 5 to 10 railcars or more (Smith, 2008; City of Madera, 2009).

The Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment Guidelines (FTA, 2006) was used for the calculation of wayside noise levels generated by the trains traveling along railroad corridors, based on the above-discussed operations. Predicted wayside noise levels for major railroad corridors and spurs are summarized in **Table 4.7-4**. It is important to note that projected noise levels do not include shielding or reflection of noise from intervening terrain or structures. In addition, actual train noise levels will vary depending on various factors, such as train speed, the number of engines used, track conditions (e.g., welded vs. jointed), and the condition of the train wheels. Additional factors, such as the sounding of the train horns as well as the operation of roadside signaling devices, can also contribute to overall noise levels. Although these predicted noise contours are not considered site-specific, they are useful for determining potential land use conflicts.

TABLE 4.7-4
PREDICTED RAILROAD NOISE LEVELS

Railroad Corridor	Number of Daily Trains	Average Speed	Wayside Noise Level at 50 feet from Track Centerline (dBA CNEL)		Distance from Track Centerline to CNEL Noise Contour (feet)			
			Without Warning Horns Sounding	With Warning Horns Sounding	Without Warning Horns Sounding		With Warning Horns Sounding	
					60 dBA	65 dBA	60 dBA	65 dBA
UP Railroad	19	60	73	81	395	184	1,356	629
BNSF Railroad	38	60	77	85	733	340	2,505	1,163
UP Railroad Spur	1	25	60	70	50	25	134	73

Noise levels were calculated based on methodology obtained from the Federal Transit Administration's Transit Noise and Vibration Impact Assessment Guidelines (FTA, 2006.) Existing train volumes and average speeds were derived from information provided by UP and BNSF and information obtained during the site reconnaissance conducted for this project. For modeling purposes, train volumes were distributed equally over a 24-hour period. Main lines assume 4 engines/train and 75-100 cars (average 88 cars)/train). Railroad spurs assume 1 engine and an average of 7 cars/train. The sounding of locomotive horns typically occurs within distances of approximately 1,000 feet of at-grade crossings. Noise contours do not include shielding due to intervening terrain or structures.

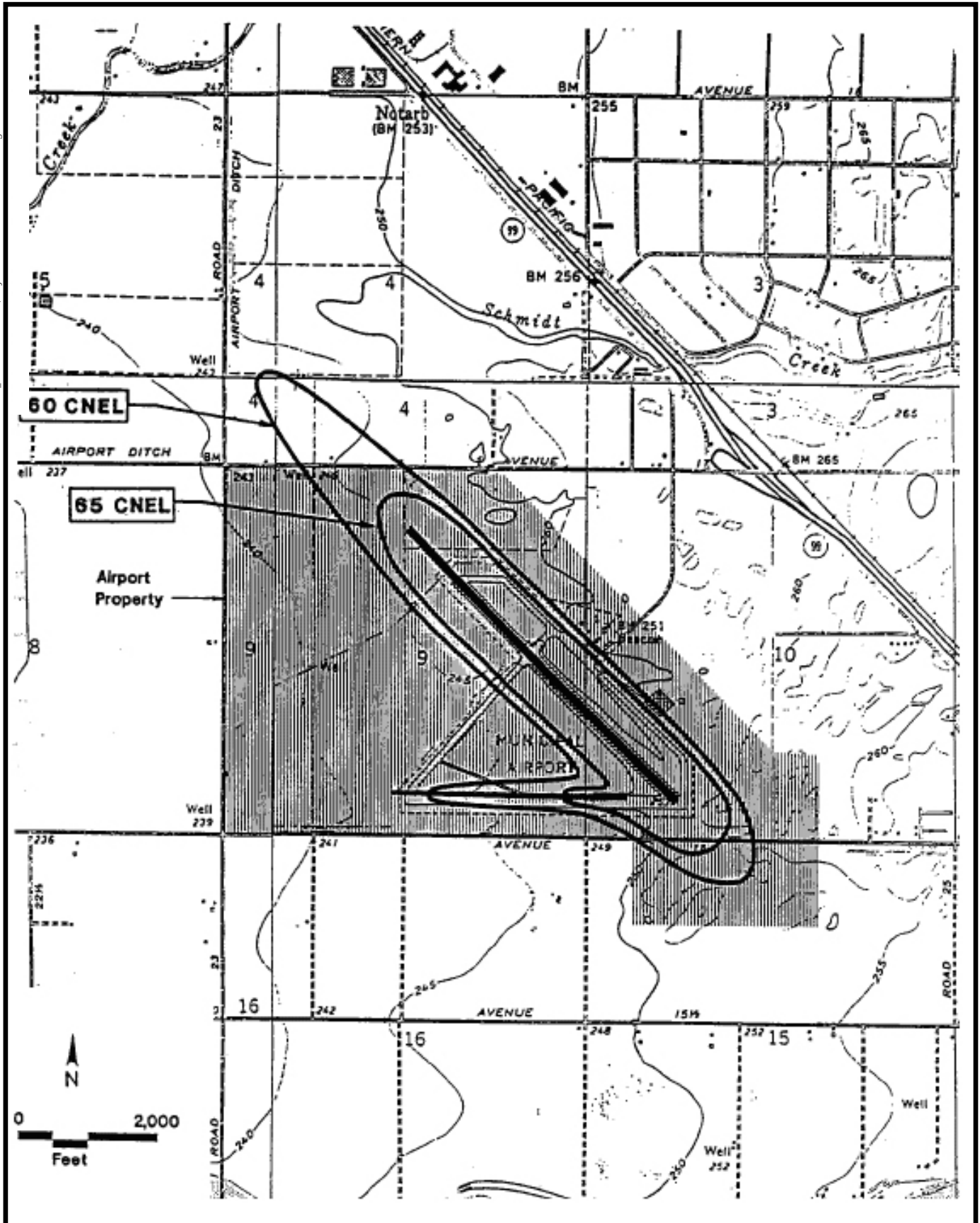


Figure 4.7-4
Projected 2010 Noise Contours

Based on the modeling conducted, the predicted 60 dBA CNEL noise contour for the UP Railroad corridor would extend to approximately 395 feet from the track centerline without the sounding of train warning horns and to approximately 1,356 feet with the sounding of train horns. Predicted 60 dBA CNEL noise contours for the BNSF Railroad corridor would extend to approximately 700 feet and 2,505 feet, without and with the sounding of train warning horns, respectively. Major transportation source noise contours are depicted in **Figure 4.7-5**. Predicted 60 dBA CNEL noise contours along the UP Railroad spur would extend to approximately 50 feet and 134 feet, without and with the sounding of train warning horns, respectively.

Roadway Traffic

Ambient noise levels in many portions of the city are defined primarily by traffic on major roadways, including SR 99 and SR 145. The FHWA Highway Traffic Noise Prediction model (FHWA-RD-77-108) was used to predict traffic noise levels along major area roadways. The FHWA modeling was based upon the Calvenno noise emission factors for automobiles and medium and heavy-duty trucks. Input data used in the model included average-daily traffic volumes, day/night percentages of automobiles and medium and heavy trucks, vehicle speeds, ground attenuation factors, and roadway widths. Traffic volumes were derived from the traffic analysis prepared for this project. Vehicle distribution percentages were based on traffic data obtained during the site reconnaissance conducted for this project, as well as heavy-duty truck distribution percentages for major highways obtained from the California Department of Transportation (Caltrans, 2007).

Predicted traffic noise levels for roadway segments within the city, including distances to the predicted 60, 65, and 70 dBA L_{dn} /CNEL noise contours, are summarized in **Table 4.7-5**. Major transportation source noise contours, including SR 99 and SR 145, are depicted in **Figure 4.7-5**. Predicted noise contours do not include shielding or reflection of noise due to intervening terrain or structures. As a result, predicted noise contours should be considered to represent bands of similar noise exposure along roadway segments, rather than absolute lines of demarcation. Although these predicted noise contours are not considered site-specific, they are useful for determining potential land-use conflicts.

4.7.2 REGULATORY FRAMEWORK

Federal, state, and local governments have established noise standards and guidelines to protect citizens from potential hearing damage and various other adverse physiological and social effects associated with noise. Those regulations most applicable to the community are summarized, as follows:

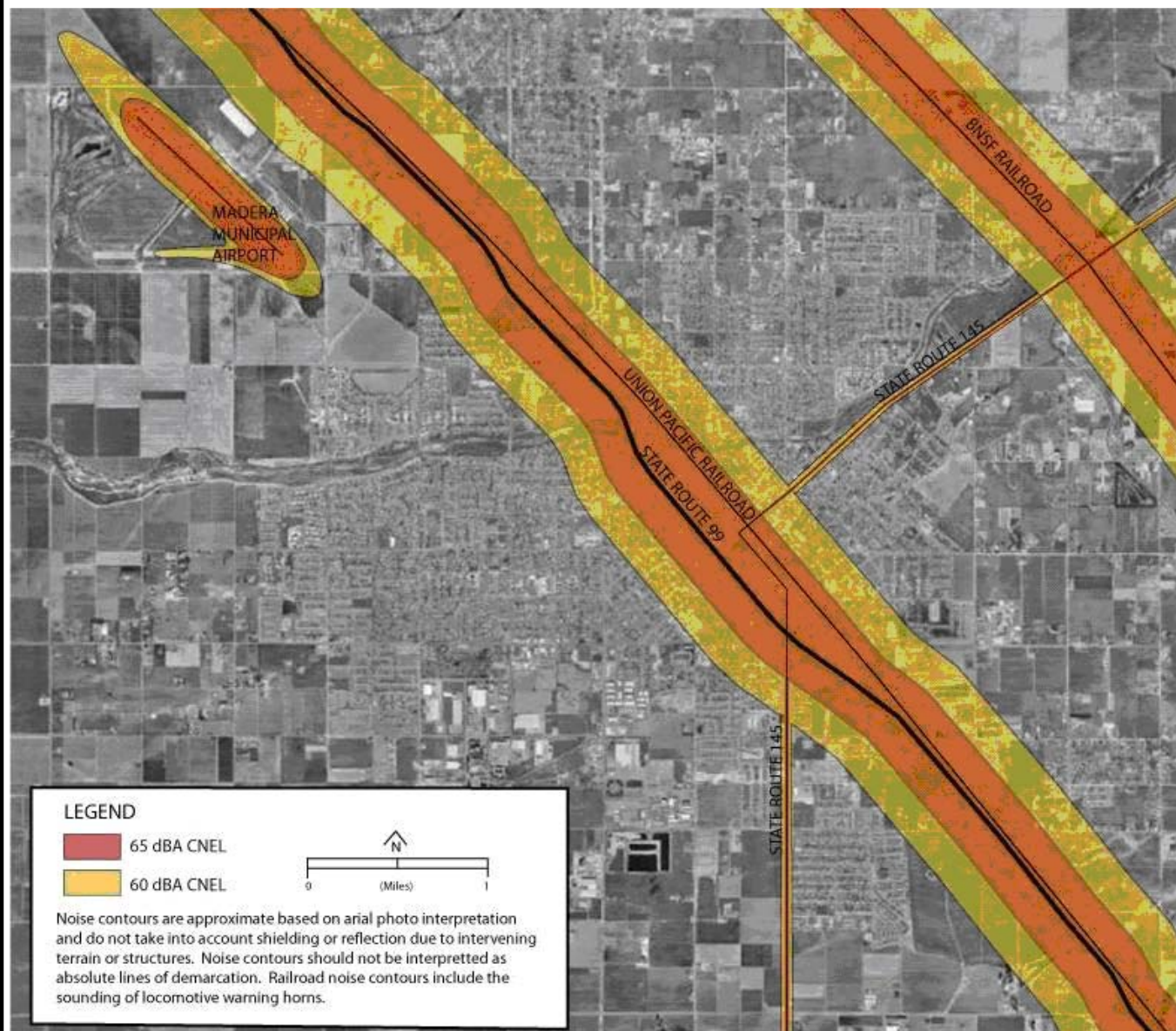
FEDERAL

Federal Aviation Administration

As a means of implementing the Aviation Safety and Noise Abatement Act of 1979, the Federal Aviation Administration adopted regulations that established a voluntary program which airports can utilize to conduct airport noise compatibility planning. These compatibility planning studies are often referred to as "Part 150" studies. Part 150 includes a system for measuring airport noise impacts and presents guidelines for identifying incompatible land uses. Airports that choose to undertake a Part 150 study are eligible for federal funding both for the study itself and for implementation of approved components of the local program.

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The noise exposure maps included in Part 150 studies are depicted in terms of average-daily noise contours (i.e., L_{dn} or CNEL) around the airport. For the purposes of federal regulations, all land uses are considered compatible with noise levels of less than DNL 65 dB. At higher noise exposures, selected land uses are also deemed acceptable, depending upon the nature of the use and the degree of structural noise attenuation provided. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses (Caltrans, 2002a).



Source: AMBIENT Air Quality and Noise Consulting

Figure 4.7-5
Projected Existing Major-Transportation Noise Contours

**TABLE 4.7-5
EXISTING TRAFFIC NOISE LEVELS
CITY OF MADERA**

Roadway Segment	ADT	CNEL at 100 Feet from Near Travel-lane Centerline	Distance (feet) From Roadway Centerline to CNEL Contour		
			70	65	60
4 th Street, East of Gateway Drive	13,227	57.73	--	--	102.6
Almond Avenue, East of SR 145	6,464	56.23	--	--	82.9
Almond Avenue, West of SR 145	3,647	53.74	--	--	59.5
Avenue 12, Between Granada Street and Pine Street	5,338	59.66	--	--	105.6
Avenue 12, Between Road 23 and Road 24½	2,781	56.83	--	--	68.5
Avenue 12, Between SR 99 and Road 30	11,291	62.91	--	80.8	173.7
Avenue 13, Between Pine Street and SR 145	7,326	61.03	--	60.7	130.3
Avenue 13, Between Road 23 and Granada Street	1,329	53.62	--	--	--
Avenue 13, Between SR 145 and SR 99	7,121	60.91	--	59.6	127.8
Avenue 13, Between SR 99 and Road 29	7,611	61.20	--	62.3	133.6
Avenue 15, West of Road 29	7,257	59.72	--	--	106.6
Avenue 17 at Airport Drive	3,557	57.31	--	--	81.2
Avenue 17, Between Country Club Drive and Lake Street	4,659	57.80	--	--	79.4
Avenue 17, Between SR 99 and Country Club Drive	11,512	61.72	--	67.4	144.8
Cleveland Avenue, Between Granada Drive and Schnoor Street	9,202	57.76	--	--	103.1
Cleveland Avenue, Between Schnoor Street and SR 99	22,911	61.72	--	88.9	185.4
Cleveland Avenue, Between Sharon Road and D Street	11,160	60.17	--	53.3	114.1
Country Club Drive, Between Avenue 17 and Avenue 17½	10,248	61.22	--	62.5	134.0
Country Club Drive, Between Cleveland Avenue and Ellis Avenue	19,584	62.03	--	77.9	166.1
Country Club Drive, North of Avenue 18½	5,262	59.60	--	--	104.6
Country Club Drive, South of Avenue 17	10,991	62.79	--	79.4	170.6
D Street, North of 4 th Street	8,058	53.72	--	--	59.3
D Street, North of Cleveland Avenue	5,984	52.92	--	--	--
Ellis Avenue, Between Country Club Drive and Lake Street	1,926	53.96	--	--	--
Gateway Drive (SR 145), Between Madera Avenue and Yosemite Avenue	14,200	63.33	--	94.6	202.5
Gateway Drive, North of 4 th Street	12,326	55.56	--	--	75.6
Gateway Drive, North of Cleveland Avenue	5,114	51.74	--	--	--

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Roadway Segment	ADT	CNEL at 100 Feet from Near Travel-lane Centerline	Distance (feet) From Roadway Centerline to CNEL Contour		
			70	65	60
Granada Drive, Between Howard Avenue and Pecan Avenue	7,209	59.11	--	--	106.5
Granada Drive, South of Cleveland Avenue	9,866	58.06	--	--	107.7
Granada Drive, South of Olive Avenue	7,142	59.35	--	64.3	130.1
Granada Drive, South of Sunset Avenue	5,824	55.78	--	--	77.9
Howard Road, Between Granada Drive and Schnoor Street	9,634	57.96	--	--	106.1
Madera Avenue (SR 145), Between Avenue 13 and SR 99	19,100	60.93	--	79.6	164.7
Olive Avenue, Between Yosemite Avenue and Madera Avenue (SR 145)	9,964	58.11	--	--	108.4
Pine Street, Between Olive Avenue and Pecan Avenue	9,329	60.23	--	59.6	126.3
Raymond Road, Between Avenue 16 and Arizona Avenue	4,211	57.36	--	--	74.3
Road 23, Between Avenue 16 and Cleveland Avenue	4,614	57.75	--	--	78.9
Road 23, North of Avenue 12	2,678	56.66	--	--	66.8
Road 29, Between Olive Avenue and Avenue 13	4,081	57.22	--	--	72.7
Road 29, Between SR 145 and Avenue 15	970	50.98	--	--	--
SR 99, Between Avenue 12 and Avenue 9	68,000	76.51	518.3	1,109.6	2,386.9
SR 99, Between Avenue 16 and Cleveland Avenue	64,000	76.25	498.1	1,065.8	2,292.4
SR 99, Between Avenue 20 and Avenue 18½	58,000	75.82	467.1	998.4	2,146.9
SR 99, Between Second Street and 4 th Street	71,000	76.70	533.2	1,141.9	2,456.5
SR 99, Between SR 145 and Gateway Drive	68,000	76.51	518.3	1,109.6	2,386.9
Sunset Avenue, Between Granada Drive and Schnoor Street	6,780	56.44	--	--	85.4
Tozer Avenue, Between Avenue 15 and Sunrise Avenue	6,567	59.29	--	--	99.7
Tozer Avenue, Between Olive Avenue and Almond Avenue	5,103	58.19	--	--	84.4
Westberry Boulevard, Between Sunset Avenue and Howard Avenue	3,381	57.09	--	--	78.6
Yosemite Avenue (SR 149), Between Cleveland Avenue /Tozer Street and Road 29	9,900	58.08	--	--	108.0
Yosemite Avenue (SR 149), Between Gateway Drive and Cleveland Ave/Tozer Street	16,000	60.16	--	71.6	146.8

Noise levels/contours were calculated using the FHWA roadway noise model based on Calven vehicle reference noise levels and traffic data obtained from the traffic analysis prepared for this project. Refer to **Appendix G** for modeling output files.

-- Contours are within roadway right-of-way

Federal Railroad Administration

The federal government, in response to safety concerns at grade crossings, enacted the Swift Rail Development Act of 1994. This act mandated that the Secretary of Transportation issue regulations requiring the use of locomotive horns at public grade crossings, but gave the agency the authority to make reasonable exceptions. On January 13, 2000, the Federal Railroad Administration published a Notice of Proposed Rule Making in the Federal Register addressing the use of locomotive horns at public road-rail grade crossings. Accordingly, locomotive horns must be sounded on approach and while entering public grade crossings, unless there is no significant risk of increased grade crossing collisions, the use of the locomotive horn is impractical, or where safety measures can be installed to fully compensate for the absence of the warning provided by the horn.

U.S. Environmental Protection Agency

In 1974, the EPA Office of Noise Abatement and Control published a report entitled Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Although this document does not constitute EPA regulations or standards, it is useful in identifying noise levels at which increased levels of annoyance would be anticipated. Based on an annual-average day-night noise level (expressed as L_{dn} or DNL), the document states that "undue interference with activity and annoyance" will not occur if outdoor noise levels in residential areas are below 55 dBA L_{dn} and indoor levels are below 45 dBA L_{dn} (EPA, 1974).

Department of Housing and Urban Development

The Federal Department of Housing and Urban Development (HUD) guidelines for the acceptability of residential land uses are set forth in the Code of Federal Regulations, Title 24, Part 51, "Environmental Criteria and Standards." These guidelines identify a noise exposure of 65 dBA L_{dn} , or less, as acceptable. Noise levels of 65 to 75 dBA L_{dn} are considered normally acceptable, provided appropriate sound attenuation is provided to reduce interior noise levels to within acceptable levels. Noise levels above 75 dBA L_{dn} are considered unacceptable. The goal of the interior noise levels is 45 dBA L_{dn} . These guidelines apply only to new construction supported by HUD grants and are not binding upon local communities (Caltrans, 2002a).

STATE

The State of California regulates vehicular and freeway noise affecting classrooms, sets standards for sound transmission and occupational noise control, and identifies noise insulation standards and airport noise/land use compatibility criteria.

California Building Code

Title 24 of the California Code of Regulations contains standards for allowable interior noise levels associated with exterior noise sources (California Building Code, 1998 edition, Volume 1, Appendix Chapter 12, Section 1208A). The standards apply to new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family residences. The standards state that the interior noise level attributable to exterior sources shall not exceed 45 dBA in any habitable room. Proposed residential structures to be located where the annual L_{dn} or CNEL exceeds 60 dBA shall require an acoustical analysis showing that the proposed building design would achieve the prescribed allowable interior noise standard. The noise metric shall be either the Day-Night Average Sound Level (L_{dn}) or the Community Noise Equivalent Level (CNEL),

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consistent with the noise element of the local general plan. Worst-case noise levels, either existing or future, shall be used as the basis for determining compliance with these standards (Caltrans, 2002a).

California Airport Noise Regulations

The airport noise standards promulgated in accordance with the State Aeronautics Act are set forth in Section 5000 et seq. of the California Code of Regulations (Title 21, Division 2.5, Chapter 6). The current version of the regulations became effective in March 1990. In Section 5006, the regulations state "The level of noise acceptable to a reasonable person residing in the vicinity of an airport is established as a community noise equivalent level (CNEL) value of 65 dBA for purposes of these regulations. Noise-sensitive land uses (i.e., residential dwellings, schools, hospitals and convalescent homes, and places of worship) that are located within the 65 dBA CNEL noise contour would be considered incompatible, unless mitigation has been incorporated. This criterion level has been chosen for reasonable persons residing in urban residential areas where houses are of typical California construction and may have windows partially open. It has been selected with reference to speech, sleep and community reaction" (Caltrans, 2002a).

State of California General Plan Guidelines

The State of California General Plan Guidelines (State of California 1998), published by the Governor's Office of Planning and Research (OPR), also provides guidance for the acceptability of projects within specific noise environments. Based on these guidelines, residential uses, churches, libraries, and hospitals are normally unacceptable in areas exceeding 70 dBA CNEL and conditionally acceptable between 60 and 70 dBA CNEL. Professional and commercial office buildings are normally unacceptable in areas exceeding 75 dBA CNEL and conditionally acceptable between 67 and 77 dBA CNEL. However, the state stresses that these guidelines can be modified to reflect communities' sensitivities to noise. Adjustment factors may be used in order to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

LOCAL

Madera County Airport Land Use Commission

The Madera County Airport Land Use Commission's (ALUC) primary responsibility is formulation and adoption of a comprehensive land use plan that provides for the orderly growth and protection of the public health, safety, and welfare within the planning area of each public use airport within the County of Madera. The Commission assists local agencies in ensuring compatible land uses in the vicinity of all new and existing airports located within Madera County (Madera County, 2009).

City of Madera Municipal Code

Section 3, Chapter 11 (Noise Control) of the Madera Municipal Code includes various nuisance provisions intended to protect community residents from prolonged unnatural or unusual noise levels that could cause increased levels of annoyance, discomfort, or injury. In accordance with the City's municipal code requirements, construction-related noise-generating activities that would result in a disturbance at nearby noise-sensitive land uses are discouraged between the hours of 8:00 p.m. and 10:00 p.m. and typically prohibited between the hours of 10:00 p.m. and

6:00 a.m. The Community Development Director, or designated representative, may exempt certain construction work when unforeseen or unavoidable conditions occur during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed or until such time that work stoppage would not jeopardize the inspection or acceptance of a project or create undue hardships for the contractor or property owners (Madera Municipal Code, 2008).

4.7.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance. A noise impact is considered significant if implementation of the General Plan Update would:

- 1) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or of applicable standards of other agencies.
- 2) Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- 3) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- 4) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- 5) Expose people residing or working in the project area to excessive noise levels for a project located within an airport land use plan area or, where such a plan has not been adopted, or within two miles of a public airport or a public use airport.
- 6) Expose people residing or working in the project area to excessive noise levels for a project within the vicinity of a private airstrip.

METHODOLOGY

A combination of use of existing literature and general application of accepted noise thresholds was used to determine the impact of ambient noise levels resulting from and on development within the General Plan Planning Area. Short-term and long-term impacts associated with transportation and non-transportation noise sources were qualitatively assessed based on potential increases in ambient noise levels anticipated to occur at noise-sensitive land uses. Traffic noise levels along major area roadways were estimated using the FHWA Highway Traffic Noise Prediction model (FHWA-RD-77-108.) The FHWA modeling was based upon the Calven noise-emission factors for automobiles and medium and heavy-duty trucks. Input data used in the model included average-daily traffic volumes, day/night percentages of automobiles and medium and heavy trucks, vehicle speeds, ground attenuation factors, roadway widths, and ground elevation data. Traffic volumes were derived from the traffic analysis prepared for this project. Roadway data and vehicle distribution percentages were based on traffic data obtained during the site reconnaissance conducted for this project, as well as heavy-duty truck distribution percentages for major highways obtained from the California Department of Transportation (Caltrans). **Appendix G** contains the modeling data. For purposes of this analysis,

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significant increases in traffic noise levels would be defined as an increase of 5 dBA, or greater, in comparison to existing conditions.

PROJECT IMPACTS AND MITIGATION MEASURES

Exposure to Construction Noise

Impact 4.7.1 Activities associated with construction could result in elevated noise levels at noise-sensitive land uses. Increases in ambient noise levels, particularly during the nighttime hours, could result in increased levels of annoyance and potential sleep disruption. In accordance with the City's Municipal Code, construction activities would be limited to the daytime hours of operation. With continued compliance with the City's Municipal Code requirements and performance standards set forth in the proposed Noise Element, this impact would be considered **less than significant**.

Construction noise typically occurs intermittently and varies depending upon the nature or phase (e.g., demolition/land clearing, grading and excavation, erection) of construction. Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Although noise ranges were found to be similar for all construction phases, the grading phase tends to involve the most equipment and resulted in slightly higher average-hourly noise levels. Typical noise levels for individual pieces of construction equipment are summarized in **Table 4.7-6**. As depicted, individual equipment noise levels typically range from approximately 74 to 89 dBA at 50 feet. Typical operating cycles may involve 2 minutes of full power, followed by 3 or 4 minutes at lower settings. Depending on the activities performed and equipment usage requirements, combined average-hourly noise levels at construction sites typically range from approximately 65 to 91 dBA L_{eq} at 50 feet (EPA, 1971).

TABLE 4.7-6
CONSTRUCTION EQUIPMENT NOISE

Equipment	Typical Noise Level (dBA L_{max}) 50 feet from Source
Roller	74
Concrete Vibrator, Pump, Saw	76
Backhoe	80
Generator, Air Compressor	81
Compactor, Concrete Pump	82
Crane, Mobile	83
Dozer, Grader, Loader, Concrete Mixer, Impact Wrench, Pneumatic Tool	85
Truck, Jack Hammer	88
Paver	89

Sources: FTA, 2006

Assuming a maximum construction noise level of 89 dBA L_{eq} and an average attenuation rate of 6 dBA per doubling of distance from the source, construction activities located within approximately 1,500 feet of noise-sensitive receptors could reach levels of approximately 60 dBA L_{eq} . Activities occurring during the more noise-sensitive evening and nighttime hours may result in increased levels of annoyance and potential sleep disruption to occupants of nearby noise-sensitive land uses (e.g., residential dwellings, schools, hospitals, etc.). Depending on distances from nearby noise-sensitive land uses, construction activities associated with buildout of the General Plan Planning Area may result in temporary and periodic increases in ambient noise levels at nearby receptors. Increases in ambient noise levels, particularly during the nighttime hours, could result in increased levels of annoyance and potential sleep disruption to occupants of nearby dwellings.

Municipal Code Items that Provide Mitigation

Section 3, Chapter 11 (Noise Control) of the City's Municipal Code restricts construction activities to between the hours of 6:00 a.m. and 8:00 p.m., unless specifically exempted by the City's Community Development Director, or designated representative, due to unforeseen or unavoidable conditions (Madera Municipal Code, 2008).

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan Noise Element includes the following noise standards and mitigation requirements that would ensure construction noise impacts are mitigated. Specifically, policies N-5, N-6, and N-7 establish the maximum noise exposure levels that must be maintained, while policies N-1, N-2, and N-9 identify performance standards to mitigate potential noise impacts to meet City noise standards.

Policy N-1: The City will protect residential areas and other noise-sensitive uses from excessive noise by doing the following:

- 1) Requiring that land uses, roadways, and other sources do not create incompatible noise levels on adjacent parcels.*
- 2) Allowing homes or noise-sensitive uses to be developed only in places where existing and projected noise levels will meet the exterior noise guidelines and standards shown in Policies N-5 and N-6.*
- 3) Requiring that City decisions which would cause or allow an increase in noise created by stationary or mobile sources (such as development of noise-generating land uses or the construction of new or wider roadways) be informed by a noise analysis and accompanied by noise reduction measures to keep noise at acceptable levels.*

Policy N-2: To implement Policy N-1, the following shall apply:

- 1) No use regulated by the City shall be permitted to generate noise that would cause the ambient noise on any adjacent parcel to exceed the "completely compatible" 24-hour guidelines shown in Policy N-5 or the 30-minute noise standards in Policy N-6.*
- 2) The City shall ensure that noise mitigation to achieve a "completely compatible" 24-hour exterior noise level and conformance with the 30-*

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minute exterior noise standard is provided in conjunction with any decision¹ it makes that would cause a violation of item 1) above.

- 3) Developers of new residential or other noise-sensitive uses which are placed in environments subject to existing or projected noise that exceeds the "completely compatible" guidelines in Policy N-5 shall be responsible for ensuring that acceptable exterior and interior noise levels will be achieved.
- 4) The City shall ensure that transportation projects such as new or widened roadways include mitigation measures to maintain at least "tentatively compatible" noise levels as shown in Policy N-5. Mitigation for roadway noise need not be provided where "tentatively compatible" noise guidelines would be exceeded on vacant lands, but shall be installed as part of the transportation project where the noise would affect existing homes. In those instances where noise mitigation is not initially triggered, it shall be the responsibility of the project which places residential units on the vacant lands.

Policy N-5: The following are the maximum 24-hour exterior noise levels for land designated by this General Plan for residential, commercial/retail, and public parks.

TABLE N-B
EXTERIOR NOISE COMPATIBILITY GUIDELINES
FOR NOISE FROM ALL SOURCES, INCLUDING TRANSPORTATION NOISE
(24-HOUR DAY-NIGHT AVERAGE [CNEL/LDN])

Land Use Designations	Completely Compatible	Tentatively Compatible	Normally Incompatible	Completely Incompatible
<i>All Residential (Single- and Multi-Family)</i>	<i>Less than 60 dBA</i>	<i>60-70 dBA</i>	<i>70-75 dBA</i>	<i>Greater than 75 dBA</i>
<i>All Commercial</i>	<i>Less than 70 dBA</i>	<i>70-75 dBA</i>	<i>Greater than 75 dBA</i>	
<i>Public Parks (lands designated as Open Space on which public parks are located or planned)</i>	<i>Less than 65 dBA</i>	<i>65-70 dBA</i>	<i>70-75 dBA</i>	<i>Greater than 75 dBA</i>

Table Notes:

- *These guidelines apply to land designated by this General Plan for these uses. Residential, retail, or public parks which have been developed on land designated for other uses shall be subject to the exterior noise guidelines for the land on which they are located.*
- *Non-residential uses located on residentially designated land shall be subject to the exterior noise guidelines for residential lands.*
- *All uses on Commercial lands, including non-commercial uses, shall be subject to the standards for Commercial land.*

¹ Examples of decisions include roadway construction projects, public park construction, General Plan amendments, changes of zone, conditional use permits, and site plan review approval.

- Land use designations not listed above do not have exterior noise compatibility standards. Land use designations with no exterior noise compatibility standard include office and industrial.
- Standards for public schools are set and enforced by the State of California and are not regulated by the City of Madera. Therefore, no standards for public schools are shown in Table N-B.

Policy N-6: The following are the City's standards for maximum exterior non-transportation noise levels to which land designated for residential land uses may be exposed for any 30-minute period on any day.

TABLE N-C
EXTERIOR NOISE LEVEL STANDARDS FOR
NON-TRANSPORTATION NOISE, MEASURED AS DBA LEQ (30 MINUTES)

Land Use Type	Time Period	Maximum Noise Level (dBA)
Single-Family Homes and Duplexes	10 p.m. to 7 a.m.	50
	7 a.m. to 10 p.m.	60
Multiple Residential 3 or More Units Per Building (Triplex +)	10 p.m. to 7 a.m.	55
	7 a.m. to 10 p.m.	60

Table Notes:

- Where existing ambient noise levels exceed these standards, the ambient noise level shall be highest allowable noise level as measured in dBA Leq(30 minutes).
- The noise levels specified above shall be lowered by 5 dB for simple tonal noises (such as humming sounds), noises consisting primarily of speech or music, or for recurring impulsive noises (such as pile drivers, punch presses, and similar machinery). Example: the Single Family/Duplex standard from 10 p.m. to 7 a.m. for these types of noises is 45 dBA.
- The City may impose exterior noise standards which are less restrictive than those specified above, provided that:
 - 1) The noise impact on the residential or other noise-sensitive use is addressed in an environmental analysis,
 - 2) A finding is made by the approving body stating the reasons for accepting a higher exterior noise standard, and
 - 3) Interior noise standards will comply with those identified in Policy N-7.

Policy N-7: The following are the City's standards for acceptable indoor noise levels for various types of land uses. These standards should receive special attention when projects are considered in "Tentatively Compatible" or "Normally Incompatible" areas.

- Noise created inside a use listed above shall not count toward the acceptable noise levels to be maintained in accordance with this policy.

TABLE N-D
MAXIMUM ACCEPTABLE INTERIOR NOISE LEVELS
CREATED BY EXTERIOR NOISE SOURCES

Land Use Type	Acceptable Noise Level (dBA Ldn or CNEL)
Residential Living and Sleeping Areas	45 dBA
Residential Living and Sleeping Areas where the dwelling unit is subject to noise from railroad tracks, aircraft overflights, or similar sources which produce clearly identifiable, discrete noise events (such as the passing of a train as opposed to relatively steady or constant noise sources such as roadways)	40 dBA

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Land Use Type	Acceptable Noise Level (dBA Ldn or CNEL)
Private & Semi Private School Classrooms ²	55 dBA
All Places of Work Other than School Classrooms	Conform with applicable state and federal workplace safety standards

Policy N-9: The City's preferences for providing noise mitigation are, in order (#1 is the most preferred, #5 the least):

- 1) Reduce noise at the source.*
- 2) If #1 is not practical, seek to designate land uses which are compatible with projected noise levels.*
- 3) If #1 or #2 are not practical, use distance from the source to reduce noise to acceptable levels.*
- 4) If #1, #2, or #3 are not practical, use buildings, berms, or landscaping or a combination of these to reduce exterior noise to acceptable levels. Use construction techniques (sound-reducing windows, etc.) to reduce interior noise to acceptable levels.*
- 5) The last measure which should be considered is the use of a sound wall to reduce noise to acceptable levels.*

With continued compliance with the City's Municipal Code limiting construction activities to the hours of 6 a.m. to 8 p.m., and with the proposed policies in the Noise Element of the General Plan Update which impose quantitative limits on noise generation and standards for mitigation, this impact would be considered **less than significant**.

Mitigation Measures

None required.

Traffic Noise Impacts

Impact 4.7.2 Implementation of the proposed General Plan would result in increases in traffic noise levels that would be in excess of City of Madera noise standards. This is considered a **significant impact**.

Projected future (year 2030) noise contours for major roadways within the city are summarized in **Table 4.7-7**. Projected future noise contours for major transportation noise sources, which include SR 99 and SR 145, are depicted in **Figure 4.7-6**. The predicted noise levels and distance to noise contours do not take into account shielding of noise by intervening structures or terrain. As a result, these noise contours should not be considered as "absolute lines of demarcation." Because distances to noise contours will vary depending on site-specific conditions, these

² Standards for public schools are set and enforced by the State of California and are not regulated by the City of Madera.

contours should be used as a guide for establishing a pattern of land uses that minimizes the exposure of community residents to excessive noise.

Predicted increases in traffic noise levels associated with future development, in comparison to existing traffic noise levels, is summarized in **Table 4.7-8**. As depicted in **Table 4.7-8**, portions of Avenue 17, Country Club Drive, and Roads 23 and 29 would experience substantial increases in traffic noise levels of 10 dBA or greater. Various other area roadways would also experience significant increases in traffic noise levels of 5 dBA or greater. Based on the modeling conducted, projected increases in vehicle traffic volumes would result in significant increases in roadway traffic noise levels.

The proposed General Plan Update includes residential land use designations along roadways anticipated to experience substantial increases in traffic noise. Development of noise-sensitive land uses could also occur within the projected 60 dBA CNEL noise contours. Implementation of the proposed General Plan Update would result in increased exposure of existing and future noise-sensitive land uses to traffic noise levels that could exceed the City's land use compatibility noise standards.

**TABLE 4.7-7
FUTURE (YEAR 2030) TRAFFIC NOISE LEVELS**

Roadway Segment	ADT	CNEL at 100 Feet from Near Travel-lane Centerline	Distance (feet) From Roadway Centerline to CNEL Contour		
			70	65	60
4 th Street, East of Gateway Drive	17,090	58.84	--	60.2	120.7
Almond Avenue, East of SR 145	15,730	60.09	--	70.9	145.2
Almond Avenue, West of SR 145	11,340	58.67	--	58.9	117.7
Avenue 12, Between Granada Street and Pine Street	23,090	66.02	60.6	130.0	279.7
Avenue 12, Between Road 23 and Road 24½	13,010	63.53	--	88.8	190.9
Avenue 12, Between SR 99 and Road 30	40,310	68.44	87.6	188.3	405.5
Avenue 13, Between Pine Street and SR 145	13,370	63.65	--	90.4	194.4
Avenue 13, Between Road 23 and Granada Street	6,970	60.82	--	58.7	126.0
Avenue 13, Between SR 145 and SR 99	16,390	64.53	--	103.5	222.7
Avenue 13, Between SR 99 and Road 29	12,970	63.51	--	88.6	190.5
Avenue 15, West of Road 29	11,050	68.51	88.6	190.5	410.3
Avenue 17 at Airport Drive	47,460	68.57	98.1	210.1	451.9
Avenue 17, Between Country Club Drive and Lake Street	24,640	72.00	151.0	325.1	700.2
Avenue 17, Between SR 99 and Country Club Drive	37,390	73.81	199.4	429.3	924.6
Cleveland Avenue, Between Granada Drive and Schnoor Street	18,220	60.73	--	77.4	159.7
Cleveland Avenue, Between Schnoor Street and SR 99	32,360	63.22	--	110.2	232.6
Cleveland Avenue, Between Sharon Road and D Street	15,070	68.91	94.1	202.4	435.9

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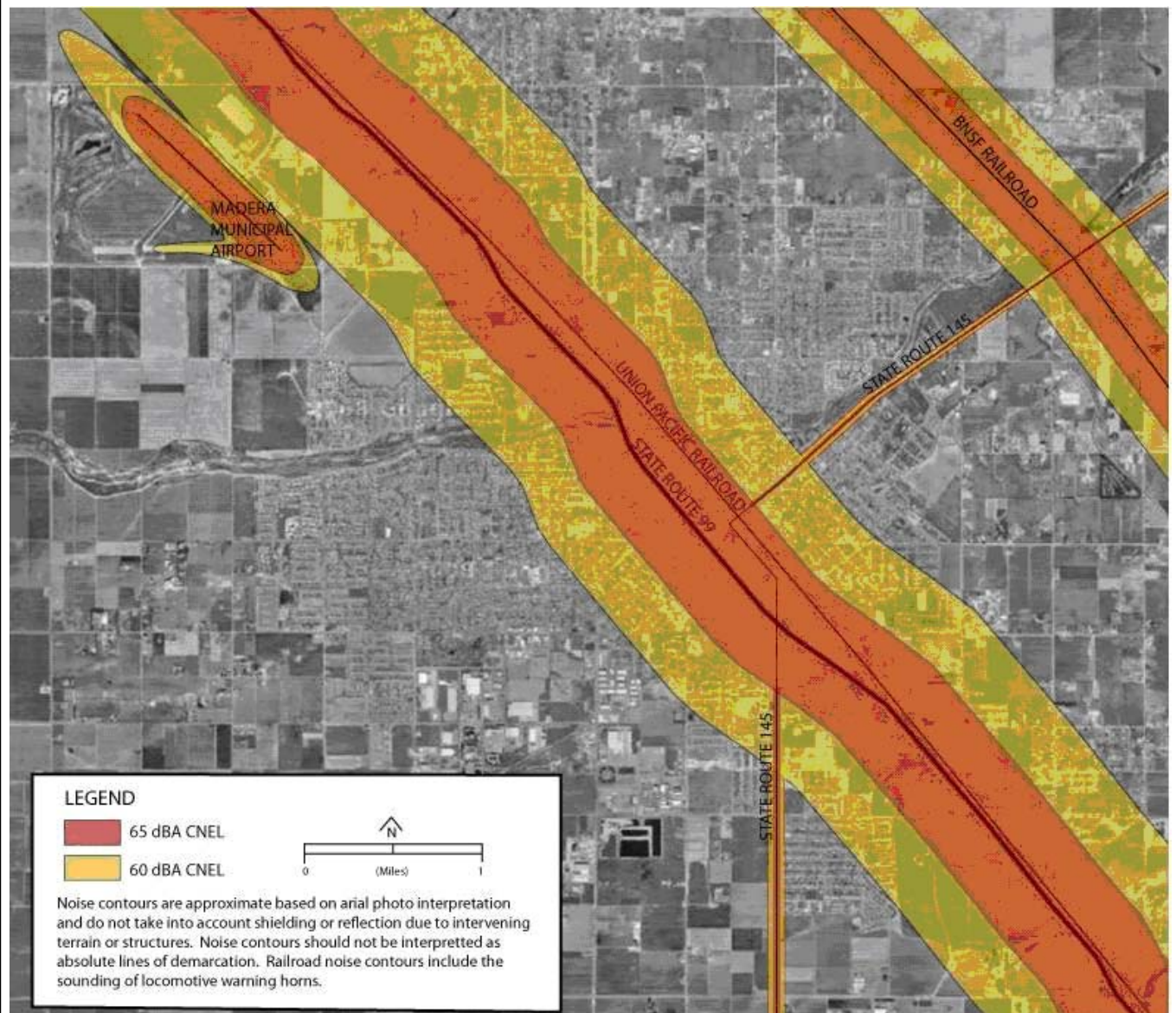
Roadway Segment	ADT	CNEL at 100 Feet from Near Travel-lane Centerline	Distance (feet) From Roadway Centerline to CNEL Contour		
			70	65	60
Country Club Drive, Between Avenue 17 and Avenue 17½	27,680	72.50	163.2	351.3	756.6
Country Club Drive, Between Cleveland Avenue and Ellis Avenue	29,660	63.83	–	102.2	218.9
Country Club Drive, North of Avenue 18½	6,790	60.70	–	57.7	123.8
Country Club Drive, South of Avenue 17	25,080	66.38	64.0	137.3	295.6
D Street, North of 4 th Street	8,570	53.99	–	–	61.3
D Street, North of Cleveland Avenue	6,790	53.47	–	–	–
Ellis Avenue, Between Country Club Drive and Lake Street	3,490	63.51	–	88.5	190.4
Gateway Drive (SR 145), Between Madera Avenue and Yosemite Avenue	29,630	63.83	–	102.1	218.7
Gateway Drive, North of 4 th Street	12,550	55.64	–	–	76.4
Gateway Drive, North of Cleveland Avenue	10,550	54.89	–	–	69.0
Granada Drive, Between Howard Avenue and Pecan Avenue	8,350	59.75	–	55.5	117.3
Granada Drive, South of Cleveland Avenue	10,150	58.19	–	–	109.7
Granada Drive, South of Olive Avenue	8,320	60.02	–	70.2	143.6
Granada Drive, South of Sunset Avenue	6,260	56.09	–	–	81.3
Howard Road, Between Granada Drive and Schnoor Street	22,540	61.65	–	88.0	183.5
Madera Avenue (SR 145), Between Avenue 13 and SR 99	35,090	63.57	58.2	116.0	245.4
Olive Avenue, Between Yosemite Avenue and Madera Avenue (SR 145)	19,240	60.97	–	79.9	165.4
Pine Street, Between Olive Avenue and Pecan Avenue	22,520	64.06	–	105.7	226.5
Raymond Road, Between Avenue 16 and Arizona Avenue	4,220	64.33	–	100.4	216.1
Road 23, Between Avenue 16 and Cleveland Avenue	29,170	72.73	169.0	363.8	783.5
Road 23, North of Avenue 12	9,770	62.28	–	73.4	157.8
Road 29, Between Olive Avenue and Avenue 13	14,590	69.72	106.6	229.3	493.7
Road 29, Between SR 145 and Avenue 15	11,910	68.84	93.1	200.3	431.3
SR 99, Between Avenue 12 and Avenue 9	135,510	79.51	816.9	1,755.3	3,778.9
SR 99, Between Avenue 16 and Cleveland Avenue	135,040	79.49	815.1	1,751.3	3,770.2
SR 99, Between Avenue 20 and Avenue 18 1/2	144,350	79.78	851.9	1,830.8	3,941.5
SR 99, Between Second Street and 4 th Street	136,410	79.54	820.5	1,763.1	3,795.7
SR 99, Between SR 145 and Gateway Drive	125,330	79.17	775.8	1,666.4	3,587.3

Roadway Segment	ADT	CNEL at 100 Feet from Near Travel-lane Centerline	Distance (feet) From Roadway Centerline to CNEL Contour		
			70	65	60
Sunset Avenue, Between Granada Drive and Schnoor Street	8,790	57.56	--	--	100.2
Tozer Avenue, Between Avenue 15 and Sunrise Avenue	8,400	67.32	73.9	158.7	341.7
Tozer Avenue, Between Olive Avenue and Almond Avenue	8,420	67.33	74.0	159.0	342.3
Westberry Boulevard, Between Sunset Avenue and Howard Avenue	10,410	59.29	--	51.9	109.4
Yosemite Avenue (SR 149), Between Cleveland Avenue /Tozer Street and Road 29	11,480	58.72	--	59.3	118.6
Yosemite Avenue (SR 149), Between Gateway Drive and Cleveland Ave/Tozer Street	22,130	61.57	--	87.0	181.3
<p>Noise levels/contours were calculated using the FHWA roadway noise model based on Calveno vehicle reference noise levels and traffic data obtained from the traffic analysis prepared for this project. Refer to Appendix G for modeling output files.</p> <p>-- Contours are within roadway right-of-way</p>					

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**TABLE 4.7-8
PREDICTED CHANGES IN TRAFFIC NOISE LEVELS**

Roadway Segment	CNEL at 100 Feet from Near Travel-lane Centerline		Predicted Change in Noise Level (CNEL)
	Existing	Future (Year 2030)	
4 th Street, East of Gateway Drive	57.73	58.84	1.11
Almond Avenue, East of SR 145	56.23	60.09	3.86
Almond Avenue, West of SR 145	53.74	58.67	4.93
Avenue 12, Between Granada Street and Pine Street	59.66	66.02	6.36
Avenue 12, Between Road 23 and Road 24½	56.83	63.53	6.70
Avenue 12, Between SR 99 and Road 30	62.91	68.44	5.53
Avenue 13, Between Pine Street and SR 145	61.03	63.65	2.62
Avenue 13, Between Road 23 and Granada Street	53.62	60.82	7.20
Avenue 13, Between SR 145 and SR 99	60.91	64.53	3.62
Avenue 13, Between SR 99 and Road 29	61.20	63.51	2.31
Avenue 15, West of Road 29	59.72	68.51	8.79
Avenue 17 at Airport Drive	57.31	68.57	11.26
Avenue 17, Between Country Club Drive and Lake Street	57.80	72.00	14.20
Avenue 17, Between SR 99 and Country Club Drive	61.72	73.81	12.09
Cleveland Avenue, Between Granada Drive and Schnoor Street	57.76	60.73	2.97
Cleveland Avenue, Between Schnoor Street and SR 99	61.72	63.22	1.50
Cleveland Avenue, Between Sharon Road and D Street	60.17	68.91	8.74
Country Club Drive, Between Avenue 17 and Ave 17½	61.22	72.50	11.28
Country Club Drive, Between Cleveland Avenue and Ellis Avenue	62.03	63.83	1.80
Country Club Drive, North of Avenue 18½	59.60	60.70	1.10
Country Club Drive, South of Avenue 17	62.79	66.38	3.59
D Street, North of 4 th Street	53.72	53.99	0.27
D Street, North of Cleveland Avenue	52.92	53.47	0.55
Ellis Avenue, Between Country Club Drive and Lake Street	53.96	63.51	9.55
Gateway Drive (SR 145), Between Madera Avenue and Yosemite Avenue	63.33	63.83	0.50
Gateway Drive, North of 4 th Street	55.56	55.64	0.08
Gateway Drive, North of Cleveland Avenue	51.74	54.89	3.15
Granada Drive, Between Howard Avenue and Pecan Avenue	59.11	59.75	0.64
Granada Drive, South of Cleveland Avenue	58.06	58.19	0.13



Source: AMBIENT Air Quality and Noise Consulting

Figure 4.7-6
Projected Future Major Transportation Noise Contours

TABLE 4.7-8 (CONTINUED)
PREDICTED CHANGES IN TRAFFIC NOISE LEVELS

Roadway Segment	CNEL at 100 Feet from Near Travel-lane Centerline		Predicted Change in Noise Level (CNEL)
	Existing	Future (Year 2030)	
Granada Drive, South of Olive Avenue	59.35	60.02	0.67
Granada Drive, South of Sunset Avenue	55.78	56.09	0.31
Howard Road, Between Granada Drive and Schnoor Street	57.96	61.65	3.69
Madera Avenue (SR 145), Between Avenue 13 and SR 99	60.93	63.57	2.64
Olive Avenue, Between Yosemite Avenue and Madera Avenue (SR 145)	58.11	60.97	2.86
Pine Street, Between Olive Avenue and Pecan Avenue	60.23	64.06	3.83
Raymond Road, Between Avenue 16 and Arizona Avenue	57.36	64.33	6.97
Road 23, Between Avenue 16 and Cleveland Avenue	57.75	72.73	14.98
Road 23, North of Avenue 12	56.66	62.28	5.62
Road 29, Between Olive Avenue and Avenue 13	57.22	69.72	12.50
Road 29, Between SR 145 and Avenue 15	50.98	68.84	17.86
SR 99, Between Avenue 12 and Avenue 9	76.51	79.51	3.00
SR 99, Between Avenue 16 and Cleveland Avenue	76.25	79.49	3.24
SR 99, Between Avenue 20 and Avenue 18½	75.82	79.78	3.96
SR 99, Between Second Street and 4 th Street	76.70	79.54	2.84
SR 99, Between SR 145 and Gateway Drive	76.51	79.17	2.66
Sunset Avenue, Between Granada Drive and Schnoor Street	56.44	57.56	1.12
Tozer Avenue, Between Avenue 15 and Sunrise Avenue	59.29	67.32	8.03
Tozer Avenue, Between Olive Avenue and Almond Avenue	58.19	67.33	9.14
Westberry Boulevard, Between Sunset Avenue and Howard Avenue	57.09	59.29	2.20
Yosemite Avenue (SR 149), Between Cleveland Avenue /Tozer Street and Road 29	58.08	58.72	0.64
Yosemite Avenue (SR 149), Between Gateway Drive and Cleveland Ave/Tozer Street	60.16	61.57	1.41

Traffic noise levels were estimated using the FHWA Highway Traffic Noise Prediction model (FHWA-RD-77-108) Traffic volumes were derived from the traffic analysis prepared for this project and assume that peak-hour volumes constitute approximately ten percent of average-daily volumes. Roadway data and vehicle distribution percentages were based on traffic data obtained during the site reconnaissance conducted for this project, as well as heavy-duty truck distribution percentages obtained from the California Department of Transportation (Caltrans).

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan Noise Element includes the following noise standards and mitigation requirements associated with exposure to traffic noise. Specifically, policies N-5 and N-7 establish the maximum noise exposure levels that must be maintained, while policies N-1, N-2,

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N-9, N-10, and N-11 identify performance standards to mitigate traffic noise impacts to the extent feasible.

Policy N-1: The City will protect residential areas and other noise-sensitive uses from excessive noise by doing the following:

- 1) Requiring that land uses, roadways, and other sources do not create incompatible noise levels on adjacent parcels.*
- 2) Allowing homes or noise-sensitive uses to be developed only in places where existing and projected noise levels will meet the exterior noise guidelines and standards shown in Policies N-5 and N-6.*
- 3) Requiring that City decisions which would cause or allow an increase in noise created by stationary or mobile sources (such as development of noise-generating land uses or the construction of new or wider roadways) be informed by a noise analysis and accompanied by noise reduction measures to keep noise at acceptable levels.*

Policy N-2: To implement Policy N-1, the following shall apply:

- 1) No use regulated by the City shall be permitted to generate noise that would cause the ambient noise on any adjacent parcel to exceed the "completely compatible" 24-hour guidelines shown in Policy N-5 or the 30-minute noise standards in Policy N-6.*
- 2) The City shall ensure that noise mitigation to achieve a "completely compatible" 24-hour exterior noise level and conformance with the 30-minute exterior noise standard is provided in conjunction with any decision³ it makes that would cause a violation of item 1) above.*
- 3) Developers of new residential or other noise-sensitive uses which are placed in environments subject to existing or projected noise that exceeds the "completely compatible" guidelines in Policy N-5 shall be responsible for ensuring that acceptable exterior and interior noise levels will be achieved.*
- 4) The City shall ensure that transportation projects such as new or widened roadways include mitigation measures to maintain at least "tentatively compatible" noise levels as shown in Policy N-5. Mitigation for roadway noise need not be provided where "tentatively compatible" noise guidelines would be exceeded on vacant lands, but shall be installed as part of the transportation project where the noise would affect existing homes. In those instances where noise mitigation is not initially triggered, it shall be the responsibility of the project which places residential units on the vacant lands.*

³ Examples of decisions include roadway construction projects, public park construction, General Plan amendments, changes of zone, conditional use permits, and site plan review approval.

Policy N-5: The following are the maximum 24-hour exterior noise levels for land designated by this General Plan for residential, commercial/retail, and public parks.

TABLE N-B
EXTERIOR NOISE COMPATIBILITY GUIDELINES
FOR NOISE FROM ALL SOURCES, INCLUDING TRANSPORTATION NOISE
(24-HOUR DAY-NIGHT AVERAGE [CNEL/LDN])

Land Use Designations	Completely Compatible	Tentatively Compatible	Normally Incompatible	Completely Incompatible
All Residential (Single- and Multi-Family)	Less than 60 dBA	60-70 dBA	70-75 dBA	Greater than 75 dBA
All Commercial	Less than 70 dBA	70-75 dBA	Greater than 75 dBA	
Public Parks (Lands designated as Open Space on which public parks are located or planned)	Less than 65 dBA	65-70 dBA	70-75 dBA	Greater than 75 dBA

Table Notes:

- These guidelines apply to land designated by this General Plan for these uses. Residential, retail, or public parks which have been developed on land designated for other uses shall be subject to the exterior noise guidelines for the land on which they are located.
- Non-residential uses located on residentially designated land shall be subject to the exterior noise guidelines for residential lands.
- All uses on Commercial lands, including non-commercial uses, shall be subject to the standards for Commercial land.
- Land use designations not listed above do not have exterior noise compatibility standards. Land use designations with no exterior noise compatibility standard include office and industrial.
- Standards for public schools are set and enforced by the State of California and are not regulated by the City of Madera. Therefore, no standards for public schools are shown in Table N-B.

Policy N-7: The following are the City's standards for acceptable indoor noise levels for various types of land uses. These standards should receive special attention when projects are considered in "Tentatively Compatible" or "Normally Incompatible" areas.

- Noise created inside a use listed above shall not count toward the acceptable noise levels to be maintained in accordance with this policy.

TABLE N-D
MAXIMUM ACCEPTABLE INTERIOR NOISE LEVELS
CREATED BY EXTERIOR NOISE SOURCES

Land Use Type	Acceptable Noise Level (dBA Ldn or CNEL)
Residential Living and Sleeping Areas	45 dBA
Residential Living and Sleeping Areas where the dwelling unit is subject to noise from railroad tracks,	40 dBA

4.7 NOISE

Land Use Type	Acceptable Noise Level (dBA Ldn or CNEL)
aircraft overflights, or similar sources which produce clearly identifiable, discrete noise events (such as the passing of a train as opposed to relatively steady or constant noise sources such as roadways)	
Private & Semi Private School Classrooms ⁴	55 dBA
All Places of Work Other than School Classrooms	Conform with applicable state and federal workplace safety standards

Policy N-9: The City's preferences for providing noise mitigation are, in order (#1 is the most preferred, #5 the least):

- 1) Reduce noise at the source.*
- 2) If #1 is not practical, seek to designate land uses which are compatible with projected noise levels.*
- 3) If #1 or #2 are not practical, use distance from the source to reduce noise to acceptable levels.*
- 4) If #1, #2, or #3 are not practical, use buildings, berms, or landscaping or a combination of these to reduce exterior noise to acceptable levels. Use construction techniques (sound-reducing windows, etc.) to reduce interior noise to acceptable levels.*
- 5) The last measure which should be considered is the use of a sound wall to reduce noise to acceptable levels.*

Policy N-10: Where they are constructed, sound walls should be:

- 1) Considered only if proven effective by accompanying noise studies.*
- 2) Be visually attractive, complement the surroundings, and require a minimum of maintenance. (See Community Design Element references to sound wall designs).*
- 3) As small/low as possible consistent with the need to reduce noise to acceptable levels.*

Policy N-11: The City shall generally not require the installation of sound walls in front yard areas to reduce noise to acceptable levels in residential areas which were originally constructed without sound walls. The City shall emphasize other methods to reduce noise levels in these situations, and may accept exterior noise levels higher than those shown in Policy N-5 in order to minimize the construction of sound walls. Examples of "other methods" include:

⁴ Standards for public schools are set and enforced by the State of California and are not regulated by the City of Madera.

- *Installation of double- or triple-paned windows*
- *Installation of weather stripping or seals to keep noise out*
- *Replacing wooden fencing with walls or other materials with better sound reducing properties.*
- *Use of rubberized asphalt to reduce roadway noise*

Mitigation Measures

While implementation of the above policies and actions would reduce noise associated with traffic and transportation, some traffic and transportation noise impacts cannot be mitigated to a less than significant level due to the proximity of noise-sensitive land uses to major roadways and highways, and because noise attenuation may not be feasible in all circumstances. Examples of this include circumstances where the noise barriers would be required along roadway frontages and would be ineffective as a result of providing a break in the barrier for parcel access. Thus, this impact would be considered **significant and unavoidable**.

Rail Noise Impacts

Impact 4.7.3 Implementation of the proposed General Plan would expose future land uses and residents to train and rail related noise. This is considered a **significant** impact.

As discussed earlier in this section, there are two primary rail corridors within Madera, consisting of the Union Pacific (UP) Railroad and the Burlington Northern Santa Fe (BNSF) Railroad. The number of freight trains traveling along these corridors currently average approximately 14 trains per day along the UP Railroad and approximately 35 trains per day along the BNSF Railroad (Smith, 2008; Kent, 2008). The number of freight trains traveling along these segments can vary from day to day, depending on demand. Projected volumes for future years are not currently available; however, it is conceivable that train volumes could increase, depending on future demand.

Within the City of Madera, railroad noise levels are highly influenced by the sounding of locomotive warning horns. The use of locomotive horns is typically required, by law, on approach to public grade crossings. As depicted in **Table 4.7-4**, the predicted 60 dBA CNEL noise contour for the UP Railroad corridor would extend to a maximum distance of approximately 1,356 feet with the sounding of train horns. The predicted 60 dBA CNEL noise contour for the BNSF Railroad, with horns sounding, would extend to a maximum distance of approximately 2,505 feet. Future noise contours for major transportation sources, which include the UP and BNSF railroad corridors, are depicted in **Figure 4.7-6**. Implementation of the proposed General Plan Update would result in increased exposure of existing and future noise-sensitive land uses to railroad noise levels that could exceed the City's land use compatibility noise standards.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan Noise Element includes the following noise standards and mitigation requirements associated with exposure to transportation-related noise. Specifically, policies N-5 and N-7 establish the maximum noise exposure levels that must be maintained, while policies

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N-1, N-2, N-9, N-10, and N-11 identify performance standards to mitigate transportation-related noise impacts to the extent feasible.

Policy N-1: The City will protect residential areas and other noise-sensitive uses from excessive noise by doing the following:

- 1) Requiring that land uses, roadways, and other sources do not create incompatible noise levels on adjacent parcels.*
- 2) Allowing homes or noise-sensitive uses to be developed only in places where existing and projected noise levels will meet the exterior noise guidelines and standards shown in Policies N-5 and N-6.*
- 3) Requiring that City decisions which would cause or allow an increase in noise created by stationary or mobile sources (such as development of noise-generating land uses or the construction of new or wider roadways) be informed by a noise analysis and accompanied by noise reduction measures to keep noise at acceptable levels.*

Policy N-2: To implement Policy N-1, the following shall apply:

- 1) No use regulated by the City shall be permitted to generate noise that would cause the ambient noise on any adjacent parcel to exceed the "completely compatible" 24-hour guidelines shown in Policy N-5 or the 30-minute noise standards in Policy N-6.*
- 2) The City shall ensure that noise mitigation to achieve a "completely compatible" 24-hour exterior noise level and conformance with the 30-minute exterior noise standard is provided in conjunction with any decision⁵ it makes that would cause a violation of item 1) above.*
- 3) Developers of new residential or other noise-sensitive uses which are placed in environments subject to existing or projected noise that exceeds the "completely compatible" guidelines in Policy N-5 shall be responsible for ensuring that acceptable exterior and interior noise levels will be achieved.*
- 4) The City shall ensure that transportation projects such as new or widened roadways include mitigation measures to maintain at least "tentatively compatible" noise levels as shown in Policy N-5. Mitigation for roadway noise need not be provided where "tentatively compatible" noise guidelines would be exceeded on vacant lands, but shall be installed as part of the transportation project where the noise would affect existing homes. In those instances where noise mitigation is not initially triggered, it shall be the responsibility of the project which places residential units on the vacant lands.*

⁵ Examples of decisions include roadway construction projects, public park construction, General Plan amendments, changes of zone, conditional use permits, and site plan review approval.

Policy N-5: The following are the maximum 24-hour exterior noise levels for land designated by this General Plan for residential, commercial/retail, and public parks.

TABLE N-B
EXTERIOR NOISE COMPATIBILITY GUIDELINES
FOR NOISE FROM ALL SOURCES, INCLUDING TRANSPORTATION NOISE
(24-HOUR DAY-NIGHT AVERAGE [CNEL/LDN])

Land Use Designations	Completely Compatible	Tentatively Compatible	Normally Incompatible	Completely Incompatible
All Residential (Single- and Multi-Family)	Less than 60 dBA	60-70 dBA	70-75 dBA	Greater than 75 dBA
All Commercial	Less than 70 dBA	70-75 dBA	Greater than 75 dBA	
Public Parks (Lands designated as Open Space on which public parks are located or planned)	Less than 65 dBA	65-70 dBA	70-75 dBA	Greater than 75 dBA

Table Notes:

- These guidelines apply to land designated by this General Plan for these uses. Residential, retail, or public parks which have been developed on land designated for other uses shall be subject to the exterior noise guidelines for the land on which they are located.
- Non-residential uses located on residentially designated land shall be subject to the exterior noise guidelines for residential lands.
- All uses on Commercial lands, including non-commercial uses, shall be subject to the standards for Commercial land.
- Land use designations not listed above do not have exterior noise compatibility standards. Land use designations with no exterior noise compatibility standard include office and industrial.
- Standards for public schools are set and enforced by the State of California and are not regulated by the City of Madera. Therefore, no standards for public schools are shown in Table N-B.

Policy N-7: The following are the City's standards for acceptable indoor noise levels for various types of land uses. These standards should receive special attention when projects are considered in "Tentatively Compatible" or "Normally Incompatible" areas.

- Noise created inside a use listed above shall not count toward the acceptable noise levels to be maintained in accordance with this policy.

TABLE N-D
MAXIMUM ACCEPTABLE INTERIOR NOISE LEVELS
CREATED BY EXTERIOR NOISE SOURCES

Land Use Type	Acceptable Noise Level (dBA Ldn or CNEL)
Residential Living and Sleeping Areas	45 dBA
Residential Living and Sleeping Areas where the dwelling unit is subject to noise from railroad tracks,	40 dBA

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Land Use Type	Acceptable Noise Level (dBA Ldn or CNEL)
aircraft overflights, or similar sources which produce clearly identifiable, discrete noise events (such as the passing of a train as opposed to relatively steady or constant noise sources such as roadways)	
Private & Semi Private School Classrooms ⁶	55 dBA
All Places of Work Other than School Classrooms	Conform with applicable state and federal workplace safety standards

Policy N-9: The City's preferences for providing noise mitigation are, in order (#1 is the most preferred, #5 the least):

- 1) Reduce noise at the source.*
- 2) If #1 is not practical, seek to designate land uses which are compatible with projected noise levels.*
- 3) If #1 or #2 are not practical, use distance from the source to reduce noise to acceptable levels.*
- 4) If #1, #2, or #3 are not practical, use buildings, berms, or landscaping or a combination of these to reduce exterior noise to acceptable levels. Use construction techniques (sound-reducing windows, etc.) to reduce interior noise to acceptable levels.*
- 5) The last measure which should be considered is the use of a sound wall to reduce noise to acceptable levels.*

Policy N-10: Where they are constructed, sound walls should be:

- 1) Considered only if proven effective by accompanying noise studies.*
- 2) Be visually attractive, complement the surroundings, and require a minimum of maintenance. (See Community Design Element references to sound wall designs).*
- 3) As small/low as possible consistent with the need to reduce noise to acceptable levels.*

Policy N-11: The City shall generally not require the installation of sound walls in front yard areas to reduce noise to acceptable levels in residential areas which were originally constructed without sound walls. The City shall emphasize other methods to reduce noise levels in these situations, and may accept exterior noise levels higher than those shown in Policy N-5 in order to minimize the construction of sound walls. Examples of "other methods" include:

⁶ Standards for public schools are set and enforced by the State of California and are not regulated by the City of Madera.

- *Installation of double- or triple-paned windows*
- *Installation of weather stripping or seals to keep noise out*
- *Replacing wooden fencing with walls or other materials with better sound reducing properties.*
- *Use of rubberized asphalt to reduce roadway noise*

Mitigation Measures

While implementation of the above policies and actions would reduce noise associated with rail, some rail noise impacts cannot be mitigated to a less than significant level, particularly existing development that may be constrained due to age, placement, or other factors which limit the feasibility of mitigation. Thus, this impact would be considered **significant and unavoidable**.

Aircraft Noise Impacts

Impact 4.7.4 Implementation of the proposed General Plan Update would expose future land uses and residents to aircraft related noise. However, implementation of performance standards in the proposed Noise Element would mitigate this impact. This is considered a **less than significant impact**.

The proposed land uses in the General Plan Update are consistent with the noise policies and recommended land uses identified within the Madera County Airport Land Use Compatibility Plan for public use airports. However, development within the city, as well as future expansion of airport activities and associated noise contours, may result in increased exposure to aircraft noise levels at some nearby noise-sensitive land uses.

The Madera County Airport Land Use Commission's (ALUC) Airport Land Use Compatibility Plan was established to ensure that there are no direct conflicts with land uses, noise, or other issues that would impact the functionality and safety of airports located within the county, including the Madera Municipal Airport. The ALUC requires that general plans and zoning ordinances are consistent with Airport Environs Land Use Plans, which contain noise contours, restrictions for types of construction and building heights in navigable air space, as well as requirements impacting the establishment or construction of sensitive uses within close proximity to airports.

Projected future (year 2010) noise contours for the Madera Municipal Airport are depicted in **Figure 4.7-4**. Projected future (year 2030) noise contours were not available for this airport at the time that this EIR was prepared. However, projected noise contours would be anticipated to expand in future years as development and demand for airport services increases.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan Noise Element includes the following noise standards and mitigation requirements associated with exposure to aircraft-related noise. Specifically, policies N-5 and N-7 establish the maximum noise exposure levels that must be maintained, while policies N-1, N-2, N-9, and N-10 identify performance standards to mitigate transportation-related noise impacts to the extent feasible. Policy N-15 would require the recordation of an aviation easement that would inform future development of occasional noise associated with airport operations.

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Policy N-1: The City will protect residential areas and other noise-sensitive uses from excessive noise by doing the following:

- 1) Requiring that land uses, roadways, and other sources do not create incompatible noise levels on adjacent parcels.
- 2) Allowing homes or noise-sensitive uses to be developed only in places where existing and projected noise levels will meet the exterior noise guidelines and standards shown in Policies N-5 and N-6.
- 3) Requiring that City decisions which would cause or allow an increase in noise created by stationary or mobile sources (such as development of noise-generating land uses or the construction of new or wider roadways) be informed by a noise analysis and accompanied by noise reduction measures to keep noise at acceptable levels.

Policy N-2: To implement Policy N-1, the following shall apply:

- 1) No use regulated by the City shall be permitted to generate noise that would cause the ambient noise on any adjacent parcel to exceed the “completely compatible” 24-hour guidelines shown in Policy N-5 or the 30-minute noise standards in Policy N-6.
- 2) The City shall ensure that noise mitigation to achieve a “completely compatible” 24-hour exterior noise level and conformance with the 30-minute exterior noise standard is provided in conjunction with any decision⁷ it makes that would cause a violation of item 1) above.
- 3) Developers of new residential or other noise-sensitive uses which are placed in environments subject to existing or projected noise that exceeds the “completely compatible” guidelines in Policy N-5 shall be responsible for ensuring that acceptable exterior and interior noise levels will be achieved.
- 4) The City shall ensure that transportation projects such as new or widened roadways include mitigation measures to maintain at least “tentatively compatible” noise levels as shown in Policy N-5. Mitigation for roadway noise need not be provided where “tentatively compatible” noise guidelines would be exceeded on vacant lands, but shall be installed as part of the transportation project where the noise would affect existing homes. In those instances where noise mitigation is not initially triggered, it shall be the responsibility of the project which places residential units on the vacant lands.

Policy N-5: The following are the maximum 24-hour exterior noise levels for land designated by this General Plan for residential, commercial/retail, and public parks.

⁷ Examples of decisions include roadway construction projects, public park construction, General Plan amendments, changes of zone, conditional use permits, and site plan review approval.

TABLE N-B
EXTERIOR NOISE COMPATIBILITY GUIDELINES
FOR NOISE FROM ALL SOURCES, INCLUDING TRANSPORTATION NOISE
(24-HOUR DAY-NIGHT AVERAGE [CNEL/LDN])

Land Use Designations	Completely Compatible	Tentatively Compatible	Normally Incompatible	Completely Incompatible
<i>All Residential (Single- and Multi-Family)</i>	<i>Less than 60 dBA</i>	<i>60-70 dBA</i>	<i>70-75 dBA</i>	<i>Greater than 75 dBA</i>
<i>All Commercial</i>	<i>Less than 70 dBA</i>	<i>70-75 dBA</i>	<i>Greater than 75 dBA</i>	
<i>Public Parks (Lands designated as Open Space on which public parks are located or planned)</i>	<i>Less than 65 dBA</i>	<i>65-70 dBA</i>	<i>70-75 dBA</i>	<i>Greater than 75 dBA</i>

Table Notes:

- *These guidelines apply to land designated by this General Plan for these uses. Residential, retail, or public parks which have been developed on land designated for other uses shall be subject to the exterior noise guidelines for the land on which they are located.*
- *Non-residential uses located on residentially designated land shall be subject to the exterior noise guidelines for residential lands.*
- *All uses on Commercial lands, including non-commercial uses, shall be subject to the standards for Commercial land.*
- *Land use designations not listed above do not have exterior noise compatibility standards. Land use designations with no exterior noise compatibility standard include office and industrial.*
- *Standards for public schools are set and enforced by the State of California and are not regulated by the City of Madera. Therefore, no standards for public schools are shown in Table N-B.*

Policy N-7: *The following are the City's standards for acceptable indoor noise levels for various types of land uses. These standards should receive special attention when projects are considered in "Tentatively Compatible" or "Normally Incompatible" areas.*

- *Noise created inside a use listed above shall not count toward the acceptable noise levels to be maintained in accordance with this policy.*

TABLE N-D
MAXIMUM ACCEPTABLE INTERIOR NOISE LEVELS
CREATED BY EXTERIOR NOISE SOURCES

Land Use Type	Acceptable Noise Level (dBA Ldn or CNEL)
Residential Living and Sleeping Areas	45 dBA
Residential Living and Sleeping Areas where the dwelling unit is subject to noise from railroad tracks,	40 dBA

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Land Use Type	Acceptable Noise Level (dBA Ldn or CNEL)
aircraft overflights, or similar sources which produce clearly identifiable, discrete noise events (such as the passing of a train as opposed to relatively steady or constant noise sources such as roadways)	
Private & Semi Private School Classrooms ⁸	55 dBA
All Places of Work Other than School Classrooms	Conform with applicable state and federal workplace safety standards

Policy N-9: The City's preferences for providing noise mitigation are, in order (#1 is the most preferred, #5 the least):

- 1) Reduce noise at the source.*
- 2) If #1 is not practical, seek to designate land uses which are compatible with projected noise levels.*
- 3) If #1 or #2 are not practical, use distance from the source to reduce noise to acceptable levels.*
- 4) If #1, #2, or #3 are not practical, use buildings, berms, or landscaping or a combination of these to reduce exterior noise to acceptable levels. Use construction techniques (sound-reducing windows, etc.) to reduce interior noise to acceptable levels.*
- 5) The last measure which should be considered is the use of a sound wall to reduce noise to acceptable levels.*

Policy N-15: The City will require that aviation easements be recorded in conjunction with the approval of development projects on properties affected by airport noise as identified in the Airport Land Use Compatibility Plan.

Implementation of the applicable policies and standards contained in the City's proposed General Plan Update would ensure that future development near Madera Municipal Airport would either meet applicable noise criteria for land use compatibility and/or include noise attenuation features to meet applicable noise standards. Accordingly, proposed future development projects located within air traffic patterns, corridors, and airport influence zones would be reviewed to ensure continued consistency with the Madera County Airport Land Use Compatibility Plan. With incorporation of the proposed General Plan policies, this impact would be considered **less than significant**.

Mitigation Measures

None required.

⁸ Standards for public schools are set and enforced by the State of California and are not regulated by the City of Madera.

Stationary Noise Impacts

Impact 4.7.5 As additional development occurs throughout the city, the potential exists for new noise-sensitive land uses to encroach upon existing or proposed stationary noise sources. As a result, this impact is considered **potentially significant**.

Implementation of the proposed General Plan could result in the future development of land uses that generate noise levels in excess of applicable City noise standards. Such land uses may include commercial, industrial, and recreational uses and could expose noise-sensitive land uses to excessive noise levels. In addition, new noise-sensitive land uses could be located in areas of existing stationary noise sources.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan Noise Element includes policies that address stationary noise impacts. Specifically, policies N-5, N-6, and N-7 establish the maximum noise exposure levels that must be maintained, while policies N-1, N-2, N-9, N-10, and N-11 identify performance standards to mitigate potential noise impacts to meet City noise standards.

Policy N-1: The City will protect residential areas and other noise-sensitive uses from excessive noise by doing the following:

- 1) Requiring that land uses, roadways, and other sources do not create incompatible noise levels on adjacent parcels.*
- 2) Allowing homes or noise-sensitive uses to be developed only in places where existing and projected noise levels will meet the exterior noise guidelines and standards shown in Policies N-5 and N-6.*
- 3) Requiring that City decisions which would cause or allow an increase in noise created by stationary or mobile sources (such as development of noise-generating land uses or the construction of new or wider roadways) be informed by a noise analysis and accompanied by noise reduction measures to keep noise at acceptable levels.*

Policy N-2: To implement Policy N-1, the following shall apply:

- 1) No use regulated by the City shall be permitted to generate noise that would cause the ambient noise on any adjacent parcel to exceed the "completely compatible" 24-hour guidelines shown in Policy N-5 or the 30-minute noise standards in Policy N-6.*
- 2) The City shall ensure that noise mitigation to achieve a "completely compatible" 24-hour exterior noise level and conformance with the 30-minute exterior noise standard is provided in conjunction with any decision⁹ it makes that would cause a violation of item 1) above.*

⁹ Examples of decisions include roadway construction projects, public park construction, General Plan amendments, changes of zone, conditional use permits, and site plan review approval.

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- 3) Developers of new residential or other noise-sensitive uses which are placed in environments subject to existing or projected noise that exceeds the "completely compatible" guidelines in Policy N-5 shall be responsible for ensuring that acceptable exterior and interior noise levels will be achieved.
- 4) The City shall ensure that transportation projects such as new or widened roadways include mitigation measures to maintain at least "tentatively compatible" noise levels as shown in Policy N-5. Mitigation for roadway noise need not be provided where "tentatively compatible" noise guidelines would be exceeded on vacant lands, but shall be installed as part of the transportation project where the noise would affect existing homes. In those instances where noise mitigation is not initially triggered, it shall be the responsibility of the project which places residential units on the vacant lands.

Policy N-5: The following are the maximum 24-hour exterior noise levels for land designated by this General Plan for residential, commercial/retail, and public parks.

TABLE N-B
EXTERIOR NOISE COMPATIBILITY GUIDELINES
FOR NOISE FROM ALL SOURCES, INCLUDING TRANSPORTATION NOISE
(24-HOUR DAY-NIGHT AVERAGE [CNEL/LDN])

Land Use Designations	Completely Compatible	Tentatively Compatible	Normally Incompatible	Completely Incompatible
All Residential (Single- and Multi-Family)	Less than 60 dBA	60-70 dBA	70-75 dBA	Greater than 75 dBA
All Commercial	Less than 70 dBA	70-75 dBA	Greater than 75 dBA	
Public Parks (Lands designated as Open Space on which public parks are located or planned)	Less than 65 dBA	65-70 dBA	70-75 dBA	Greater than 75 dBA

Table Notes:

- These guidelines apply to land designated by this General Plan for these uses. Residential, retail, or public parks which have been developed on land designated for other uses shall be subject to the exterior noise guidelines for the land on which they are located.
- Non-residential uses located on residentially designated land shall be subject to the exterior noise guidelines for residential lands.
- All uses on Commercial lands, including non-commercial uses, shall be subject to the standards for Commercial land.
- Land use designations not listed above do not have exterior noise compatibility standards. Land use designations with no exterior noise compatibility standard include office and industrial.
- Standards for public schools are set and enforced by the State of California and are not regulated by the City of Madera. Therefore, no standards for public schools are shown in Table N-B.

Policy N-6: The following are the City's standards for maximum exterior non-transportation noise levels to which land designated for residential land uses may be exposed for any 30-minute period on any day.

TABLE N-C
EXTERIOR NOISE LEVEL STANDARDS FOR
NON-TRANSPORTATION NOISE, MEASURED AS DBA LEQ (30 MINUTES)

Land Use Type	Time Period	Maximum Noise Level (dBA)
Single-Family Homes and Duplexes	10 p.m. to 7 a.m.	50
	7 a.m. to 10 p.m.	60
Multiple Residential 3 or More Units Per Building (Triplex +)	10 p.m. to 7 a.m.	55
	7 a.m. to 10 p.m.	60

Table Notes:

- Where existing ambient noise levels exceed these standards, the ambient noise level shall be highest allowable noise level as measured in dBA Leq(30 minutes).
- The noise levels specified above shall be lowered by 5 dB for simple tonal noises (such as humming sounds), noises consisting primarily of speech or music, or for recurring impulsive noises (such as pile drivers, punch presses, and similar machinery). Example: the Single Family/Duplex standard from 10 p.m. to 7 a.m. for these types of noises is 45 dBA.
- The City may impose exterior noise standards which are less restrictive than those specified above, provided that:
 - 4) The noise impact on the residential or other noise-sensitive use is addressed in an environmental analysis,
 - 5) A finding is made by the approving body stating the reasons for accepting a higher exterior noise standard, and
 - 6) Interior noise standards will comply with those identified in Policy N-7.

Policy N-7: The following are the City's standards for acceptable indoor noise levels for various types of land uses. These standards should receive special attention when projects are considered in "Tentatively Compatible" or "Normally Incompatible" areas.

- Noise created inside a use listed above shall not count toward the acceptable noise levels to be maintained in accordance with this policy.

TABLE N-D
MAXIMUM ACCEPTABLE INTERIOR NOISE LEVELS
CREATED BY EXTERIOR NOISE SOURCES

Land Use Type	Acceptable Noise Level (dBA Ldn or CNEL)
Residential Living and Sleeping Areas	45 dBA
Residential Living and Sleeping Areas where the dwelling unit is subject to noise from railroad tracks, aircraft overflights, or similar sources which produce clearly identifiable, discrete noise events (such as the passing of a train as opposed to relatively steady or constant noise sources such as roadways)	40 dBA
Private & Semi Private School Classrooms ¹⁰	55 dBA
All Places of Work Other than School Classrooms	Conform with applicable state and federal workplace safety standards

¹⁰ Standards for public schools are set and enforced by the State of California and are not regulated by the City of Madera.

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Policy N-9: The City's preferences for providing noise mitigation are, in order (#1 is the most preferred, #5 the least):

- 1) Reduce noise at the source.*
- 2) If #1 is not practical, seek to designate land uses which are compatible with projected noise levels.*
- 3) If #1 or #2 are not practical, use distance from the source to reduce noise to acceptable levels.*
- 4) If #1, #2, or #3 are not practical, use buildings, berms, or landscaping or a combination of these to reduce exterior noise to acceptable levels. Use construction techniques (sound-reducing windows, etc.) to reduce interior noise to acceptable levels.*
- 5) The last measure which should be considered is the use of a sound wall to reduce noise to acceptable levels.*

Policy N-10: Where they are constructed, sound walls should be:

- 1) Considered only if proven effective by accompanying noise studies.*
- 2) Be visually attractive, complement the surroundings, and require a minimum of maintenance. (See Community Design Element references to sound wall designs).*
- 3) As small/low as possible consistent with the need to reduce noise to acceptable levels.*

Policy N-11: The City shall generally not require the installation of sound walls in front yard areas to reduce noise to acceptable levels in residential areas which were originally constructed without sound walls. The City shall emphasize other methods to reduce noise levels in these situations, and may accept exterior noise levels higher than those shown in Policy N-5 in order to minimize the construction of sound walls. Examples of "other methods" include:

- Installation of double- or triple-paned windows*
- Installation of weather stripping or seals to keep noise out*
- Replacing wooden fencing with walls or other materials with better sound reducing properties.*
- Use of rubberized asphalt to reduce roadway noise*

Mitigation Measures

Implementation of the above policies and actions would reduce noise associated with new stationary noise sources and the placement of new noise-sensitive land uses over which the City has jurisdiction (e.g., commercial and industrial sites, residential uses). However, some stationary noise impacts cannot be mitigated to a less than significant level due to limitations on the City to control the exact placement of substantial noise-generating uses (e.g., school facilities) in

proximity to noise-sensitive land uses (e.g., residential). Accordingly, stationary source noise levels from activities on uses for which the City has limited control could result in noise levels that exceed the City's maximum allowable noise standards. Thus, this impact is considered **significant and unavoidable**. No additional feasible mitigation has been identified that would further reduce this impact.

Groundborne Vibration

Impact 4.7.6 Subsequent development under the proposed General Plan Update would not be exposed to significant groundborne vibration impacts. This impact is considered **less than significant**.

The effects of ground vibration can vary from no perceptible effects at the lowest levels, low rumbling sounds and detectable vibrations at moderate levels, and slight damage to nearby structures at the highest levels. At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in structural damage.

There are no federal, state, or local regulatory standards for vibration. However, various criteria have been established to assist in the evaluation of vibration impacts. For instance, the California Department of Transportation (Caltrans) has developed vibration criteria based on human perception and structural damage risks. For most structures, Caltrans considers a peak-particle velocity (ppv) threshold of 0.2 inches per second (in/sec) to be the level at which architectural damage (i.e., minor cracking of plaster walls and ceilings) to normal structures may occur. Below 0.10 in/sec there is virtually no risk of 'architectural' damage to normal buildings. Damage to historic or ancient buildings could occur at levels of 0.08 in/sec ppv. In terms of human annoyance, continuous vibrations in excess of 0.1 in/sec ppv are identified by Caltrans as the minimum level perceptible level for ground vibration. Short periods of ground vibration in excess of 0.2 in/sec ppv can be expected to result in increased levels of annoyance to people within buildings (Caltrans, 2002b).

Groundborne vibration sources located within the city that could potentially affect future development would be primarily associated with railroad operations. Construction activities could also result in short-term groundborne vibration levels that could affect nearby sensitive land uses. Groundborne vibration levels and associated impacts associated with train travel along area roadways (i.e., UP and BNSF railroads) and short-term construction activities are discussed in more detail, as follows.

Railroads

Groundborne vibration levels associated with railroad operations are dependent on various factors, including track type and condition, train speeds, site conditions, and train characteristics, such as the number of engines, number of cars, weight, and wheel type and condition. Site and geologic conditions can also influence how vibration propagates at increasing distance from the track. Based on Caltrans vibration measurement data, the highest train vibration level measured was 0.36 in/sec at 10 feet. Based on this level, Caltrans prepared a "drop-off curve" used to estimate maximum train vibration levels at distance from the track centerline. The curve represents maximum expected vibration levels from trains and, thus, is considered by Caltrans to be "very conservative" (Caltrans, 2002b).

Based on the Caltrans drop-off curve for train vibration levels, predicted maximum groundborne vibrations levels along the BNSF and UP railroad corridors would not exceed 0.20 in/sec ppv

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beyond approximately 7.5 feet from the track centerline, the level above which may cause architectural damage for typical building construction or increased levels of annoyance for individuals in buildings (Caltrans, 2002b). The proposed General Plan Update would not result in the development of new land uses within 7.5 feet of railroad corridors. As a result, this impact would be considered **less than significant**.

Construction Activities

With the exception of pavement breaking and pile driving, construction activities and related equipment typically generate groundborne vibration levels of less than 0.2 in/sec, which is the architectural damage risk threshold recommended by Caltrans. Based on Caltrans measurement data, off-road tractors, dozers, earthmovers and haul trucks generate groundborne vibration levels of less than 0.10 in/sec, or one half of the architectural damage risk level, at 10 feet. The highest vibration level associated with pavement breaker was 2.88 in/sec at 10 feet. During pile driving, vibration levels near the source depend mainly on the soil's penetration resistance as well as the type of pile driver used. Impact pile drivers tend to generate higher vibration levels than vibratory or drilled piles. Groundborne vibration levels of pile drivers can range from approximately 0.17 to 1.5 in/sec ppv. Caltrans indicates that the distance to the 0.2 in/sec ppv criterion for pile driving activities would occur at a distance of approximately 50 feet.

However, as with construction-generated noise levels, pile driving can result in a high potential for human annoyance, and pile-driving activities are typically considered as potentially significant if these activities are performed within 200 feet of permanent structures (Caltrans, 2002b). This would be mitigated through compliance with Section 3, Chapter 11 (Noise Control) of the City's Municipal Code that restricts construction activities to between the hours of 6:00 a.m. and 8:00 p.m. Thus, this impact would be **less than significant**.

Mitigation Measures

None required.

4.7.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The land use policies in the proposed City of Madera General Plan Update would provide direction for growth within the city limits, while the Madera County General Plan policies provides direction for growth outside the city limits, but within the Planning Area boundaries (until land areas are annexed into the City). Thus, the setting for this cumulative analysis includes existing, proposed, approved, and planned projects in the City of Madera General Plan Planning Area and surrounding portions of unincorporated Madera County as well as full buildout of the City of Madera General Plan Planning Area as proposed in the General Plan Update (occurring after year 2030). Development in the region identified in Section 4.0 would change the intensity of land uses in the region. In particular, this cumulative development scenario would increase development in the southern portion of Madera County and would provide additional housing, employment, shopping, and recreational opportunities. This development, in combination with regional growth, would increase traffic noise as well as opportunities for stationary noise conflicts.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Noise

Impact 4.7.7 Implementation of the proposed General Plan Update along with potential development of the Planning Area could result in increased noise conflicts. This is considered a **cumulatively considerable** and a **significant and unavoidable** impact.

Projected future (year 2030) noise contours for major roadways within the city and predicted increases in traffic noise levels associated with future development are summarized in **Table 4.7-7** and **Table 4.7-8**, respectively (refer to Impact 4.7-2). Projected noise contours for major transportation noise sources are depicted in **Figure 4.7-6**. Buildout of the Planning Area as set forth in the proposed General Plan Update would result in additional traffic along these roadways and result in increased noise.

In addition, buildout of the Planning Area could result in additional stationary noise conflicts beyond anticipated development by the year 2030.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan contains several goals, policies, and action items that would assist in reducing agricultural land conversion and conflict impacts. The reader is referred to Impacts 4.7.1 through 4.7.5 for those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards to assist in reducing (though not fully mitigating) this impact.

Mitigation Measures

While implementation of the above policies and actions would reduce noise associated with new stationary noise sources and with traffic noise, some noise impacts cannot be mitigated to a less than significant level due to limitations on the City to control the exact placement of substantial noise-generating uses (e.g., school facilities) in proximity to noise-sensitive land uses (e.g., residential), and it will not be feasible to ensure that no existing residential uses will be exposed to future traffic noise levels in excess of the City's noise standards. Accordingly, stationary source noise levels and traffic noise from activities on uses for which the City has limited control could result in noise levels that exceed the City's maximum allowable noise standards. Thus, this impact is considered **cumulatively considerable** and **significant and unavoidable**. No additional feasible mitigation has been identified that would further reduce this impact.

4.7 NOISE

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4.8 GEOLOGY AND SOILS

This section discusses the geologic, soil, and mineral resources conditions of the Planning Area and identifies the related potential environmental impacts and development constraints if the proposed General Plan Update were implemented. This analysis is based on a review of statutory law, local planning documents, and publications by the California Department of Conservation, California Geological Survey (formerly the Division of Mines and Geology), and the Division of Oil, Gas, and Geothermal Resources.

4.8.1 EXISTING SETTING

TOPOGRAPHY AND LOCAL GEOLOGY

Existing Setting

The City of Madera and the greater proposed General Plan Update Planning Area are located in the Great Valley Geomorphic Province of California, more commonly referred to as the San Joaquin Valley. The San Joaquin Valley is made up largely of alluvial fans sourced from the Sierra Nevada Range to the east, the Coastal Range to the west, and to some degree the Tehachapi Mountains to the south. Weathering of these mountain ranges combined with surface water flows and flooding have resulted in accumulation of alluvial (river), lacustrine (lake), and marine (ocean) deposits throughout the San Joaquin Valley at extreme depths of many thousands of feet (Madera County, 1995). Alluvium depths in the vicinity of the City of Madera average 500 feet, with depths generally increasing from east to west.

The Planning Area is generally flat with some areas of undulating slopes. The Planning Area contains the Fresno River and several smaller drainages, such as Schmidt and Cottonwood creeks, that have higher slopes in some locations along their length. Much of the topography along these banks has been heavily modified as a result of flood control and other efforts.

The Planning Area slopes generally downhill from northeast to southwest, with the highest elevations (about 315 feet above mean sea level (msl)) located in the vicinity of Madera Lake and the lowest elevations (about 210 feet above msl) located west of the wastewater treatment plant.

GEOTECHNICAL CONDITIONS

Structural Support

According to the U.S. Geologic Survey (USGS) and the U.S. Department of Agriculture, Natural Resources Conservation Service, the Planning Area contains 23 different soils, in addition to "gravel pits," "riverwash," and "towns," which are not classified beyond their descriptive names. The types of soils located in the Planning Area, the approximate acres of each type, and their general drainage and permeability characteristics are listed in **Table 4.8-1** below.

TABLE 4.8-1
SOIL TYPES AND ASSOCIATED ACREAGE – CITY OF MADERA GENERAL PLAN PLANNING AREA

Soil Class	Area (Acres) ¹	% of Total Area ²	Slopes (Percent)	Drainage	Permeability	Shrink/Swell Potential
Alamo	806.2	1.2	0 to 1	Poor	Very Slow	High
Atwater	2,195.1	3.3	0 to 8	Good	Rapid	Low

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Soil Class	Area (Acres) ¹	% of Total Area ²	Slopes (Percent)	Drainage	Permeability	Shrink/Swell Potential
Borden	705.4	1.0	0 to 1	Moderate	Moderately Slow	Moderate
Cajon	0.2	Less than 0.1	0 to 1	Excessive	Rapid	Low
Chino	150.0	0.2	0 to 1	Poor	Moderately Slow	Moderate
Cometa	11,343.6	16.8	0 to 15	Moderate	Very Slow	High
Delhi	505.7	0.8	0 to 8	Excessive	Rapid	Low
Fresno	21.9	Less than 0.1	0 to 1	Moderate	Very Slow	Low
Grangeville	5,262.3	7.8	0 to 1	Poor	Moderately Rapid	Low
Greenfield	3,437.3	5.1	0 to 8	Good	Moderately Rapid	Low
Hanford	9,009.0	13.4	0 to 3	Good	Moderately Rapid	Low
Lewis	338.7	0.5	0 to 1	Good	Slow	High
Madera	1,963.1	2.9	0 to 3	Moderate to Good	Very Slow	High
Montpellier	88.6	0.1	3 to 15	Moderate to Good	Moderately Slow	Moderate
Pachappa	7,175.6	10.6	0 to 1	Good	Moderate	Moderate
Ramona	56.4	0.1	0 to 3	Good	Moderately Slow	Low
San Joaquin	11,978.2	17.8	0 to 8	Moderate to Good	Very Slow	High
Traver	2,680.8	4.0	0 to 1	Moderate to Poor	Moderate to Slow	Low
Trigo	119.5	0.2	0 to 15	Good	Moderately Rapid	Low
Tujunga	5,083.1	7.5	0 to 8	Excessive	Rapid	Low
Visalia	1,341.5	2.0	0 to 3	Good	Rapid	Low
Whitney	956.3	1.4	3 to 15	Good	Moderate to Moderately Rapid	Low to Moderate
Wunje	5.5	Less than 0.1	0 to 1	Moderate to Good	Moderate to Moderately Rapid	Low

Source: U.S. Department of Agriculture, 2008a; U.S. Department of Agriculture, 2008b

Notes: ¹The sum of the acres listed does not equal the total of 67,408.8 acres due to the exclusion of non-soil and non-surveyed areas such as water, gravel pits, and towns. These are not strictly soil classes and are thus not included in this list. However, these acreages are included in the total acres.

²Percent of total area includes area assigned to water, gravel pits, and towns. As such, the sum of the percentages does not total 100.

GEOLOGIC HAZARDS FAULTS AND SEISMICITY

Faults

Earthquakes are generally expressed in terms of intensity and magnitude. Intensity is based on the observed effects of ground shaking on people, buildings, and natural features. An earthquake's intensity varies from region to region, depending on the location of the observer with respect to the earthquake epicenter. **Table 4.8-2** provides a description and a comparison of intensity and magnitude.

TABLE 4.8-2
MAGNITUDE AND INTENSITY COMPARISON

Magnitude	Typical Maximum Modified Mercalli Intensity
1.0 to 3.0	I
3.0 to 3.9	II - III
4.0 to 4.9	IV – V
5.0 to 5.9	VI – VII
6.0 to 6.9	VII to IX
7.0 or higher	VIII or higher

Source: USGS, 2009

An earthquake's magnitude is related to the amount of seismic energy released at the hypocenter of the earthquake. Magnitude is based on the amplitude of the earthquake waves recorded on instruments which have a common calibration. The magnitude or strength of earth movement associated with seismic activity is typically quantified using the Richter scale. This scale is a measure of the strength of an earthquake or strain energy released by it, as determined by seismographic observations. This is a logarithmic value originally defined by Charles Richter (1935). An increase of one unit of magnitude (for example, from 4.6 to 5.6) represents a 10-fold increase in wave amplitude on a seismogram, or approximately a 30-fold increase in the energy released. In other words, a magnitude 6.7 earthquake releases over 900 times (30 times 30) the energy of a 4.7 earthquake.

The Modified Mercalli (MM) Intensity Scale is used in the United States to evaluate earthquake movements. The MM scale is composed of 12 increasing levels of intensity designated by Roman numerals. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and, finally, total destruction. The levels range from imperceptible shaking to catastrophic destruction. The MM scale does not have a mathematical basis; instead, it is an arbitrary ranking based on observed effects. The lower numbers of the intensity scale generally deal with the manner in which the earthquake is felt by people. The higher numbers of the scale are based on observed structural damage. **Table 4.8-3** describes the typical effects observed at locations near the epicenter of earthquakes of different magnitudes.

TABLE 4.8-3
TYPICAL EFFECTS OF EARTHQUAKE ACTIVITY

Typical Maximum Modified Mercalli Intensity	Typical Effects of Earthquake Activity
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations are similar to the passing of a truck.

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Typical Maximum Modified Mercalli Intensity	Typical Effects of Earthquake Activity
IV	Felt indoors by many, outdoors by few during the day. At night, some are awakened. Dishes, windows, and doors disturbed; walls make cracking sound. Sensation of a heavy truck striking building was felt. Standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage light.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures. Some chimneys broken.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, and walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level are distorted. Objects thrown into air.

Source: USGS, 2009

Five major active and potentially active faults are close to the Planning Area: the San Andreas, San Joaquin, Ortigalita, Owens Valley, and Melones faults. Of these, the San Andreas and the Owens Valley faults are expected to be the sources of future major earthquakes. No active earthquake faults are located in the Planning Area—the closest active faults are 50 or more miles distant.

Ground Shaking

Ground shaking is the motion that occurs as energy is released during fault-related activity and is considered the most damaging of all seismic activities. The State of California Department of Conservation, California Geological Survey (CGS) calculates earthquake shaking hazards by projecting earthquake rates based on earthquake history and fault slip rates. As of 2007, CGS has used new fault parameters developed for probability calculations, further refining the national system of seismic zones. As part of a cooperative project between USGS and CGS, probabilistic seismic hazard maps and fault parameter maps have been developed for the entire state that provide an estimate of future earthquakes.

Probabilistic Seismic Hazards

The probabilistic seismic hazard models consider earthquakes on faults and in background sources (random earthquakes). The activity rates for any given fault includes consideration for the slip rate, or how quickly one side of the fault slides against the other, as well as the length and/or area of the fault rupture (if one occurs). The model itself contains data for all recorded earthquakes of magnitude 4.0 and greater. However, smaller earthquakes can have a

measurable effect on future probability as they release less stored energy than larger quakes. To account for the effect of these smaller earthquakes, the probabilistic models incorporate background "random" earthquake factors that, in part, account for the effect of earthquakes smaller than magnitude 4.0.

According to the California Department of Conservation, Madera is in an area in which there is a 10 percent chance in the next 50 years for an earthquake that would result in "strong" ground shaking (as felt by people) and "light" damage to structures. (By comparison, portions of Los Angeles, an area of much higher seismic risk, are expected to experience "violent" ground shaking and "heavy" damage sometime within the next 50 years.) This shaking increases greatly in the northeastern portion of Madera County that lies within the Sierra Nevada range – which at its maximum could exceed 30 to 40 percent the acceleration of gravity. By comparison, portions of the Los Angeles basin, an area of much higher seismic risk, are expected to exceed 80 percent the acceleration of gravity within 50 years.

The Ground Motion Map further refines expected ground motion into three factors: peak ground acceleration (Pga), spectral acceleration at short periods (Sa 0.2 sec), and spectral acceleration at long periods (Sa 1.0 sec). Peak ground acceleration indicates the highest expected acceleration of a single point located on the ground. However, this is not truly indicative of shaking experienced by a building. For this purpose, spectral acceleration is calculated to simulate a particle mass on a massless vertical rod, thereby allowing for the exaggerated motion and associated acceleration effects of a vertical building. The expected Pga, Sa 0.2 sec, and Sa 1.0 sec for the three primary ground materials within the proposed General Plan Update Planning Area (firm rock, soft rock, and alluvium) are shown in **Table 4.8-4** below.

TABLE 4.8-4
PROBABILISTIC GROUND MOTION IN THE GENERAL PLAN PLANNING AREA
10 PERCENT EXCEEDANCE IN 50 YEARS

Motion Type	Transmission Material		
	Firm Rock	Soft Rock	Alluvium
Pga	0.126	0.137	0.180
Sa 0.2 Sec	0.291	0.317	0.042
Sa 1.0 Sec	0.137	0.175	0.246

Source: California Department of Conservation, 2008

The Fault Parameters Map indicates faults and fault zones considered at risk for generating significant seismic shaking. The County of Madera, and thus the entire proposed General Plan Update Planning Area, lies outside any identified faults or fault areas identified in the State Fault Parameters Map. The USGS Earthquake Hazards Program provides digital mapping of faults known to have been the source of magnitude 6.0 and greater earthquakes in recent geologic history. Those faults known to have significant activity within the last 15,000 years and within 100 miles of the proposed General Plan Update Planning Area are shown in **Table 4.8-5** below.

No earthquakes of magnitude 5.5 or greater have ever been recorded in the Madera area, nor have there been reports of damage in the area from earthquakes of such magnitude outside Madera County. The most recent notable earthquake affecting Madera occurred on May 30, 2003, with a magnitude of 3.1 and an epicenter located approximately 6 miles northwest of Madera.

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**TABLE 4.8-5
PRE-QUATERNARY FAULTS WITHIN 100 MILES OF THE CITY OF MADERA**

Time of Last Activity	Fault/Zone Name	Section (if applicable)	Distance (miles)	Direction
0–150 years	San Andreas Fault Zone	Creeping	65	SW
		Santa Cruz	92	W
	Calaveras Fault Zone	Paicines	71	W
		Southern Calaveras	75	W
		Central Calaveras	79	W
	Hartley Springs Fault Zone	-	76	NE
	Hilton Creek Fault	-	80	NE
	Unnamed Faults in Volcanic Tablelands	-	95	NE
	Owens Valley Fault Zone	1822 Rupture	99	E
150–15,000 years	Ortogonalita Fault Zone	Piedra Azul	47	W
		Little Panoche Valley	49	W
		Los Banos	56	W
		Cottonwood Arm	62	W
	San Andreas Fault Zone	Creeping	65	SW
		Parkfield	79	S
		Santa Cruz Mountains	98	W
	Quien Sabe Fault	-	70	W
	Calaveras Fault Zone	Paicines	71	W
		Southern Calaveras	75	W
		Central Calaveras	87	W
	Silver Lake Fault	-	77	NE
	Hilton Creek Fault	-	80	NE
	Hartley Springs Fault Zone	-	80	NE
	Round Valley Fault	-	84	E
	Mono Lake Fault	-	88	NE
	Zyante-Vergeles Fault Zone	-	89	W
	Greenville Fault Zone	Arroyo Mocho	90	NW
	Unnamed Faults in Volcanic Tablelands	-	94	E
	Owens Valley Fault Zone	Keough Hot Springs	96	E
		1822 Rupture	98	E
	Robinson Creek Fault Zone	-	97	NE
	Fish Slough Fault	-	97	E
	Sargent Fault Zone	Southeastern	98	W

Time of Last Activity	Fault/Zone Name	Section (if applicable)	Distance (miles)	Direction
		Northwestern	93	W
	Hayward Fault	Southeast Extension	98	W

Source: U.S. Geological Survey and California Geological Survey, 2006

Notes: All distances are approximate, measured from the geographic of the City of Madera proposed General Plan Update Planning Area to the approximate geographic center of the fault – not necessarily the location along the fault where the recorded event occurred. Differences in distance between historic events (0–150 years ago) and Holocene/Late Pleistocene events (150–15,000 years ago) on a particular fault/zone and section occur due to differences in plotting between the two databases.

Fault Rupture

The State of California passed the Alquist-Priolo Earthquake Fault Zoning Act in 1972 in order to reduce hazards from surface faulting to structures on the surface. The 1971 San Fernando earthquake resulted in extensive surface ruptures, which caused substantial damage to structures in the vicinity of those ruptures. As a response, the Alquist-Priolo Earthquake Fault Zoning Act was adopted to prevent the construction of buildings designed for human occupancy within the surface trace of active faults. As part of the act, the State Geologist is required to establish regulatory zones around fault surface traces. Local jurisdictions (counties, cities, etc.) are required to regulate development projects within those zones, preventing most structures. Single-family wood and steel frame buildings up to two stories in height are exempt from those regulations under the act. However, local jurisdictions are free to be more restrictive than what the state sets forth. As part of compliance with the Alquist-Priolo Act, the State Geologist published a list of counties, cities, and state agencies that are affected by Alquist-Priolo Fault Zones. The County and City of Madera do not appear on this list.

Secondary Hazards

Earthquake events can produce a variety of secondary hazards affecting structures and/or adversely affecting human safety. The most common secondary seismic hazards result from ground shaking, liquefaction, and the settlement of underlying soils.

Liquefaction Potential

Liquefaction is a process that occurs during earthquakes when the soils behave like quicksand. Significant damage to structures can result when buildings sink into the liquefied soil.

Liquefaction potential is determined from a variety of factors, including soil type, soil density, depth to the groundwater table, and the duration and intensity of ground shaking. Liquefaction is most likely to occur in deposits of water-saturated alluvium or areas of considerable artificial fill. Areas most prone to liquefaction are those which are water-saturated (specifically where the water table is less than 30 feet below the surface) and consist of relatively uniform sands that are of loose to medium density. According to the Madera County 1995 General Plan, although there are areas within the county where the water table is at 30 feet or less below the surface, soil types in the area are not conducive to liquefaction because they are either too coarse in texture or too high in clay content.

Subsidence

Subsidence is the gradual settling or sinking of surface soil deposits with little or no horizontal motion. Soils that are particularly subject to subsidence include those with high silt or clay content. Some areas of the San Joaquin Valley have experienced substantial amounts of

4.8 GEOLOGY AND SOILS

subsidence, in excess of 20 feet over the past 50 years. However, according to the Madera County 1995 General Plan, the valley areas of Madera County have not experienced this problem. The nearest subsidence problems lie to the west of Madera County, in Fresno County. Because there is no high water table in Madera County, the risk of subsidence is considered to be very low.

SURFICIAL DEPOSITS AND SOIL TYPES

Characteristics and properties of geologic surficial deposits and soil types in the Planning Area are described below. Soil behavior properties for the area from the Natural Resources Conservation Service include engineering classification, erosion potential, erosion class, and excavation difficulty.

Soil Types

Descriptions of each of the 23 soil series evident in the proposed General Plan Update Planning Area and some general characteristics of each are described below.

Alamo

The Alamo series consists of moderately deep to hardpan, poorly drained soils that formed in alluvium from mixed sources. Alamo soils are in basins and drainage ways on floodplains and fan remnants. Slope ranges from 0 to 2 percent. These soils are used mainly for pasture land and some dry-farming of grains, rice, and irrigated pasture. Vegetation consists of annual grasses, forbs, and weeds.

Atwater

The Atwater series consists of very deep, well drained soils formed in granitic alluvium. Atwater soils occur on gently undulating to rolling dunes. These soils are used mainly for production of truck crops, grapes, fruit trees, nuts, grain, and alfalfa. Typical vegetation consists of annual grasses, weeds, and low-growing shrubs.

Borden

The Borden series has brown, slightly acid soils which are low in organic matter. Borden soils occur on gently sloping older alluvial fans and basin rims that may be hummocky under natural conditions. Borden soils are moderately well to well drained with slow surface runoff. They are often used for irrigated crops such as cotton, alfalfa, grain, and grapes with some areas used for dry grain and pasture.

Cajon

The Cajon series consists of very deep, somewhat excessively drained soils that formed in sandy alluvium from dominantly granitic rocks. Due to the rapid permeability of this soil class, flooding is often non-existent. These soils are used mostly for range, watershed, and recreational uses. Some areas within the county are used for growing alfalfa and other crops. Vegetation found in the Cajon series is mostly of the desert shrub variety, including creosote bushes, saltbush, Mormon-tea, Joshua trees, some Indian rice grasses, annual grasses, and forbs.

Chino Series

Chino soils are found in basins and floodplains at elevations of near sea level up to 3,100 feet. Poorly to somewhat poorly drained, these soils remain wet for much of the winter. However, this is commonly impacted by stream channel entrenchment or lowering of groundwater levels by nearby pumping. These soils are commonly used for grazing while drained areas are used for growing irrigated truck and row crops. Normal vegetation includes grass, weeds, and shrubs.

Cometa

The Cometa series consists of moderately deep, moderately well or well drained soils that formed in alluvium from granitic rock sources. These soils are generally found on gently sloping, slightly dissected older stream terraces. Moderately well or well drained, these soils are commonly used for rice, vineyards, orchards, dry-farmed grain, and livestock grazing. Typical vegetation includes annual grasses, forbs, and weeds.

Delhi

The Delhi series consists of very deep, somewhat excessively drained soils on slopes of 0 to 15 percent. These soils are typically used for growing grapes, peaches, truck crops, alfalfa, and for homesites. Principal native plants found on these soils are buckwheat and some shrubs and trees. Other vegetation commonly found on these soils include annual grasses and forbs.

Fresno

The Fresno series is made up of fine, sandy loams on flat or nearly flat slopes. Fresno soils typically occur in nearly level valley plains with irregular low hummocky topography. As these soils are very difficult to reclaim, they are not often used for agriculture. Vegetation is sparse in general with bare spots being very common. Those areas that do exhibit vegetation contain saline-alkali tolerant shrubs, weeds, and grasses.

Grangeville

The Grangeville series consists of very deep, somewhat poorly drained soils that formed in moderate coarse textured alluvium dominantly from granitic sources. This soil series is somewhat poorly drained and exhibits negligible to very low runoff. Natural formations of this soil indicated a high frequency of flooding historically; however much of the flooding potential of these soils has been eliminated by flood control features such as dams, pumping from the water table, and filling and leveling of sloughs in the vicinity. Grangeville soils are used intensively for growing alfalfa, grapes, cotton, and truck crops and as irrigated pasture. Vegetation in uncultivated areas includes annual grasses and forbs with some scattered oak and cottonwood trees.

Greenfield

The Greenfield series of soils consists of deep, well drained soils that formed from granitic sources as well as mixed rock. As this soil is well drained with moderately rapid permeability and slow to medium runoff, the Greenfield series is commonly used for the production of a wide variety of field, forage, and fruit crops as well as grains and pasture land. Vegetation on uncultivated areas includes annual grasses, forbs, some shrubs, and scattered oak trees.

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Hanford

The Hanford series of soils consists of very deep, well drained soils that formed from typical granitic sources, similar to other series in the proposed General Plan Update Planning Area. As with Greenfield series soils, the good drainage and rapid permeability of Hanford soils have led to the use of these soils for the growing of a wide variety of fruits, vegetables, and general farm crops. Vegetation in undisturbed areas includes annual grasses with some herbaceous plants.

Lewis

The Lewis series consists of moderately deep, well drained soils formed in alluvial fans from mixed rock sources. Lewis soils are typically located on terraces, basins, and valley plains. These soils are moderately well drained and often wet due to the water table being located above the duripan for a time in wetter winters. Runoff is medium to high and permeability is slow – further exacerbating the potential for this soil to exhibit ponding or standing water during wetter weather. This series is used mainly for pasture land. Those areas that remain undisturbed commonly exhibit alkali-tolerant grasses and weeds. However, barren spots are common in some areas.

Madera

Commonly occurring in undulating low terraces, the Madera series consists of moderately deep to hardpan, well to moderately well drained soils that formed from granitic rock sources. Madera soils are hummocky, gently sloping, and often contain meandering drainageways and closed depressions, which fill with water to form vernal pools in the winter months. These soils exhibit medium to very slow runoff and very slow permeability. Cultivated areas of Madera soils are used mainly for irrigated cropland, growing alfalfa, almonds, grapes, oranges, rice, and tomatoes. Madera soils are also used for irrigated pasture, dry-farmed grain, and annual ranges. Vegetation consists of typical annual grasses for the vicinity as well as some forbs.

Montpellier

The Montpellier series consists of deep to very deep, well or moderately well drained soils formed alluvium from granitic sources. Occurring on a range of slopes, this series exhibits medium to slow runoff depending on the slope of the soil. Montpellier soils exhibit moderately slow permeability with decreasing permeability with lower depths. These soils are used primarily for farmed grains, vineyards, orchards, and rangeland. Typical vegetation includes annual grasses and forbs as well as some scattered oaks.

Pachappa

The Pachappa series consists of well drained soils developed from moderately coarse alluvium. While general drainage is good for these soils, surface runoff is slow and permeability is only moderate. As such, some evidence exists that these soils exhibited occasional overflow in the past. While little evidence points to such problems in recent history, these soils still exhibit excess salts and sodium, generally limiting agriculture on these soils to alfalfa, small grains, and some row crops. Uncultivated areas exhibit annual grasses, herbs, and shrubs.

Ramona

The Ramona series is a member of the fine-loamy, mixed soils. Ramona soils exhibit a wide range of slopes from nearly level to moderately steep, commonly occurring on terraces and fans.

Ramona soils are well drained and exhibit a range of runoff speeds. These soils are used primarily for the production of grain, grain-hay, pasture, irrigated citrus, olives, truck crops, and deciduous fruits. Uncultivated areas contain annual grasses, forbs, chamise, and chaparral.

San Joaquin

The San Joaquin series consists of moderately deep to duripan soils which are moderately well drained. San Joaquin soils are hummocky, nearly level to undulating terraces. Some areas have been leveled from their original topography. These soils exhibit medium to very high runoff and very slow permeability. They are commonly used for cropland and livestock grazing, with crops generally limited to small grains and rice. Some vineyards and fruit and nut orchards are located on San Joaquin soils as well.

Traver

Traver series soils are coarse, loamy, mixed soils that occur on level to depressional hummocky areas. These soils are moderately well to somewhat poorly drained, with moderately slow permeability and slow runoff. In their natural state, these soils are commonly used for early spring pasture alone. However, reclamation of some Traver soils has led to their use in growing cotton, sugar beets, and alfalfa. Uncultivated areas of Traver soils contain saltgrass and other salt-tolerant weeds with some bare spots.

Trigo

The Trigo series of soils consists of shallow, well drained soils formed in consolidated alluvium from mixed sources. These soils exhibit moderately rapid permeability and medium to rapid runoff. They commonly contain annual grasses, red brome, wild oats, ripgut brome, filaree, foxtail fescue, and mouse barley.

Tujunga

The Tujunga series consists of very deep, somewhat excessively drained soils formed in granitic-sourced granitic rock. Tujunga soils exhibit very low to negligible runoff and rapid permeability. Depending on location and condition, Tujunga soils can exhibit a wide range of flooding potential. These soils are used primarily for grazing, though some citrus, grapes, and other fruits are grown on Tujunga soils.

Whitney

The Whitney series consists of well drained soils on undulating hilly topography. Drainage is generally good with Whitney soils, with slow to medium surface runoff and moderate permeability. Whitney soils are used extensively for dry-farmed grains and, where irrigation is available, some fruits and vegetables. Uncultivated land contains annual grasses and associated herbaceous plants.

Wunje

Wunje soils consist of coarse-silty soils on nearly level to channeled floodplains and geologically recent alluvial fans. These soils are moderately well to well drained and exhibit slow runoff and moderately rapid permeability. Developed areas of Wunje soils are used for growing cotton, alfalfa, and potatoes and for irrigated pasture. Uncultivated areas contain saltgrass and some annual grasses and forbs.

4.8 GEOLOGY AND SOILS

4.8.2 REGULATORY FRAMEWORK

FEDERAL

Uniform Building Code

The purpose of the Uniform Building Code (UBC) is to provide minimum standards to preserve the public peace, health, and safety by regulating the design, construction, quality of materials, certain equipment, location, grading, use, occupancy, and maintenance of all buildings and structures. UBC standards address foundation design, shear wall strength, and other structurally related conditions.

STATE

California Geological Survey

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (prior to January 1, 1994, known as the Alquist-Priolo Special Studies Zones Act – CCR, Title 14, Section 3600) sets forth the policies and criteria of the State of California in regard to building within active fault zones. The Alquist-Priolo Earthquake Fault Zoning Act outlines cities' and counties' responsibilities in prohibiting the location of developments and structures for human occupancy across the trace of active faults. The policies and criteria are limited to potential hazards resulting from surface faulting or fault creep within Earthquake Fault Zones delineated on maps officially issued by the State Geologist.

California Building Code

In addition to the requirements of the Uniform Building Code (see Federal, above), California Code of Regulations, Title 24, also known as the California Building Standard Code or the California Building Code (CBC), establishes further guidance for foundation design, shear wall strength, and other structurally related concerns. The CBC modified UBC regulations for specific conditions found in California and included a large number of more detailed and/or more restrictive regulations. For example, the CBC includes common engineering practices requiring special design and construction methods that reduce or eliminate potential expansive soil related impacts. The CBC requires structures to be built to withstand ground shaking in areas of high earthquake hazards and the placement of strong motion instruments in larger buildings to monitor and record the response of the structure and the site of seismic activity. Compliance with CBC regulations ensures the adequate design and construction of building foundations to resist soil movement. In addition, the CBC also contains drainage requirements in order to control surface drainage and to reduce seasonal fluctuations in soil moisture content.

Seismic Hazards and Mapping Act

The Seismic Hazards Mapping Act of 1990 (Public Resources Code, Chapter 7.8, Section 2690-2699.6) directs the Department of Conservation, California Geological Survey to identify and map areas prone to earthquake hazards of liquefaction, earthquake-induced landslides, and amplified ground shaking. The purpose of the act is to reduce the threat to public safety and to minimize the loss of life and property by identifying and mitigating these seismic hazards. The act was passed by the State Legislature following the 1989 Loma Prieta earthquake and pertains to seismic hazards other than the fault surface rupture hazard regulated by the Alquist-Priolo Earthquake Fault Zoning Act of 1972.

The maps produced per the Seismic Hazards Mapping Act are the Seismic Hazard Zone Maps, prepared by California Geological Survey geologists in the Seismic Hazard Mapping Program. The program will ultimately map all of California's principal urban and major growth areas. Each map covers an area of approximately 60 square miles and uses a scale of 1 inch = 2,000 feet (1:24,000 scale). The Seismic Hazard Zone maps include designated "Zones of Required Investigation" for areas prone to liquefaction and earthquake-induced landslides. Once a map becomes available for a certain area, cities and counties within that area are required to withhold development permits for projects proposed within a Zone of Required Investigation until geologic and soil conditions are investigated and appropriate mitigations, if any, are incorporated into development plans.

California Water Code – Division 3, Dams and Reservoirs

Since 1929, the State of California has supervised dams to prevent failure in order to safeguard life and protect property. The legislation resulted from the failure of St. Francis Dam in March of 1928. Legislation enacted in 1965, as a result of the failure of Baldwin Reservoir in 1963, revised the statutes to include off-stream storage. This legislation is regulated by the California Department of Water Resources, Division of Safety of Dams. Two classifications of dam types are covered: (1) dam structures that are or will be in the future 25 feet or more in height from the natural bed of the stream or water course at the downstream toe of the barrier and (2) dams that have an impounding capacity of 50 acre feet or more (California Department of Water Resources, 2004).

Implementing the legislation involves use of geology and geotechnical engineering over the entirety of the dam's useful life for site selection, dam design and construction, and ongoing inspection of the impounding structures.

4.8.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

Based on Appendix G of the CEQA Guidelines, a geology, soils, or mineral resources impact is considered significant if project implementation would result in any of the following:

- 1) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death, involving:
 - a. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.
 - b. Strong seismic ground shaking.
 - c. Seismic-related ground failure, including liquefaction.
 - d. Landslides.
- 2) Result in substantial soil erosion or the loss of topsoil.

4.8 GEOLOGY AND SOILS

- 3) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
- 4) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- 5) 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.

A project's mineral resources impacts are considered significant if project implementation would be of value to the region and the residents of the state; or

- 6) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- 7) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

According to the findings of the Initial Study for the proposed General Plan Update, released along with the Notice of Preparation on December, 27, 2007, the proposed General Plan Update does not have the potential to affect the availability of any state or locally designated mineral resource, and no impact was expected. As such, this EIR does not address impacts related to mineral resources, and standards 6 and 7 above are not discussed further.

PROJECT IMPACTS AND MITIGATION MEASURES

Seismic Events

Impact 4.8.1 Implementation of the proposed General Plan Update, and the resulting increase in population, employment, and development activity within the Planning Area, would not expose people, structures, and development to substantial ground shaking and seismic hazards as a consequence of earthquakes resulting in the risk of loss, injury, or death. This is considered a **less than significant** impact.

The hazards related to ground shaking include the risk of loss, injury, or death. Buildings that were constructed within the City's Planning Area prior to 1930, including unreinforced masonry (URM) buildings that have not been seismically retrofitted, are most likely to have structural failure or collapse occur. Buildings that have been seismically retrofitted would have a decreased chance of failure. However, even structurally enhanced buildings and newer buildings could still experience significant damage and present a hazard to occupants.

Ground shaking can result in significant structural damage or structural failure in the absence of appropriate seismic design. However, as previously discussed, the Planning Area is not located within an Alquist-Priolo earthquake hazard zone and there are no known active faults occurring within the Planning Area. The Planning Area, as with virtually all sites within the State of California, is, however, subject to minor ground shaking and potential secondary hazards as a result of earthquakes. The Planning Area is in the area of Seismic Zone 2, which is considered an area of low ground shaking potential, as defined by the California Department of Mines and Geology on the Preliminary Map of Maximum Expectable Earthquake Intensity in California, and

the Madera County Code. A Seismic Zone 2 is an area that can expect to experience ground motion of low severity. Based upon the seismologic and geologic conditions discussed above, the maximum level of ground motion potentially experienced in the Planning Area would occur as a result of a 6.5 magnitude earthquake on the Foothills fault zone or Great Valley fault. Minor ground shaking can result in partial collapse of buildings and extensive damage in poorly built or substandard structures.

The combination of the Planning Area characteristics and compliance with the UBC and CBC would be sufficient to prevent significant damage from ground shaking during seismic events resulting from movement on any of the faults or fault systems described within this EIR.

Proposed General Plan Policies and Action Items that Provide Mitigation

The following proposed General Plan Update policies and action items that address seismic hazards are identified in the General Plan Health and Safety Element:

Policy HS-7: The City supports efforts by federal, state, and other local organizations to investigate local seismic and geological hazards and support those programs that effectively mitigate these hazards.

Policy HS-8: The City shall seek to ensure that new structures are protected from damage caused by earthquakes, geologic conditions, or soil conditions.

Adherence to the Uniform Building Code and the California Building Code would reduce to a minimum the exposure of people and structures to potential substantial adverse effects. Thus, this impact is considered **less than significant**.

Mitigation Measures

None required.

Soil Erosion

Impact 4.8.2 Implementation of the proposed General Plan Update could include construction and site preparation activities. These activities can increase the potential for soil, wind, and water erosion, due to minor or major grading over large areas of land. This is considered a **less than significant** given current City standards and requirements.

Implementation of the proposed General Plan Update would include new roadways, improvements to existing roadways, substantial infrastructure (water and sanitary sewer facilities), and extensive densities of commercial, residential, and industrial development.

Grading and site preparation activities associated with proposed development would remove topsoil, disturbing and potentially exposing the underlying soils to erosion from a variety of sources, including wind and water. In addition, construction activities generally involve the use of water, which may further erode the topsoil as the water moves across the ground. The reader is referred to Section 4.9, Hydrology and Water Quality, for a further discussion regarding erosion and water quality.

Construction activities involving clearing, grading, or excavation that causes soil disturbance on one or more acres (or any project involving less than one acre that is part of a larger

4.8 GEOLOGY AND SOILS

development plan and includes clearing, grading, or excavation) would be subject to coverage under the State's National Pollutant Discharge Elimination System (NPDES) General Construction Storm Water Permit. Project applicants are required to prepare and comply with a Storm Water Pollution Prevention Plan (SWPPP) that specifies Best Management Practices (BMPs) to avoid soil erosion and associated pollution of waterways and are also required to report any water pollution and remediate the pollution occurrence.

The City of Madera operates under a statewide NPDES permit to discharge urban runoff from Municipal Separate Storm Sewer Systems (MS4s) within their municipal jurisdiction. Under the NPDES permit, the City of Madera was required to prepare and implement a Stormwater Quality Improvement Plan (SQIP) to reduce pollutants in runoff from construction sites during all construction phases. A Storm Water Quality Management Program (SWQMP) was completed in 2004 by the City of Madera which outlines the City's approach to compliance with the requirements of the NPDES permit and addresses the program areas required under the MS4 permit. The SWQMP also includes a voluntary water quality monitoring program. The purpose of the City's SWQMP is to implement and enforce a series of management practices, referred to as Best Management Practices.

Proposed General Plan Policies and Action Items that Provide Mitigation

The following proposed General Plan Update policies and action items are identified in the General Plan Conservation Element that address soil erosion through the use of enforceable performance standards:

Policy CON-8: The City encourages Low Impact Development practices in all residential, commercial, office, and mixed-use discretionary projects and land division projects to reduce, treat, infiltrate, and manage runoff flows caused by storms, urban runoff, and impervious surfaces. Low impact development practices may include:

- Use of small scale stormwater controls such as bioretention, grass swales and channels, vegetated rooftops, rain barrels and cisterns.*
- Reduction of impervious surfaces through site design and use of pervious paving materials.*
- Retention of natural features such as trees and ponds on site.*
- The use of drought tolerant plant materials and/or water-conserving irrigation systems.*

Policy CON-9: The City shall protect and maintain water quality for the health of all users, including natural plant and animal communities.

Policy CON-10: The City shall seek to minimize toxic runoff from such sources as homes, golf courses, and roadways. Examples of potential programs include:

- The use of "bioswales" and similar features (such as infiltration trenches, filter trips, and vegetated buffers) to trap contaminants*
- Installation of grease/oil separators to keep these contaminants out of storm runoff*

- *Regular street sweeping programs to prevent the buildup of oil, grease, and other contaminants and keep them from being swept into creeks and rivers*
- *Minimizing pesticide use and promoting the use of natural pest controls*
- *Encouraging the installation of "gray water" systems*

Action Item CON-10.1: Implement the City's "Storm Water Quality Management Plan."

Action Item CON-10.2: Update the "Storm Water Quality Management Plan" as needed to incorporate the measures included in Policy CON-10 and other new measures that become available.

As noted above, the City is subject to the NPDES Permit for stormwater quality that involves the implementation of the SQIP that calls for the use of BMPs to mitigate potential soil erosion impacts. In addition, development in the city would be subject to the National Pollutant Discharge Elimination System General Construction Storm Water Permit. Project applicants are required to prepare and comply with a Storm Water Pollution Prevention Plan that specifies Best Management Practices to avoid soil erosion and associated pollution of waterways and are also required to report any water pollution and remediate the pollution occurrence. The proposed General Plan Update policies identified above would involve further implementation of these water quality protection requirements. As result, this impact is **less than significant**.

Mitigation Measures

None required.

Expansive and Unstable Soils

Impact 4.8.3 Implementation of the proposed General Plan Update could place development in areas with unstable soils or expose buildings, pavements, and utilities to significant damage as a result of underlying expansive or unstable soils. This impact is considered a **significant and mitigable** impact.

Implementation of the proposed General Plan Update results in construction activities overlying expansive or unstable soils. Newly constructed buildings, pavements, and utilities could be damaged by differential settlement due to soil expansion and contraction. When structures are located on expansive soils, foundations have the tendency to rise during the wet season and shrink during the dry season. Movements can vary under the structures, which in turn create new stresses on various sections of the foundation and connected utilities. These variations in ground settlement can lead to structural failure and damage to infrastructure.

As discussed previously, the City of Madera adopted the Uniform Building Code and the California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code or California Building Code (CBC). The CBC includes common engineering practices requiring special design and construction methods that reduce or eliminate potential expansive soil related impacts. Compliance with CBC regulations ensures the adequate design and construction of building foundations to resist soil movement. In addition, the CBC also contains drainage related requirements in order to control surface drainage and reduce seasonal fluctuations in soil moisture content.

4.8 GEOLOGY AND SOILS

Proposed General Plan Policies and Action Items that Provide Mitigation

The following proposed General Plan Update policy is identified in the General Plan Health and Safety Element to address soil and geologic stability:

Policy HS-8: The City shall seek to ensure that new structures are protected from damage caused by earthquakes, geologic conditions, or soil conditions.

Mitigation Measures

The following mitigation measure shall be incorporated into the City of Madera proposed General Plan Update as an action item in the Health and Safety Element.

MM 4.8.3 Require a geotechnical report or other appropriate analysis be conducted that determines the shrink/swell potential and stability of the soil for public and private construction projects and identifies measures necessary to ensure stable soil conditions.

Compliance with CBC regulations ensures the adequate design and construction of building foundations to resist soil movement. In addition, the CBC also contains drainage related requirements in order to control surface drainage and reduce seasonal fluctuations in soil moisture content. In addition, implementation of the above policy, as well as mitigation measure MM 4.8.3, would reduce the impacts of expansive soils to **less than significant**.

Septic System Operation

Impact 4.8.4 Implementation of the proposed General Plan Update could impact areas where soils may be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems. This would be a **less than significant** impact given that new development would either connect to the City's wastewater system or meet applicable septic design standards.

The impacts associated with the soils suitability of soils can be reduced or avoided through proper site inspection and project monitoring and maintenance on a project-by-project basis as well as through compliance with Madera County septic system design requirements. Site inspection should include percolation testing to determine soil suitability. When soil suitability is identified, septic systems should be designed accordingly. When appropriate field-testing is conducted and current system location and design standards are used combined with post construction monitoring and maintenance, the potential adverse impacts to septic suitability of soils can be reduced to acceptable levels. Urban development associated with the proposed General Plan Update would connect to the City's wastewater system, while rural development may involve the use of a septic system. Thus, this impact would be **less than significant**.

Mitigation Measures

None required.

4.8.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

Site-specific topography, soil conditions, and surrounding development generally determine geological, soil, and mineral resource related impacts, which generally are not considered cumulative in nature. However, surficial deposits, namely erosion and sediment deposition, can be cumulative in nature, depending on the type and the amount of development proposed in a given geographical area. The cumulative setting for seismic hazards, expansive soils, and soil erosion consists of existing, planned, proposed, and reasonably foreseeable land use conditions in the region including buildout of the Planning Area, as described in Section 4.0 of this document.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Seismic Hazards, Expansive Soils, and Soil Erosion Impacts

Impact 4.8.5 Implementation of the proposed General Plan Update, in combination with existing, planned, proposed, and reasonably foreseeable development, would not contribute to cumulative seismic hazards, expansive soils, and soil erosion impacts given the area-specific nature of the impact. This is considered a **less than cumulatively considerable** impact.

Implementation of the proposed General Plan Update, along with potential development in the Planning Area as well as continued development within Madera County, would result in cumulative soil erosion and other geologic impacts. Compliance with the City's NPDES permit would reduce the City's contribution to cumulative soil erosion impacts. Development projects are analyzed on an individual basis and must comply with established requirements of the City and the UBC as they pertain to protection against known geologic hazards and potential geologic and expansive soil related impacts. There are no known active faults in the Planning Area, there is a low incidence of historical geologic activity in the vicinity, and there is no contribution with other regional geologic impacts. Therefore, the proposed General Plan Update's contribution to cumulative geology-related impacts is considered **less than cumulatively considerable**.

The reader is referred to Section 4.9, Hydrology and Water Quality, for additional information regarding soil erosion and water quality.

Mitigation Measures

None required.

4.8 GEOLOGY AND SOILS

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4.9 HYDROLOGY AND WATER QUALITY

This section of the DEIR identifies the hydrologic resources, existing drainage conditions, and surface and groundwater quality in the Planning Area. This section also evaluates the potential impacts of implementing the proposed General Plan with respect to flooding, drainage, erosion, water quality, and water supply, and identifies appropriate mitigation measures to lessen the identified impacts. The information provided in this section is based on state and regional studies on water quality, local studies and plans on water supply and infrastructure, and data from the Federal Emergency Management Agency (FEMA).

4.9.1 EXISTING SETTING

CLIMATE AND PRECIPITATION

The climate in the region is mild in the winter and hot in the summer. According to the National Weather Service, the annual average precipitation for the Planning Area ranges from 4.7 to 20.7 inches (NWS, 2008). Nearly nine-tenths of the annual precipitation falls between the months of November and April. Although the heaviest rains recorded in Madera for short periods have occurred in June, rainfall in the summer is usually very light. There is very little snow that falls in the San Joaquin Valley, so it is not considered a climatic feature of the valley floor. Fog usually occurs in the morning hours and may continue for several days in a row if atmospheric conditions are stagnant.

SURFACE WATER RESOURCES

Surface watersheds are those land areas that catch rain or snow and drain to specific marshes, streams, rivers, lakes, or the groundwater table. The Planning Area is part of the San Joaquin River watershed, which covers approximately 15,880 square miles and yields an average annual surface runoff of about 1.6 million acre-feet (CVRWQCB, 2004). The San Joaquin River originates in the Sierra Nevada mountain range. The river first flows west, then turns north for a total of approximately 330 miles before converging with the Sacramento River in the Sacramento-San Joaquin Delta. The San Joaquin River forms the western boundary and much of the southern boundary of Madera County.

The San Joaquin River watershed has been divided into numerous hydrologic areas and subareas. The Planning Area lies within the Madera and Berenda Creek hydrologic areas (DWR, 2005). The Madera hydrologic area encompasses the southwestern and northwestern portions of the city and extends northwest to the city of Chowchilla. This area drains to the Fresno River at its center. The Berenda Creek hydrologic area encompasses the northeastern and southeastern portions of the City of Madera and also drains to the Fresno River and its tributaries. The primary streams within the San Joaquin River watershed are the San Joaquin River and its larger tributaries, the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno rivers. The major reservoirs and lakes within the watershed are the Padre, New Hogan, Millerton, McClure, Don Pedro, and New Melones (CVRWQCB, 2004).

The following are the main surface hydrological features in the Planning Area (see **Figure 4.9-1**).

Fresno River

The Fresno River is the main hydrologic feature in the Planning Area. The river flows west from the Sierra Nevada through the City of Madera before entering the Chowchilla Bypass in western Madera County, eventually discharging into the San Joaquin River. The Fresno River is dry throughout much of the year, with flow depending mainly on water releases from upstream water agencies (City of Madera, 2005).

4.9 HYDROLOGY AND WATER QUALITY

Cottonwood Creek

Cottonwood Creek flows in the southern portion of the Planning Area and forms part of its boundary. Cottonwood Creek discharges in an area of southwestern Madera County. The creek is classified as an intermittent stream on U.S. Geological Survey topographic maps, indicating that it is dry for part of the year.

Dry Creek

Dry Creek traverses the northwestern portion of the Planning Area. The last few miles of Dry Creek are channelized, and its flow is eventually routed to the Fresno River, west of and outside the Planning Area. Dry Creek is classified as an intermittent stream on U.S. Geological Survey topographic maps, indicating that it is dry for part of the year.

Schmidt Creek

Schmidt Creek is a minor creek in the northern portion of the Planning Area, flowing through the Madera Country Club golf course. The creek ends west of State Route (SR) 99, without discharging into another stream. Schmidt Creek is also classified as an intermittent stream on U.S. Geological Survey topographic maps, indicating that it is dry for part of the year.

Madera Lake

Madera Lake is a 500-acre reservoir located in the northeastern corner of the Planning Area. It is owned by the Madera Irrigation District. The Fresno River provides water to Madera Lake via an unnamed tributary. Excess flow from the lake is returned to the Fresno River by the lake's dam. Madera Lake is operated intermittently as a groundwater recharge facility and is designated by the County as a wildlife sanctuary (Madera County, 2008).

Irrigation Facilities

There are also several manmade channels in the Planning Area. Most of these are maintained by the Madera Irrigation District to bring irrigation water to users in the district.

The Madera Canal is operated and maintained by the Madera-Chowchilla Water and Power Authority, under an agreement with the United States Bureau of Reclamation. The Madera Canal delivers water from Millerton Lake to the Madera Irrigation District.

DRAINAGE AND FLOODING

Drainage

The Planning Area is primarily flat with a lack of significant grade and only one major natural drainage channel, the Fresno River. Other surface hydrologic features in the Planning Area are Cottonwood Creek, Dry Creek, Schmidt Creek, and Madera Lake (see **Figure 4.9-1**). Because of the lack of significant grade (slope), the predominant method of runoff disposal in the city is the use of retention basins that are excavated below ground level. Some areas, however, drain to the Fresno River or to Madera Irrigation District conveyance facilities. The Fresno River is typically dry within the city limits and usually flows only in the wettest years (City of Madera, 2004).

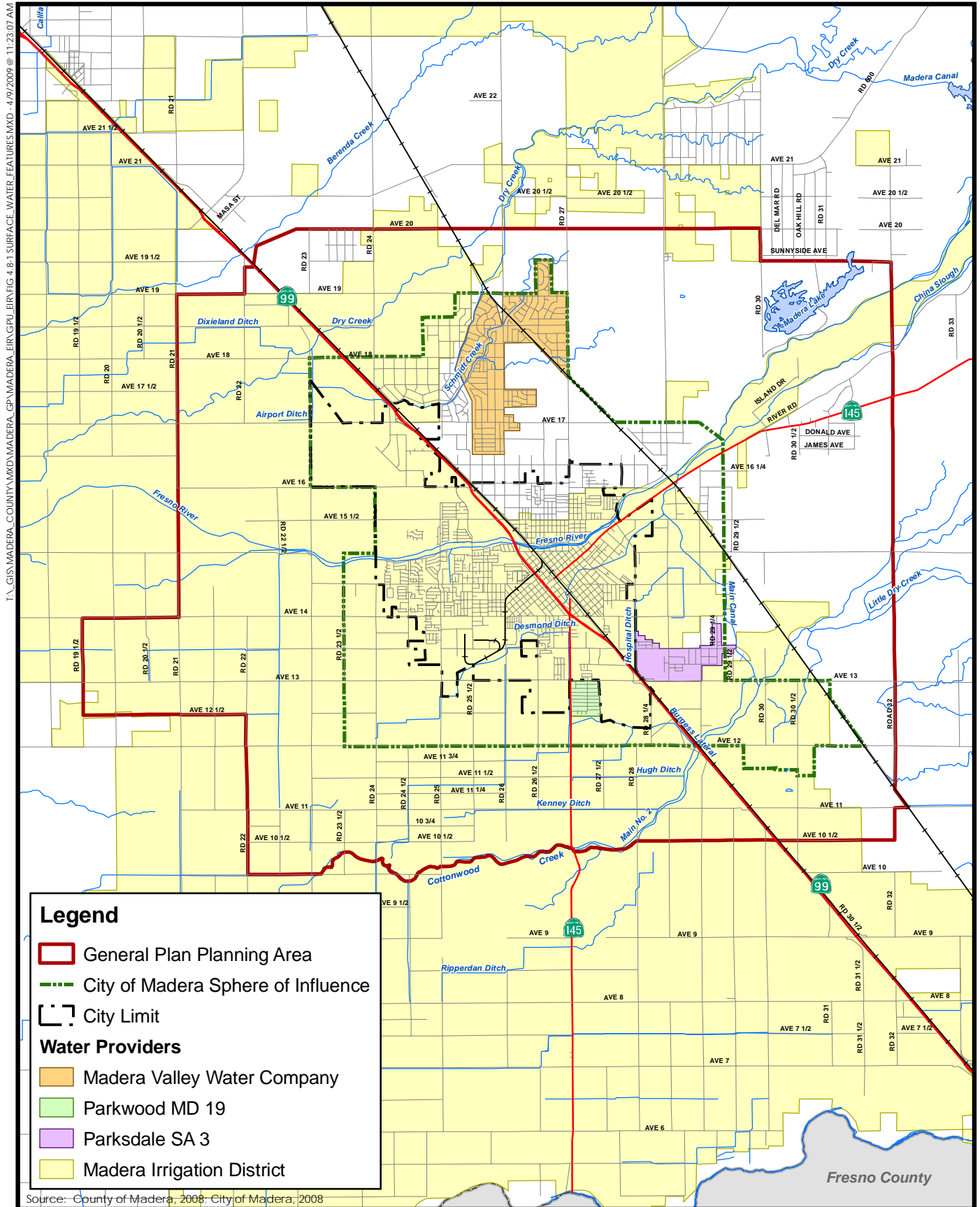


Figure 4.9-1
Surface Water Features and Water Provider Service Areas

Drainage from the urbanized areas of the Planning Area is typically directed to street curbs and gutters (concrete) where it is carried to inlets located along the street and into the storm drain pipeline system. No natural channels are used for this primary conveyance. The pipeline system conveys the runoff to various discharge points including the Fresno River and irrigation canals. The storm drain pipeline and retention basin system is owned, operated, and maintained by the City (City of Madera, 2004).

Flooding

The Federal Emergency Management Agency (FEMA) has prepared a series of Flood Insurance Rate Maps for Madera and the surrounding area. These maps delineate areas subject to a 100-year flood – a flood that occurs on average once every 100 years. This is not to say that only one such flood can occur within a given 100-year time period. Several 100-year events can happen in a short period of time. However, the potential for such a storm to occur within a given year is 1 in 100. The 100-year floodplain is the basis for most land use planning related to flood hazards.

Figure 4.9-2 illustrates the 100-year floodplains in the Planning Area, as delineated by FEMA flood maps (FEMA, 2008a). The figure includes narrow 100-year floodplains along the Fresno River and Schmidt Creek. It also indicates more extensive floodplains along Cottonwood Creek in the southern portion of the Planning Area and along Dry Creek in the northwestern and western portions.

Dam Failure Inundation

There are three major dams that would inundate portions of the county if they were to fail: Hidden Dam on the Fresno River, Buchanan Dam on the Chowchilla River, and Friant Dam on the San Joaquin River. In addition, there are several smaller dams within the county that would inundate mainly small, localized areas if they were to fail. A large portion of the Planning Area, including the entire existing city limits, is located within the inundation area of Hidden Dam (see **Figure 4.9-3**).

Hidden Dam impounds the Fresno River at Hensley Lake approximately 12 miles northeast of the Planning Area. The facility was built in 1975 by the U.S. Army Corp of Engineers to provide for irrigation and flood control. Hensley Lake is also utilized for recreation. The dam is an earth-fill dam, 184 feet high with a capacity of 90,000 acre-feet (Madera County, 1995; FEMA, 2008b).

GROUNDWATER RESOURCES

Regional Aquifer System

The Central Valley contains the largest basin-fill aquifer system in the state. The valley is in a structural trough about 400 miles long and from 20 to 70 miles wide and extends over more than 20,000 square miles. The trough is filled to great depths by marine and continental sediments, which are the result of millions of years of inundation by the ocean and erosion of the rocks that form the surrounding mountains. Sand and gravel beds in this basin-fill material form an important aquifer system. From north to south, the aquifer system is divided into the Sacramento Valley, the Sacramento-San Joaquin Delta, and the San Joaquin Valley subregions, delineated on the basis of different characteristics of surface water basins. The aquifer underlying the Planning Area is part of the San Joaquin Valley subregion (Planert, 1995).

4.9 HYDROLOGY AND WATER QUALITY

The San Joaquin Valley hydrologic subregion covers approximately 9.7 million acres (15,200 square miles) and includes all of Calaveras, Tuolumne, Mariposa, Madera, San Joaquin, and Stanislaus counties, most of Merced and Amador counties, and parts of Alpine, Fresno, Alameda, Contra Costa, Sacramento, El Dorado, and San Benito counties. The region contains all or part of three separate groundwater basins, including the San Joaquin Valley Groundwater Basin, which underlies Madera County and continues south into the Tulare Lake hydrologic region. The San Joaquin Valley Groundwater Basin is further divided into nine subbasins within the San Joaquin Valley subregion. These nine subbasins underlie 3.73 million acres (5,830 square miles) (DWR, 2003).

Aquifers in the San Joaquin Valley hydrologic subregion are generally quite thick, with groundwater wells commonly extending to depths of up to 800 feet. Aquifers include unconsolidated alluvium and consolidated rocks with unconfined and confined groundwater conditions. Typical well yields in the subregion range from 300 to 2,000 gallons per minute (gpm), with possible yields of 5,000 gpm (DWR, 2004). The subregion is heavily groundwater reliant, with groundwater accounting for about 30 percent of the annual supply used for agricultural and urban purposes (DWR, 2003).

Local Groundwater Resources

The Planning Area is located within the boundaries of the Madera Subbasin of the San Joaquin Valley Groundwater Basin. The subbasin is bounded on the south by the San Joaquin River, on the west by the eastern boundary of the Columbia Canal Service area, on the north by the southern boundary of the Chowchilla subbasin, and on the east by the crystalline bedrock of the Sierra Nevada foothills (DWR, 2004).

Capacity and Storage Estimates

Hydrogeologic units in the subbasin consist of unconsolidated deposits of Pleistocene (10,000 to 1.8 million years ago) and Holocene (last 10,000 years) age. Although younger alluvium and flood-basin deposits yield small quantities of water to wells, the most important aquifer in the area is the older alluvium. The estimated average specific yield of the subbasin (generally defined as the portion of the groundwater supply that is actually available for extraction) is approximately 10.4 percent. Estimates of the total storage capacity of the subbasin and the amount of water in storage as of 1995 were calculated by the Department of Water Resources (DWR) based on the specific yield and water level data collected by DWR and cooperators. According to these calculations, the total storage capacity of the subbasin is estimated to be 18,500,000 acre-feet to a depth of 300 feet and 40,900,000 acre-feet to the base of fresh groundwater. These same calculations give an estimate of 12,600,000 acre-feet of groundwater to a depth of 300 feet actually stored in the subbasin as of 1995 (DWR, 2004).

Groundwater Levels and Flow Direction

According to water level elevation maps prepared for the subbasin by DWR, groundwater levels in the Planning Area generally range from about 100 to 160 feet (DWR, 2004). Most of the City of Madera and Madera Valley Water Company's wells in the area are from 300 to 600 feet deep (City of Madera, 2006).

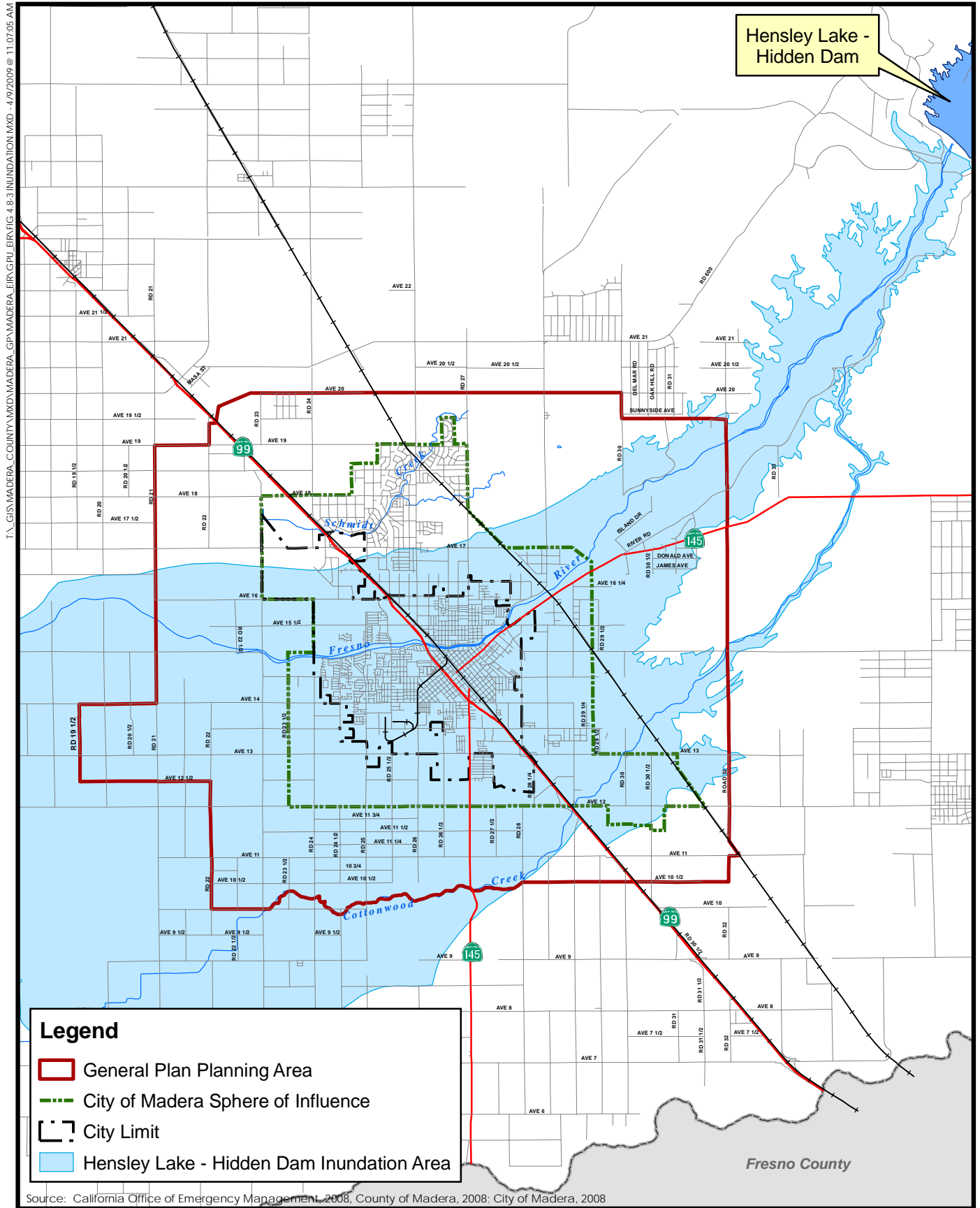


Figure 4.9-3
Hidden Dam Inundation Area

On average, the subbasin water level has declined nearly 40 feet from 1970 through 2000. The period from 1970 through 1978 showed steep declines totaling about 30 feet. The nine-year period from 1978 to 1987 saw stabilization and rebound of about 25 feet, taking the water levels close to where they were in 1970. The period from 1987 through 1996 again showed steep declines, bottoming out in 1996 at about 45 feet below 1970 levels. Water levels rose about 8 feet from 1996 through 2000 (DWR, 2004).

Rates of water-level decline generally increase with increasing distance from the Chowchilla River, the Fresno River, and the San Joaquin River. For example, near the Fresno River east of the City of Madera, the average rate of water-level decline has been less than 1 foot per year. In contrast, water level declines averaged about 2 feet per year south of the city and 3 feet per year to the north (Madera County, 2008).

Several large cones of depression¹ have developed in recent years near the Planning Area. One of the largest depressions is located south of Highway 145 and northeast of the Burlington Northern Santa Fe Railroad tracks, just northeast of Madera. Another major cone of depression is located just east of Fairmead, north of Madera. There are several additional cones of depression west of Madera (DWR, 2004; County of Madera, 2008).

Historically, the direction of groundwater flow in the eastern portion of the subbasin was to the southwest, toward the valley trough (San Joaquin River downstream of Mendota). However, as groundwater pumping has increased for agriculture and urban uses, instead of flowing uniformly to the southwest, groundwater in the southern portion of the subbasin has been flowing away from the San Joaquin River to the northwest (Madera County, 2008).

Groundwater Production and Overdraft

The San Joaquin Valley Groundwater Basin is not adjudicated, meaning there are no limitations placed on groundwater pumping volumes (City of Madera, 2005). A major concern in the San Joaquin Valley is groundwater overdraft, a condition where the average long-term amount of water pumped out of the basin exceeds the amount of water recharged or naturally replenished into the groundwater basin. This may lead to land subsidence, higher pumping costs, poorer water quality, and potential adjudication of the basin (Madera County, 2008).

Both the San Joaquin Valley Groundwater Basin and the Madera Subbasin have been in a state of overdraft for several years. The California Water Plan Update, Bulletin 160-98, estimated the average overdraft in the San Joaquin Valley Basin to be 239,000 acre-feet in 1995. The Integrated Regional Water Management Plan for Madera County (2007) indicates the average overdraft in the City of Madera Master Water Plan Area is approximately 8,000 acre-feet per year. The Madera Master Water Plan Area encompasses most of the Planning Area.

Groundwater Recharge

Groundwater recharge is a hydrologic process where water moves downward from surface water to groundwater. Recharge occurs both naturally, by precipitation and percolation from surface water bodies, and anthropologically, where rainwater and reclaimed water is directly

¹ The term "cone of depression" refers to the cone-shaped area around a point of groundwater extraction where the groundwater level is lowered by pumping. The shape of the cone is influenced by the underground porosity and water yield of the well(s).

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routed to the subsurface. Within the Planning Area, recharge of the Madera Subbasin occurs primarily from percolation of water from the major surface water features in the region such as the Fresno River, Cottonwood Creek, and Madera Lake. In addition, areas in the southern and southwestern portions of the city have been identified as being favorable for recharge due to coarse-grain sediment that persists with depth (Madera County, 2008).

WATER QUALITY

Stormwater Runoff

The City of Madera Department of Public Works has jurisdiction over aspects of stormwater management in the City of Madera. The Madera County Department of Engineering and General Services has jurisdiction over the remainder of the Planning Area.

In 1999, the statewide National Pollutant Discharge Elimination System (NPDES) permit program was expanded to include operators of municipal separate storm drain systems (MS4s) in urban areas serving populations greater than 25,000 and less than 100,000 as well as operators of small construction sites disturbing one acre of land or more. The permit requires Phase II MS4 operators to implement programs and practices to control polluted stormwater runoff. The City of Madera was identified as a Phase II MS4 operator subject to the statewide general permit. As such, the City prepared a Storm Water Quality Management Program (SWQMP) to comply with the permit and to implement and enforce a series of Best Management Practices (BMPs) that are designed to reduce the discharge of pollutants from the City's storm drain system and construction sites within the city (City of Madera, 2004).

The area subject to the City's SWQMP includes the area with the city limits except those areas over which the City does not have jurisdiction, including the areas surrounding State Routes 99 and 145 which are included in Caltrans Phase I permit, school districts and colleges including the Madera Unified School District and Madera Community College which are required to prepare separate SWQMPs, the Madera Fairgrounds which is required to prepare a separate SWQMP, and the City of Madera Airport which is covered by the Phase I permit (City of Madera, 2004).

Surface Water

The California Clean Water Act Section 303(d) list identifies water bodies with impaired water quality. None of the Planning Area streams or reservoirs are on the most recent (2006) California Clean Water Act Section 303(d) list, indicating that no significant water quality problems have been identified in the area. The nearest Section 303(d) stream to the Planning Area is the San Joaquin River to the south and west. Land uses along the San Joaquin River are primarily agricultural; however, urban growth is rapidly converting historical agricultural lands leading to an increased potential for stormwater and urban impacts to local waterways. In addition, upper watershed areas can be impacted by timber activities, grazing, abandoned mines, rural communities, and recreation. Contaminants identified in the San Joaquin River include boron, DDT (dichlorodiphenyltrichloroethane), Group A pesticides, mercury, and selenium (CVRWQCB, 2007).

The Central Valley Regional Water Quality Control Board's (CVRWQCB) Water Quality Control Plan (Basin Plan) for the San Joaquin River Basin identifies objectives to maintain pesticide levels in the basin's water bodies as well as Maximum Contaminant Levels for pesticides as set forth in the California Code of Regulations, Title 22, Division 4, Chapter 15. This indicates that pesticides are a contaminant of concern within the basin.

The California Department of Water Resources released a Water Plan Update for the San Joaquin River hydrologic region in order to control the discharge of boron and salt loads in agricultural drainage and runoff (DWR, 2005). In late October 2005, CVRWQCB adopted a Basin Plan Amendment for the development of a TMDL to control diazinon- and chlorpyrifos-caused aquatic life toxicity in the San Joaquin River (CVRWQCB, 2005).

Groundwater

There are localized areas of high hardness, iron, nitrate, and chloride within the Madera Subbasin (DWR, 2004). Groundwater extracted by the City of Madera's wells has been of good quality, meeting all primary and secondary drinking water standards, with the exception of Well 27. This well currently utilizes a granular activated carbon (GAC) treatment system to remove ethylene dibromide (EDB) and dibromochloropropane (DBCP). In addition, a new well (in the northeast part of the city) is to be treated for manganese (Madera County, 2008). DBCP was also detected in the County Maintenance District 19-Parkwood water system (Madera County, 2002).

EDB is primarily used in aviation fuel, as a solvent for resins, gums, and waxes, in waterproofing preparations, in making dyes and drugs, and as a pesticide for grains and fruit. The United States Environmental Protection Agency (EPA) Maximum Contaminant Level Goal (MCLG) for EDB is zero and the Maximum Contaminant Level (MCL) is 0.05 parts per billion (ppb). Health effects associated with exposure to EDB include damage to the nervous and respiratory systems, multiple organs, and reproductive complications. EDB is also considered a carcinogen (EPA, 2006a).

DBCP is primarily used as a nematocide for soil fumigation of various crops. EPA's MCLG for DBCP is zero and the MCL is 0.2 ppb. Health effects associated with exposure to DBCP include damage to the kidney, liver and reproductive organs as well as cancer (EPA, 2006b).

In addition, there is a localized brine plume in the southwestern portion of the Planning Area, where the former Oberti Olive Company disposal ponds were once located. The facility is regulated by Waste Discharge Requirements (WDRs), Order No. 91-1 and subsequent enforcement orders as well as a purchaser agreement entitled "Agreement for Reciprocal Covenants" (ARC), executed March 30, 2001, between the CVRWQCB, Tri-Valley Growers, and the California Olive Growers. The Oberti Olive Company initiated a groundwater extraction program in 1988 to attempt to remediate the high salinity brine waste that migrated from the disposal ponds. The CVRWQCB conducted a review of this program in 2004 and found that the program had resulted in a significant decrease in chloride concentrations in the areas that had been impacted and that the program should be discontinued. The CVRWQCB did, however, require continued groundwater monitoring to ensure that there are no adverse impacts on groundwater quality from cessation of the program (CVRWQCB, 2004).

Aside from these localized water quality issues, the quality of the groundwater available to the City of Madera is excellent and is, for the most part, usable for potable purposes without treatment. It is not anticipated that water quality issues associated with the groundwater in the area will have a significant impact on water service reliability in the near or long term. The City monitors the quality of all water produced from its wells and reports this data annually to the State and to its customers (City of Madera, 2005).

4.9 HYDROLOGY AND WATER QUALITY

WATER SUPPLY

Water Service Providers

There are five water purveyors in the Planning Area: (1) the City of Madera, (2) the Madera Valley Water Company, (3) the Madera County Maintenance District 19-Parkwood (CMD-19), (4) the County Service Area 3-Parksdale (CSA-3), and (5) the Madera Irrigation District (see **Figure 4.9-1**). The following descriptions of each water purveyor were obtained from the County's Integrated Regional Water Management Plan (2008).

City of Madera

The City of Madera provides water service to a population of approximately 56,000 as of 2007 and relies solely on groundwater. The City's existing water system facilities include 16 groundwater wells, 150 miles of water distribution system pipelines, and a one million gallon elevated water storage tank. The wells are scattered throughout the city and have depths ranging from approximately 300 to 700 feet. The total pumping capacity of the current water system is about 27,000 gallons per minute (gpm). Specific capacities for the wells range from 17 gpm/ft to about 100 gpm/ft.

The City's distribution system pipelines range from 4 to 14 inches in diameter. Wells 32, 33, 34, and 35 have been constructed and are at different stages of development. The City currently has approximately 12,500 water service connections, of which about 500 commercial and multifamily residential connections are metered. Annual pumping from 1999 through 2006 averaged approximately 12,260 acre-feet per year (AFY).

Water Supply

The City of Madera relies solely on groundwater from the Madera Groundwater Subbasin. The subbasin is not adjudicated, meaning that there are no legal limitations placed on groundwater pumpage volumes. The amount of groundwater pumped by the City of Madera between 1999 and 2006 is shown in **Table 4.9-1** below. The amount of groundwater projected to be pumped over the next 15 years (in five-year increments) is also shown in **Table 4.9-1** below. Pumpage estimates are based on the City's population growth estimates and assume that the current per capita use will remain constant, although it is hoped that through the City's conservation efforts and water use policies the per capita use will decrease in the future. These estimates also assume that the City will continue to rely solely on groundwater for its supply since it currently has no surface water supplies or entitlements.

TABLE 4.9-1
HISTORICAL AND PROJECTED FUTURE GROUNDWATER PUMPAGE BY CITY OF MADERA (AFY)

1999	2000	2001	2002	2003	2004	2005	2006	2010 ¹	2015 ¹	2020 ¹	2025 ¹
12,156	11,834	11,210	11,868	12,473	12,886	12,473	13,165	15,932	19,014	22,692	27,081

Source: Madera County, 2008; City of Madera, 2005

Notes: ¹Estimates based on annual population growth rate of 3.6 percent

It should be noted that the groundwater pumping projections provided in **Table 4.9-1** above are based on a 3.6 percent growth rate for the purposes of preparing the City's 2005 Urban Water Management Plan and do not reflect the current population growth projections calculated as part of the proposed General Plan Update. See Impact 4.8.5 below for a further discussion.

Madera Valley Water Company

The Madera Valley Water Company (MVWC) is a mutually owned water company providing water to approximately 1,890 residential and 40 commercial customers in the northern portions of the Planning Area.

Water Supply

The MVWC relies solely on groundwater supply from seven wells distributed throughout its water distribution system. From 1999 to 2006, MVWC has pumped an average of about 2,300 acre-feet per year to meet customer water demand.

County Special Districts

Madera County has 34 County Service Areas (CSA) and County Maintenance Districts (CMD) that together operate 30 small water systems, two of which are located within the Planning Area: CMD-19 and CSA-3. CMD-19 serves about 635 units with a system capacity of 1,840 gallons per minute. CSA-3 serves about 507 units with a system capacity of 1,900 gpm.

Water Supply

Both systems rely entirely on groundwater. All of the County-operated water systems in the valley floor area of Madera County produced as a whole an average of 3,570 acre-feet per year from 1999 to 2006. Data specific to CMD-19 and CSA-3 were not readily available at the time this document was prepared.

Madera Irrigation District

The Madera Irrigation District (MID) is the largest irrigation district in Madera County providing water service to agricultural customers within an approximately 128,300-acre service area that includes the portions of the Planning Area outside of the existing city limits (see **Figure 4.9-1**). MID delivers water to its agricultural customers through approximately 115 miles of pipelines, 225 miles of lined canals, 90 miles of unlined canals, and 102 miles of natural streambeds. The pipelines range from 12 inches to 84 inches in diameter with about half of them cast in place. The flows are delivered by gravity in the majority of the water distribution system with only a few small pump stations.

Water Supply

MID relies entirely on surface water diversions from the Fresno, San Joaquin, and Merced rivers. MID's main source of water is through water diversions from Friant Dam on the upper San Joaquin River. Other sources of water for MID include U.S. Bureau of Reclamation (USBR) contract water from Hidden Dam as well as from water rights on the Fresno River, including the Big Creek Diversion from the Merced River watershed and the Soquel Diversion from the San Joaquin River watershed.

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MID's contract with USBR for water from Friant Dam provides for 85,000 acre-feet of Class 1 water and 186,000 acre-feet of Class 2 water. Class 1 water is a relatively firm supply, whereas Class 2 is on an as-available basis and its quantity varies from year to year. All water supplied under the contract with USBR is conveyed to MID through the Madera Canal, which receives water from Friant Dam. Central Valley Project (CVP) allocations during the period of 1996 through 2007 averaged 97 percent of Class 1 water and 19 percent of Class 2 water.

MID's contract with USBR for water from Hidden Dam provides for up to 24,000 acre-feet per year. Water supplied under this contract is for the conservation yield of the project; however, the project has stringent flood control criteria that preclude large carryover or early season storage.

The Big Creek and Soquel diversions provide an average annual supply of 9,400 acre-feet and 9,700 acre-feet, respectively. The Fresno River adjudicated and appropriative average annual supply is approximately 20,000 acre-feet and is inclusive of the Big Creek and Soquel diversions.

The overall maximum water supply from all the surface water supply sources described above is 315,000 acre-feet annually. However, this maximum water supply is rarely fully available for various reasons, as discussed above. The average annual amount of water delivered to MID's customers during the period of 1996 through 2007 was approximately 120,000 acre-feet, which included deliveries to growers classified "subordinates." When necessary, MID growers pump groundwater to meet the remaining crop water demand. The timing and amount of groundwater pumped by individual farmers is not known (Madera County, 2008).

WATER DEMAND

Table 4.9-2 below provides information on past, recent, and projected future water use by land use obtained from the City's Urban Water Management Plan. Again, it should be noted that the water demand projections provided in **Table 4.9-2** below are based on previous population growth projections calculated as part of the City's 2005 Urban Water Management Plan and do not reflect the current population growth projections calculated as part of the proposed General Plan Update. See Impact 4.8.5 below for a further discussion.

TABLE 4.9-2
PAST, CURRENT, AND FUTURE WATER USE (AFY)

Land Use	2000	2005	2010	2015	2020	2025
Single-Family Residential	5,012	5,653	6,747	8,052	9,611	11,469
Multifamily Residential	3,339	3,766	4,495	5,365	6,403	7,641
Commercial	918	1,036	1,236	1,475	1,760	2,101
Industrial	755	852	1,016	1,213	1,448	1,728
Institutional/Governmental	1,402	1,582	1,887	2,253	2,688	3,208
Landscape	107	121	144	172	205	245
Agricultural	301	340	405	484	577	689
Total	11,834	13,350	15,932	19,014	22,692	27,081

Source: City of Madera, 2005

According to the City's Water System Master Plan prepared in 1997, the typical per capita water consumption rate in Madera is 280 gallons per capita per day (gpcd). This per capita demand fluctuates depending on climate but is based on multiple-year data (City of Madera, 1997).

The City of Madera does not sell (wholesale) water to other agencies or use any of its produced water for other purposes, such as for saline barriers or groundwater recharge. All water produced by the City is delivered to its water customers (City of Madera, 2005).

4.9.2 REGULATORY FRAMEWORK

FEDERAL

Federal Flood Insurance Program

Congress, alarmed by increasing costs of disaster relief, passed the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The intent of these acts is to reduce the need for large publicly funded flood control structures and disaster relief by restricting development on floodplains.

The Federal Emergency Management Agency administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development on floodplains. FEMA issues Flood Insurance Rate Maps (FIRMs) for communities participating in the NFIP. FIRMs delineate flood hazard zones in the community.

Executive Order 11988

Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. It generally requires federal agencies constructing, permitting, or funding a project in a floodplain to do the following.

- Avoid incompatible floodplain development.
- Be consistent with the standards and criteria of the NFIP.
- Restore and preserve natural and beneficial floodplain values.

Clean Water Act

The Clean Water Act (CWA) regulates the water quality of all discharges into waters of the United States including wetlands, perennial and intermittent stream channels. Section 401, Title 33, Section 1341 of the CWA sets forth water quality certification requirements for "any applicant applying for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters." Section 404, Title 33, Section 1344 of the CWA in part authorizes the U.S. Army Corps of Engineers to:

- Set requirements and standards pertaining to such discharges: subparagraph (e);
- Issue permits "for the discharge of dredged or fill material into the navigable waters at specified disposal sites": subparagraph (a);
- Specify the disposal sites for such permits: subparagraph (b);

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- Deny or restrict the use of specified disposal sites if “the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies and fishery areas”: subparagraph (c);
- Specify type of and conditions for non-prohibited discharges: subparagraph (f);
- Provide for individual state or interstate compact administration of general permit programs: subparagraphs (g), (h), and (j);
- Withdraw approval of such state or interstate permit programs: subparagraph (i);
- Ensure public availability of permits and permit applications: subparagraph (o);
- Exempt certain federal or state projects from regulation under this Section: subparagraph (r); and,
- Determine conditions and penalties for violation of permit conditions or limitations: subparagraph (s).
- Section 401 certification is required prior to final issuance of Section 404 permits from the U.S. Army Corps of Engineers.

The California State Water Resources Control Board and RWQCBs that enforce State of California statutes are equivalent to or more stringent than the federal statutes. RWQCBs are responsible for establishing water quality standards and objectives that protect the beneficial uses of various waters. In the Planning Area, the RWQCB is responsible for protecting surface and groundwaters from both point and non-point sources of pollution. Water quality objectives for all of the water bodies within the Planning Area were established by the RWQCB and are listed in its Basin Plan.

Total Maximum Daily Loads

Under CWA Section 303(d) and California's Porter-Cologne Water Quality Control Act of 1969 (discussed below), the State of California is required to establish beneficial uses of state waters and to adopt water quality standards to protect those beneficial uses. Section 303(d) establishes the Total Maximum Daily Load (TMDL) process to assist in guiding the application of state water quality standards, requiring the states to identify waters whose water quality is “impaired” (affected by the presence of pollutants or contaminants) and to establish a TMDL or the maximum quantity of a particular contaminant that a water body can assimilate without experiencing adverse effects on the beneficial use(s) identified for that water body. TMDLs are generally stakeholder-driven processes that involve investigation of sources and their loading (pollution input), make load allocations, and identify an implementation plan and schedule. Where stakeholder processes are not effective, TMDLs can be established by the RWQCBs or the EPA.

National Pollutant Discharge Elimination System

The City of Madera operates under a statewide NPDES permit to discharge urban runoff from Municipal Separate Storm Sewer Systems (MS4s) within their municipal jurisdiction. Under the NPDES permit, the City of Madera was required to prepare and implement a Storm Water Quality Improvement Plan (SWQIP) to reduce pollutants in runoff from construction sites during all construction phases. A Storm Water Quality Management Program (SWQMP) was completed in

2004 by the City of Madera, which outlines the City's approach to compliance with the requirements of the NPDES permit and addresses the program areas required under the MS4 permit. It also includes a voluntary water quality monitoring program. The purpose of the City's SWQMP is to implement and enforce a series of management practices, referred to as Best Management Practices (City of Madera, 2004).

STATE

Groundwater Rights

Groundwater rights in California are similar to surface water rights; however, no permit system or comprehensive regulatory method exists. The exception is groundwater deemed to be part of a subterranean stream or underflow that is hydraulically connected to a surface water body. In such cases, the source is classified as surface water and remains subject to the permitting authority of the State Water Resources Control Board (SWRCB). Groundwater law is primarily expressed through previous legal decisions, and disputes among groundwater users are usually settled through judicial actions or adjudications. There are two main types of groundwater rights: overlying and appropriative.

Overlying Rights

Overlying rights apply to parcels that overlie a groundwater basin. Overlying rights are analogous to riparian rights for surface water. Overlying users do not have priorities with respect to one another, and each holder has a right to a reasonable share of the total groundwater supply available. Overlying rights may be active or dormant and are generally senior to appropriative rights (defined below). Note that water devoted to public uses (e.g., municipal water supply systems) is considered in most cases to be an appropriative use, rather than an overlying use, regardless of the location of the water use with respect to the aquifer.

Appropriative Rights

Appropriative rights apply to groundwater extractions used on lands that do not overlie the aquifer in question. Appropriative rights are analogous to appropriative rights for surface water. Appropriative rights are protected by the construction and use of a well, and putting the pumped water to reasonable and beneficial use. These rights are subject to a seniority system, where the appropriative right holder with the longest-standing right has first priority to groundwater in a condition of shortage.

Dam Safety and Operation

Dam safety in California is administered by the Department of Water Resources, Division of Safety of Dams (DSOD). DSOD reviews plans and specifications for the construction of new dams or for the enlargement, alteration, repair, or removal of existing dams, as well as performs inspections during dam construction and operation. A water rights permit from the SWRCB is required prior to filing an application to the DSOD to construct a dam.

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Act governs the coordination and control of water quality in the state and includes provisions relating to non-point source pollution. The California Coastal Commission, pursuant to the Coastal Act, specified duties regarding the federally approved California Coastal Management Program. This law required that the State Water Resources

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Control Board, along with the California Coastal Commission, regional boards, and other appropriate state agencies and advisory groups, prepare a detailed program to implement the state's non-point source management plan on or before February 1, 2001. The law also requires that the state board, in consultation with the Commission and other agencies, submit copies of prescribed state and regional board reports containing information related to non-point source pollution, on or before August 1 of each year.

Drinking Water Standards

Title 22 of the California Code of Regulations (CCR) outlines drinking water standards in the State of California. Maximum Contaminant Levels for various contaminants are identified and are made enforceable regulatory standards under the federal Safe Drinking Water Act. MCL standards must be met by all public drinking water systems to which they apply. Primary MCLs can be found in 22 CCR Sections 64431–64444. Specific regulations for lead and copper are in 22 CCR Section 64670 et seq. Secondary MCLs that address the taste, odor, and appearance of drinking water are found in 22 CCR Section 64449.

Reclaimed Water Standards

Title 22 of the California Code of Regulations outlines reclaimed water standards in the State of California, and reclaimed water is primarily regulated by the California Department of Health Services (DHS), in coordination with the RWQCBs.

DHS has produced The Purple Book, which contains California health laws related to reuse of disinfected tertiary recycled water. Disinfected tertiary recycled water is defined as filtered and subsequently disinfected wastewater that exhibits extremely low levels of coliform bacteria and turbidity. This publication identifies allowable uses for disinfected tertiary recycled water, as well as limitations and requirements for the use and control of recycled water.

Disinfected tertiary treated effluent may be used for groundwater recharge of domestic water supply aquifers by surface spreading provided the effluent is of a quality that fully protects human health at all times. For groundwater recharge projects, DHS makes recommendations to the RWQCB based on the relevant aspects of the project, including effluent quality and quantity, spreading area operations, soil characteristics, hydrogeology, residence time, and distance to withdrawal.

California Fish and Game Code Sections 1601–1607 (Lake or Streambed Alteration Agreement Program)

Under Sections 1601–1607 of the California Fish and Game Code, the California Department of Fish and Game (DFG) regulates projects that affect the flow, channel, or banks of rivers, streams, and lakes. Sections 1601 and 1603 require public agencies and private individuals, respectively, to notify and enter into a streambed or lakebed alteration agreement with DFG before beginning construction of a project that will have either of the following results.

Divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake.

Use materials from a streambed.

Section 1601 contains addition prohibitions against the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

Sections 1601–1607 may apply to any work undertaken within the 100-year floodplain of any body of water or its tributaries, including intermittent stream channels. In general, however, it is construed as applying to work within the active floodplain and/or associated riparian habitat of a wash, stream, or lake that provides benefit to fish and wildlife. Sections 1601–1607 typically do not apply to drainages that lack a defined bed and banks, such as swales, or to very small bodies of water and wetlands such as vernal pools.

Senate Bill (SB) 5

SB 5 was signed into law in October 2007 and requires the state to develop a plan for flood protection by 2012. Once this state plan takes effect, the bill will prohibit counties and cities located in the Sacramento-San Joaquin Valley watershed from entering into development agreements or approving permits, entitlements, or subdivision maps in a flood zone unless there is an appropriate level of flood protection or the local flood management agency has determined that adequate progress toward that flood protection has been made. Also once the plan takes effect, the bill will require 200-year flood protection for proposed projects in urban and urbanizing areas (defined as 10,000 residents or more). The bill also authorizes cities and counties to develop and adopt local plans of flood protection that include a strategy to meet the 200-year level of flood protection, an emergency response plan, and a long-term funding strategy for improvement, maintenance, and operation of flood protection facilities.

In order to implement this bill, the Department of Water Resources was required to provide cities and counties within the Central Valley watershed with preliminary 100- and 200-year floodplain maps by July 1, 2008. DWR has prepared only preliminary 100- and 200-year flood maps for 32 counties and 91 cities within the watershed. These maps are based on the best information currently available. DWR has initiated several projects that will provide updated information about flood hazards in the watershed over the next two to four years (DWR, 2008).

Assembly Bill (AB) 162

AB 162 was signed into law in October 2007 and requires cities and counties in California to incorporate flood hazards in their general plans in order to minimize risk in flood-prone areas. The bill further requires that each city and county submit their draft safety element, or draft amendment to the safety element of its general plan, to the Central Valley Flood Protection Board (formerly the State Reclamation Board) for review and comment at least 90 days prior to adoption.

Senate Bill 610 and Assembly Bill 901

During the 2001 regular session of the State Legislature, SB 610 and AB 910 – Water Supply Planning were signed and became effective January 1, 2002. SB 610 amends Public Resources Code Section 21151.9, requiring any EIR, negative declaration, or mitigated negative declaration for a qualifying project to include consultation with affected water supply agencies (current law applies only to Notices of Preparation). SB 610 also amends Water Code Sections 10656 and 10657 to restrict state funding for agencies that fail to submit their urban water management plan to the Department of Water Resources, and Water Code Section 10910 to describe the water supply assessment that must be undertaken for projects referred under PRC Section 21151.9, including an analysis of groundwater supplies. Water agencies would be given

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90 days from the start of consultation in which to provide a water supply assessment of the CEQA lead agency; Water Code Section 10910 would also specify the circumstances under which a project for which a water supply assessment was once prepared would be required to obtain another assessment. AB 910 amends Water Code Section 10631, expanding the contents of the urban water management plans to include further information on future water supply projects and programs and groundwater supplies.

Senate Bill 221

SB 221 adds Government Code Section 66455.3, requiring that the local water agency be sent a copy of any proposed residential subdivision of more than 500 dwelling units within 5 days of the subdivision application being accepted as complete for processing by the city or county. It adds Government Code Section 66473.7, establishing detailed requirements for determining whether a "sufficient water supply" exists to support any proposed residential subdivisions of more than 500 dwellings, including any such subdivision involving a development agreement. When approving a qualifying subdivision tentative map, the city or county must include a condition requiring a sufficient water supply to be available. Proof of availability must be requested of and provided by the applicable public water system. If there is no public water system, the city or county must undertake the analysis described in Section 66473.7. The analysis must include consideration of effects on other users of water and groundwater.

Regional Water Quality Control Board, Central Valley Region

The RWQCB, Central Valley Region provides planning, monitoring, and enforcement techniques for surface and groundwater quality in the Central Valley region. A basin plan provides more specific information for specific waterways within the region, in terms of establishing monitoring techniques to control pollutant levels within the waterways. The RWQCB also monitors stormwater quality from construction activities through a National Pollutant Discharge Elimination System permitting process.

Central Valley Regional Water Quality Control Plan (Basin Plan)

The Central Valley Regional Water Quality Control Plan covers all the drainage basin areas for the Sacramento and San Joaquin rivers, extending approximately 400 miles from the California-Oregon border to the headwaters of the San Joaquin River. This plan describes the beneficial uses to be protected in these waterways, water quality objectives to protect those uses, and implementation measures to make sure those objectives are achieved.

LOCAL

Madera County Integrated Regional Water Management Plan

Madera County prepared an Integrated Regional Water Management Plan (IRWMP) in April 2008 to document the collective approach of the County and its stakeholders to water management, which include the City of Madera, to deal with water supply, water quality, and flood management through 2030. The main objectives of the IRWMP are water resource management optimization, evaluating and increasing water supplies, water quality protection and improvement, and flood control planning.

Madera County Groundwater Management Plan

Madera County prepared a Groundwater Management Plan (GMP) in January 2002 in accordance with AB 3030. The GMP describes the current condition of the groundwater resources in the county, documents current groundwater management practices, and explores techniques to cooperatively manage Madera County's groundwater resources.

City of Madera Urban Water Management Plan

The City of Madera prepared an Urban Water Management Plan (UWMP) in October 2005 in accordance with the Urban Water Management Planning Act (Water Code Section 10610–10656). The UWMP describes the existing conditions of the area including geographic characteristics, population, and climate. The UWMP examines the City's existing water supply sources and infrastructure as well as existing and projected demands for water and examines the ability of the City to provide water service to its customers in the future under normal, dry, and multi-dry year scenarios.

City of Madera Water System Master Plan

The City of Madera prepared a Water System Master Plan in January 1997, which outlines the City's plan for its water supply through the year 2020. The plan includes an evaluation of the City's existing water supply and water distribution system, the City's projected future water supply requirements and future water distribution system, an evaluation of groundwater issues, an analysis of storage and standby power requirements, and a Capital Improvement Program (CIP) for proposed water system improvements.

City of Madera Storm Drainage Master Plan

The City of Madera prepared a Storm Drainage Master Plan in October 1997. The Storm Drainage Master Plan identifies current and future capacity deficiencies in the existing storm drainage system, provides design criteria for future storm drain improvements, provides recommendations for system improvements to serve current and projected land uses within the city, and includes a Capital Improvement Program (CIP) for the proposed improvements.

City of Madera Storm Water Quality Management Program

In order to comply with the statewide NPDES permit for municipal stormwater discharges, the City of Madera prepared a Storm Water Quality Management Program in June 2004. The purpose of the SWQMP is to implement and enforce a series of Best Management Practices designed to reduce the discharge of pollutants from the municipal separate storm drain systems to the maximum extent practicable to protect water quality and to satisfy the appropriate water quality requirements of the Clean Water Act. The SWQMP also provides a series of measurable goals with which to gauge the achievement of the plan's objectives.

City of Madera Municipal Code – Chapter 3: Floodplain Management

The City of Madera adopted a floodplain management ordinance in 1987 that applies to all land identified by the Federal Emergency Management Agency or the Federal Insurance Administration in a report entitled Flood Insurance Study for the City of Madera, California dated August 15, 1985. The ordinance established development restrictions and standards for these areas in order to minimize risks associated with flooding hazards.

4.9 HYDROLOGY AND WATER QUALITY

4.9.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

Based on Appendix G of the CEQA Guidelines the proposed City of Madera General Plan would result in a significant impact to hydrology or water quality if it would:

- 1) Generate substantial stormwater runoff and/or alter surface water drainage patterns that would result in an increased severity of flooding within the Planning Area or downstream;
- 2) Significantly degrade surface water and groundwater quality directly or indirectly;
- 3) Substantially deplete groundwater resources to such an extent that it would impact existing surface water features that rely on groundwater;
- 4) Substantially degrade groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted); or
- 5) Conflict with applicable local, state, and/or federal policies and standards associated with water resources.

In addition, based on state legislation, the proposed City of Madera General Plan would result in a significant impact to hydrology if it would result in future development within areas that do not have a minimum 200-year flood protection.

METHODOLOGY

The hydrology and water quality analysis is based on a review of published information, reports and plans regarding regional and local hydrology, climate, topography, and geology obtained from private and governmental agencies as well as Internet websites. Agencies consulted include the Madera Irrigation District, Central Valley Regional Water Quality Control Board, and the Federal Emergency Management Agency.

The analysis takes into account the density and type of existing and proposed land uses within the Planning Area, as well as proposed and anticipated development in the City of Madera and surrounding unincorporated areas of Madera County. The reader is referred to Section 4.0 regarding assumed land uses and development conditions in this area.

PROJECT IMPACTS AND MITIGATION MEASURES

Surface Water Quality – Construction

Impact 4.9.1 Implementation of the proposed General Plan could result in the discharge of polluted runoff from construction of future urban development, potentially causing harm to the biological integrity of waterways, violating water quality standards, or otherwise substantially degrading surface water quality. This impact is **less than significant**.

Implementation of the proposed General Plan would result in the construction of new development within the Planning Area including residential, commercial, industrial, public/institutional, and recreational uses as well as the infrastructure associated with these uses. An additional approximately 7,637 acres within the Planning Area (including the city) are anticipated to be disturbed and altered with urban levels of development by 2030 under the proposed General Plan. Direct and indirect surface water quality impacts could occur from such construction. For example, grading and vegetation removal activities during construction would result in the exposure of raw soil materials to the natural elements (wind, rain, etc.). During rainstorm events, soil erosion can impact the surface runoff by increasing the amount of silt and debris carried by runoff. In addition, refueling and parking of construction equipment and other vehicles onsite during construction may result in spills of oil, grease, or related pollutants that may discharge into Planning Area drainages. Improper handling, storage, or disposal of fuels and hazardous materials or improper cleaning of machinery close to area waterways could cause water quality degradation.

As described in Section 4.10, Biological Resources, surface waters provide for a variety of functions for plants and animals, including a water source, habitat, foraging, cover, and migration and movement corridors. Adverse impacts to surface waters in regard to changes to natural flow conditions and water quality can cause harm to the organisms that rely upon these waters and to the biological integrity of the Planning Area as a whole. The reader is referred to Section 4.10 for further discussion of these biological resource impacts.

The State Water Resources Control Board is responsible for implementing the Clean Water Act and has issued a statewide General Permit (Water Quality Order 99-08-DWQ) for construction activities within the state. Within the Planning Area, this State General Construction Activity Storm Water Permit (CGP) is implemented and enforced by the Central Valley Regional Water Quality Control Board. The CGP applies to construction activities that disturb one acre or more and requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) that identifies Best Management Practices (BMPs) to minimize pollutants discharging from the construction site to the maximum extent practicable (MEP).

The BMPs that must be implemented can be categorized into two major groups: (1) erosion and sediment control BMPs and (2) non-stormwater management and materials management BMPs. Erosion and sediment control BMPs fall into four main subcategories:

- Erosion controls
- Sediment controls
- Wind erosion controls
- Tracking controls

Erosion controls include methods to stabilize soil, protect the soil in its existing location, and prevent soil particles from migrating. Examples of erosion control BMPs are preserving existing vegetation, mulching, and hydroseeding. Sediment controls are methods designed to collect

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soil particles after they have migrated but before the sediment leaves the site. Examples of sediment control BMPs are street sweeping, fiber rolls, silt fencing, gravel bags, sand bags, storm drain inlet protection, sediment traps, and detention basins. Wind erosion controls prevent soil particles from leaving the site in the air. Examples of wind erosion control BMPs include applying water or other dust suppressants to exposed soils on the site. Tracking controls prevent sediment from being tracked offsite via vehicles leaving the site. Examples of tracking controls are limiting site access points, utilizing wheel washers or hosing down exiting trucks, and requiring truck loads to be covered during transit.

Non-stormwater management and material management controls reduce non-sediment-related pollutants from potentially leaving the construction site to the extent practicable. The CGP prohibits the discharge of materials other than stormwater and authorized non-stormwater discharges (such as irrigation and pipe flushing and testing). Non-stormwater BMPs tend to be management practices with the purpose of preventing stormwater from coming into contact with potential pollutants. Examples of non-stormwater BMPs include preventing illicit discharges and implementing good practices for vehicle and equipment maintenance, cleaning, and fueling operations, such as using drip pans under vehicles. Waste and materials management BMPs include implementing practices and procedures to prevent pollution from materials used on construction sites. Examples of materials management BMPs include:

- Good housekeeping activities such as storing of materials covered and elevated off the ground, in a central location.
- Securely locating portable toilets away from the storm drainage system and performing routine maintenance.
- Providing a central location for concrete washout and performing routine maintenance.
- Providing several dumpsters and trash cans throughout the construction site for litter/floatable management.
- Covering and/or containing stockpiled materials and overall good housekeeping on the site.

Prior to construction on any site exceeding one acre in size, a SWPPP must be developed and submitted to the City that identifies the specific BMPs to be implemented and maintained on the site. A Notice of Intent must also be filed with the CVRWQCB. The CGP also requires that construction sites be inspected before and after storm events and every 24 hours during extended storm events. The purpose of the inspections is to identify maintenance requirements for the BMPs and to determine the effectiveness of the BMPs that are being implemented. The SWPPP is a "living document" and as such can be modified as construction activities progress.

Furthermore, groundwater may be encountered during certain construction activities, such as drilling and excavating for building footings and foundations and trenching for infrastructure. As a result, dewatering may be required of both construction sites and any saturated material removed during construction. Dewatering refers to the removal of non-stormwater (such as groundwater encountered during drilling or excavations) and accumulated precipitation from a construction site so that construction work may be accomplished (CASQA, 2003). Although such water is generally considered to be relatively pollutant-free, it would likely contain sediments, particularly remnants of mud from drilling and excavations. Discharge of these sediments and the release of pollutants associated with the sediments to downstream waters or the underlying groundwater basin could violate water quality standards.

The SWRCB has also issued a statewide General Permit (Water Quality Order R5-2008-0081, NPDES No. CAG995001) for dewatering and other low-threat discharges to surface waters within the state. This permit is also implemented and enforced by the CVRWQCB. Proponents of projects requiring dewatering would be required to submit a Notice of Intent, as well as a Best Management Practice Plan, to comply with the general permit. The BMP Plans would include disposal practices to ensure compliance with the general permit such as the use of sediment basins or traps, dewatering tanks, or gravity or pressurized bag filters. Monitoring and reporting would also be performed to ensure compliance with the permit (CVRWQCB, 2004; CASQA, 2004).

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this water quality impact. The following list contains those policies and action items that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Policy CON-10: The City shall seek to minimize toxic runoff from such sources as homes, golf courses, and roadways. Examples of potential programs include:

- The use of “bioswales” and similar features (such as infiltration trenches, filter trips, and vegetated buffers) to trap contaminants;*
- Installation of grease/oil separators to keep these contaminants out of storm runoff;*
- Regular street sweeping programs to prevent the buildup of oil, grease, and other contaminants and keep them from being swept into creeks and rivers;*
- Minimizing pesticide use and promoting the use of natural pest controls;*
- Encouraging the installation of “gray water” systems.*

Action Item CON-10.1: Implement the City’s “Storm Water Quality Management Plan.”

Action Item CON-10.2: Update the “Storm Water Quality Management Plan” as needed to incorporate the measures included in Policy CON-10 and other new measures that become available.

Continued compliance with the statewide permits for construction site stormwater and dewatering would ensure that effective and adequate Best Management Practices are in place during construction activities within the Planning Area, thereby reducing the potential for surface water quality degradation and ensuring compliance with applicable water quality standards. In addition, implementation of the above-listed General Plan policies would further protect surface water quality by requiring the regular update and implementation of the City’s Storm Water Quality Management Plan. As such, this impact is considered **less than significant**.

4.9 HYDROLOGY AND WATER QUALITY

Mitigation Measures

None required.

Surface Water Quality – Operation

Impact 4.9.2 Implementation of the proposed General Plan could result in the discharge of polluted runoff from operation of future urban development, potentially causing harm to the biological integrity of waterways, violating water quality standards, or otherwise substantially degrading surface water quality. This impact is **less than significant**.

The operation of new development planned for in the proposed General Plan, including residential, commercial, industrial, public/institutional, and recreation uses and associated infrastructure, could result in direct and indirect surface water quality impacts as described below:

Residential – Residential activities often involve the conventional maintenance of yards, e.g., using fertilizers, herbicides, pesticides, fungicides, and other chemicals in and around the home that can enter stormwater runoff. In addition, motor vehicle operation and maintenance can introduce oil, antifreeze, and other petroleum-based products, heavy metals such as copper from brake linings, and surfactants from cleaners and waxes into residential runoff. Uncontrolled pet and animal waste from yards, trails, and stream corridors can enter stormwater runoff or flow directly into stream channels.

Commercial – Commercial businesses often provide conventional maintenance of landscaped areas and use fertilizers, herbicides, pesticides, and other chemicals, which can enter into stormwater runoff. Motor vehicle operation and maintenance also contributes oil, antifreeze, and other petroleum-based products, heavy metals such as copper from brake linings, and surfactants into stormwater runoff. Auto mechanic shops, farm and hardware supply stores, salvage yards, dry cleaners, graphic and photographic processing shops, recycling businesses, and mining and aggregate operations, as well as other commercial and industrial businesses, can potentially contribute concentrated quantities of hazardous substances directly or indirectly into stormwater runoff, as well as groundwater, if not properly maintained and monitored.

Recreation – Parks and golf courses often practice conventional landscaping methods and maintain recreation areas using fertilizers, herbicides, pesticides, and algaecides, which can enter into stormwater runoff or flow directly into stream channels (currently there is one existing municipal golf course in the City of Madera and one private golf course located outside the City of Madera but within the Planning Area).

Infrastructure – In addition to the above-mentioned operational surface water quality pollutants from urban land use conditions, construction and operation of roadways and drainage improvements (e.g., culverts, discharge points, and alteration of natural drainage flow conditions) can alter natural and storm drainage flows in waterways. This could result in the alteration of natural erosion and siltation conditions that could impact water quality in terms of total dissolved solids, turbidity, dissolved oxygen, and other associated water quality parameters.

All runoff from urban development typically contains oils, grease, fuel, antifreeze, byproducts of combustion (such as lead, cadmium, nickel, and other metals), as well as nutrients from fertilizers and animal waste, sediment, pesticides, herbicides, and other pollutants. Also, sizable quantities of animal waste from pets (e.g., dogs, cats, and horses) contribute bacterial pollutants into surface and source waters. In particular, precipitation during the early part of the wet season

displaces these pollutants into the stormwater runoff, resulting in high pollutant concentrations in the initial wet weather runoff. This initial runoff, containing peak pollutant levels, is referred to as the “first flush” of storm events. The first flush of heavy metals and hydrocarbons typically occurs during the first 5 inches of seasonal rainfall.

The amount and type of runoff generated by development within the Planning Area would be greater than that under existing conditions due to increases in impervious surfaces such as roadways, parking lots, sidewalks, and roofs. There would be a corresponding increase in urban runoff pollutants and “first flush” roadway contaminants such as heavy metals, oil, and grease, as well as an increase in nutrients (e.g., nitrates and phosphates) and pesticides and herbicides from landscaped areas. These constituents could result in water quality impacts to onsite and offsite drainage flows and to downstream area waterways, including the Fresno River, Schmidt Creek, and other local waterways, and result in violations of applicable federal, state, and regional water quality standards (e.g., RWQCB Basin Plan, State NPDES permit, State Implementation Policy of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries).

As described in Section 4.10, Biological Resources, surface waters provide for a variety of functions for plants and animals, including a water source, habitat, foraging, cover, and migration and movement corridors. Adverse impacts to surface waters in regard to changes to natural flow conditions and water quality can cause detrimental harm to the organisms that rely upon these waters and to biological integrity of the Planning Area as a whole. The reader is referred to Section 4.10 for further discussion of these biological resource impacts.

As previously noted, the City of Madera operates under a SWRCB General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems also known as MS4s (Water Quality Order No. 2003-0005-DWQ). As required for coverage under this permit, the City has prepared a Storm Water Quality Management Program to implement and enforce Best Management Practices designed to reduce the discharge of pollutants from the City's municipal separate storm drain systems to protect water quality. As described in Subsection 4.9.2, Regulatory Framework, these BMPs include public participation and involvement, public education and outreach, construction site runoff control, illicit discharge detection and elimination, pollution prevention and good housekeeping, and post-construction runoff control.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this water quality impact. The following list contains those policies and action items that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Policy CON-10

The City shall seek to minimize toxic runoff from such sources as homes, golf courses, and roadways. Examples of potential programs include:

- The use of “bioswales” and similar features (such as infiltration trenches, filter trips, and vegetated buffers) to trap contaminants;*
- Installation of grease/oil separators to keep these contaminants out of storm runoff;*

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- Regular street sweeping programs to prevent the buildup of oil, grease, and other contaminants and keep them from being swept into creeks and rivers;
- Minimizing pesticide use and promoting the use of natural pest controls;
- Encouraging the installation of "gray water" systems.

Action Item CON-10.1: Implement the City's "Storm Water Quality Management Plan."

Action Item CON-10.2: Update the "Storm Water Quality Management Plan" as needed to incorporate the measures included in Policy CON-10 and other new measures that become available.

Continued implementation of the City's Storm Water Quality Management Program would ensure that effective and adequate Best Management Practices would be in place throughout the Planning Area to minimize the pollutant load in storm drainage, thereby protecting surface water quality. In addition, implementation of the above-listed General Plan policies would further protect surface quality by requiring the Storm Water Quality Management Program to be updated to include newly available BMPs. As such, this impact is considered **less than significant**.

Mitigation Measures

None required.

Groundwater Quality

Impact 4.9.3 Implementation of the proposed General Plan could result in the degradation of groundwater quality resulting from construction and operation of future land uses. This is considered a **less than significant** impact.

As discussed above in Impacts 4.9.1 and 4.9.2, development of the Planning Area under the proposed General Plan Update could generate runoff containing oils, grease, fuel, antifreeze, byproducts of combustion (such as lead, cadmium, nickel, and other metals), household pollutants, nutrients (e.g., fertilizers and pet waste), and other chemicals from landscaped areas. These pollutants could potentially contaminate groundwater conditions (if not properly treated with water quality controls) as runoff percolates into the soil. However, as noted under Impacts 4.9.1 and 4.9.2, the statewide NPDES permits for construction runoff, dewatering and other low-threat releases to surface water, and discharges from municipal storm drain systems (MS4s) require the provision of water quality control measures that would protect groundwater quality from future development activities.

Several technical studies have been conducted regarding water quality control feature impacts on groundwater (e.g., the City of Fresno's Nationwide Urban Runoff Project and the California Storm Water Best Management Practices Handbook prepared by the California Stormwater Quality Association). These studies, among others, have identified that water quality control features such as infiltration basins have been successful in controlling water quality and avoiding groundwater quality impacts. As runoff infiltrates into the ground, particulates and attached contaminants such as metals and nutrients are removed as they become attached to soil particles. Dissolved constituents are also absorbed by soil particles (EPA, 1999). Depth to

groundwater in the Planning Area varies but is generally greater than 100 feet below ground surface, providing more than sufficient depth for infiltration (DWR, 2008). Therefore, any remaining pollutants in runoff will not significantly contaminate groundwater supplies.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this water quality impact. The following list contains those policies and action items that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Action Item CON-3.1: Prepare a groundwater recharge program which identifies specific recharge strategies and projects, and consider the establishment of a fee-based system for new development to implement these strategies to offset the water demand created by such development.

Policy CON-10: The City shall seek to minimize toxic runoff from such sources as homes, golf courses, and roadways. Examples of potential programs include:

- The use of "bioswales" and similar features (such as infiltration trenches, filter trips, and vegetated buffers) to trap contaminants;*
- Installation of grease/oil separators to keep these contaminants out of storm runoff;*
- Regular street sweeping programs to prevent the buildup of oil, grease, and other contaminants and keep them from being swept into creeks and rivers;*
- Minimizing pesticide use and promoting the use of natural pest controls;*
- Encouraging the installation of "gray water" systems.*

Action Item CON-10.1: Implement the City's "Storm Water Quality Management Plan."

Action Item CON-10.2: Update the "Storm Water Quality Management Plan" as needed to incorporate the measures included in Policy CON-10 and other new measures that become available.

Continued compliance with SWRCB statewide water quality permits will minimize pollutant loads in construction site runoff and dewatering and municipal stormwater. Any remaining pollutants would be effectively removed through infiltration prior to reaching the relatively deep groundwater basin. In addition, implementation of the above-listed General Plan policies would further protect groundwater quality by creating a groundwater recharge program and by requiring the City's Storm Water Quality Management Plan to be updated continually to include newly available BMPs. As such, this impact is considered **less than significant**.

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Mitigation Measure

None required.

Flooding Hazards

Impact 4.9.4 Implementation of the proposed General Plan would increase impervious surfaces and alter drainage conditions and rates in the city, which could result in increased runoff and potential flooding impacts. The proposed General Plan could also potentially provide for development within areas subject to flooding. This is considered a **less than significant** impact.

Urban development often includes the addition of impervious surfaces, including roads, parking lots, driveways, and conventional roof tops, such that precipitation does not have the opportunity to saturate the ground and enter the groundwater table. As a result, precipitation runs off as stormwater via sidewalks, roadways, and gutters. Surface waters provide a physical conveyance of surface water flows and channels for the handling of large stormwater events. Large storms can produce extreme flows that cause bank cutting and sedimentation of ephemeral drainages, streams, lakes, and reservoirs. In addition, flooding can cause problems to area roadways and homes. This could result in new flooding issues (e.g., enlargement of floodplain areas along waterways) as well as the exacerbation of existing flooding issues (e.g., existing localized flooding along Cottonwood Creek and Dry Creek).

Flooding hazards in the Planning Area were significantly reduced with the 1979 construction of Hidden Dam, located upstream from the City of Madera on the Fresno River. However, several portions of the Planning Area remain designated by the Federal Emergency Management Agency as being within either the 100- or 500-year flood zones (see **Figure 4.9-2**). No areas within the Planning Area have been designated as being within the 200-year floodplain; however, these 200-year floodplain maps are not currently available for Madera County. The Department of Water Resources, pursuant to SB 5, has initiated several projects that will provide updated information about flood hazards in the region over the next two to four years. According to the data currently available, the northwestern portion of the Planning Area, in the vicinity of Dry Creek, as well as the southeastern portion of the Planning Area, in the vicinity of Cottonwood Creek, are both within the 100-year flood zone. An area near the center of the city, generally east of SR 99 and south of SR 145, is designated as being within the 500-year flood zone. In addition, two narrow corridors along the Fresno River and Schmidt Creek are within the 100-year flood zone.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this water quality impact. The following list contains those policies and action items that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

- | | |
|---------------|---|
| Policy HS-19: | <i>The City shall not permit new development projects to result in new or increased flooding impacts on adjoining parcels in either upstream or downstream areas.</i> |
| Policy HS-21: | <i>The City shall require any development on land subject to a 100-year flood event, based on Federal Emergency Management</i> |

	<i>Agency (FEMA) or on other updated mapping acceptable to the City, to conform to NFIP standards.</i>
<i>Policy HS-22:</i>	<i>Creation of lots whose access will be inundated by flows resulting from a 10-year or greater storm shall not be allowed. Bridges or similar structures may be used to provide flood-free access.</i>
<i>Policy HS-23:</i>	<i>The City shall limit the number of crossings of natural streams in order to reduce potential flooding, degradation, hydrological changes and property access problems. Among the methods which may be used to reduce the number of crossings is a shared access drive serving two or more parcels.</i>
<i>Policy HS-24:</i>	<i>Parcels shall not be created on which the presence of easements, floodplain, marsh or riparian habitat, or other features would leave insufficient land to build and operate structures. This policy shall not apply to open space lots specifically created for dedication to the City or another appropriate party for habitat protection, flood control, drainage, or wetland maintenance.</i>
<i>Policy HS-25:</i>	<i>New and modified bridge structures shall not cause an increase in water surface elevations of the 100-year floodplain exceeding one foot, unless analysis clearly indicates that the physical and/or economic use of upstream or downstream property will not be adversely affected.</i>
<i>Policy HS-26:</i>	<i>The City shall require all new urban development projects to incorporate runoff control measures to minimize peak flows of runoff and/or assist in financing or otherwise implementing comprehensive drainage plans. All such control measures will consider potential affects to adjacent property owners.</i>
<i>Policy HS-27:</i>	<i>Upon adoption of the Central Valley Flood Protection Plan, and this General Plan, the City shall review the consistencies of City flood-related planning documents for consistency with the current General Plan with the provisions of Central Valley Flood Protection Plan and the policies of the General Plan.</i>
<i>Action Item HS-27.1:</i>	<i>Consider adoption of a local plan of flood protection under Water Code sections 8201 et seq.</i>
<i>Action Item HS-27.2:</i>	<i>Work collaboratively with other appropriate agencies to identify those areas subject to flooding and to prepare flood emergency plans and flood mitigation programs, as provided for by Water Code Sections 9621 through 9623.</i>
<i>Action Item HS-27.3:</i>	<i>Review the flood hazard provisions of the Land Use, Conservation, and Health and Safety Elements of the General Plan for consistency with the Central Valley Flood Protection Plan, upon its adoption.</i>

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Policy CON-12:

The relocation of natural stream courses is discourages. Where flood protection is a necessity, the City supports leaving existing natural stream courses and adjoining land in a natural state and creating new storm drainage capacity in parallel above- or below-ground facilities.

Continued maintenance and expansion of the City's municipal storm drain system and review of drainage plans for future development projects prior to their approval would minimize potential flooding issues associated with urban growth within the Planning Area. Additionally, continued City participation in the National Flood Insurance Program would minimize risks associated with existing flooding issues. Implementation of the above-listed General Plan policies and action items would further reduce the potential for flooding issues and associated risks by enforcing various lot design restrictions and standards for new subdivisions and development, by preventing bridge projects from increasing existing flooding risks, and by requiring new development to incorporate appropriate drainage systems. Furthermore, the above-listed policies would ensure consistency with newly adopted flood-related regulations. As such, this impact is considered **less than significant**.

Mitigation Measures

None required.

Dam Failure Inundation

Impact 4.9.5 Implementation of the proposed General Plan could potentially provide for development within areas subject to flooding as a result of dam failure. This is considered a **less than significant** impact.

Failure of the Hidden Dam could potentially result in the inundation of properties within the city and other portions of the Planning Area. However, such an event has an extremely low probability of occurring and is not considered to be a reasonably foreseeable event. The dam is regularly inspected and maintained by the U.S. Army Corp of Engineers, and repairs and improvements are completed as necessary. In addition, dams are regulated by the California Department of Water Resources, Division of Safety of Dams and are routinely inspected during their impoundment life, which includes monitoring for compliance with seismic stability standards. As such, this impact is considered to be **less than significant**.

Mitigation Measures

None required.

Environmental Effects of Increased Groundwater Use

Impact 4.9.6 Implementation of the proposed General Plan would increase demand for water supply to the city, requiring increased groundwater production and potentially worsening the overdraft condition of the Madera Subbasin. This is considered a **potentially significant** impact.

The proposed General Plan is anticipated, as a worst-case scenario, to accommodate an annual residential growth rate of 5.7 percent within the 2030 General Plan horizon. This rate of growth would result in a city population of over 192,000 by 2030 (135,294 new residents). The proposed General Plan also anticipates approximately 500 acres of new commercial

development and 500 acres of new industrial development within the Planning Area by 2030. Based on the city's per capita water demand rate of 280 gpcd (City of Madera, 1997), this anticipated future development would have a total water demand of approximately 42,450 acre-feet per year by 2030. This projected water demand is significantly greater than the previous estimate for 2030 of 27,081 acre-feet per year contained in the City's 2005 UWMP (see **Table 4.9-2**) and the county's Integrated Regional Water Management Plan (see **Table 4.9-1**). This considerable increase is a result of the greater population growth rate assumed in the proposed General Plan Update, which will expand the city's Sphere of Influence and designate more land for urban development.

It should be noted, however, that the city's per capita water demand rate of 280 gpcd is an average consumption rate for existing uses in the city and is likely far greater than the actual demand rates of new urban development. New development within the Planning Area will be generally denser, will be fully metered, will feature low-flow bath and kitchen fixtures in accordance with state law, and will likely feature drought-tolerant landscaping. In addition, much of the urban development anticipated under the proposed General Plan would replace existing agricultural lands which could have substantially higher water demands per acre than urban development. Therefore, the actual net increase in water demand within the Planning Area may be significantly lower than the estimated 42,450 acre-feet per year.

As described previously in this section, portions of the Planning Area located outside the current city limits are served by water agencies that rely in part or entirely on surface water supplies. However, it is anticipated that new development within the Planning Area would be annexed to the City (see proposed General Plan Policy LU-13) and would therefore be provided water service by the City, which relies entirely on groundwater supplies. The City does not currently have any surface water entitlements and has no immediate plans to purchase long-term surface water supplies (City of Madera, 2005).

Both the San Joaquin Valley Groundwater Basin and the Madera Subbasin have been in a state of overdraft for many years. Average groundwater level declines in the vicinity of the Planning Area range from 1 to 3 feet annually. The presence of several large cones of depression near the city offer further evidence of the overdraft condition of the subbasin. The average overdraft in the vicinity of the Planning Area is estimated at approximately 8,000 acre-feet per year. The City expects that several new wells will be needed to meet the demands of projected future growth and acknowledges that recharge and conservation programs and new sources of water supply will likely be needed to increase the reliability of the city's water supply in the future (City of Madera, 2005).

The City of Madera is actively managing its water system and water use in an attempt to efficiently use its limited water supply and minimize overdraft. The City currently implements or plans to implement in the future a number of water conservation policies and programs as described below.

Conservation Efforts

The City's UWMP outlines a number of programs to reduce Madera's water demands. The City offers onsite inspections of residences and businesses to identify sources of water waste, educate customers, and suggest control measures. In addition, the City implements an ongoing program to detect and repair leaks within its own system. New development within the city is required to install water meters, and the City is currently considering a program to retrofit existing development with meters to provide an incentive to conserve. Also, as part of the normal plan check process, the City reviews project plans and specifications to ensure that sound water

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conservation practices are considered as part of the designs. Finally, the City enforces its water waste restrictions through its Conservation Water Patrols and a series of escalating penalties for violations (City of Madera, 2005).

Reclaimed Water

The City currently treats wastewater and discharges treated effluent into percolation ponds at its wastewater treatment plant (WWTP) located southwest of the city. The City has recently upgraded and expanded its WWTP. As the next part of this expansion, the City plans to construct extraction wells at the WWTP to pump groundwater from under the WWTP and the percolation ponds to prevent possible mounding or a concentration of nitrates or other potential contaminants from occurring in the immediate area. The City intends to make beneficial use of the extracted water. Under an agreement with MID, the groundwater may be pumped into an MID canal for delivery to its agricultural water users. The use of groundwater extracted at the WWTP in this fashion would allow MID surface water supply deliveries to be expanded, which would decrease the amount of groundwater pumped from elsewhere in the basin. In any case, the rate of groundwater extraction from underneath the WWTP will not exceed the rate of percolation (City of Madera, 2005).

Water Banking

MID is planning to construct and operate a groundwater banking facility southwest of the City of Madera. The Water Supply Enhancement Project is intended to help alleviate water supply shortages and overdraft conditions in the Madera Subbasin. Although early in the planning stages, such a project may make opportunities available to the City of Madera to participate in the project, which may make various sources of water available for groundwater recharge within the City's service area through exchanges with other water banking participants (City of Madera, 2005).

Groundwater Recharge

The City's 1997 Water System Master Plan recommended that the City pursue groundwater recharge projects along the Fresno River including the use of storm drainage retention basins to allow stormwater to percolate to the groundwater basin. The plan indicated that areas favorable for recharge are in the southern and southwestern portions of the city where coarse-grain sediments persist with depth (Madera County, 2008).

Environmental Effects Associated with Potential Future Water Supply Shortages

Should the City's planned water supplies prove insufficient to adequately serve the future development planned for in the proposed General Plan Update, development could be curtailed and the City's vision for the Planning Area may not be fully realized. In addition, should development be curtailed, a portion of anticipated development fees may not be received and, as a result, certain capital improvement projects (i.e., roadway and intersection improvements, infrastructure improvements, etc.) may be delayed or never constructed. Consequently, additional traffic, public service, utility, and other impacts could result. Similarly, the City's affordable housing and redevelopment programs may not be fully implemented due to a lack of funding.

Secondary Water Supply Opportunities

The City's 1997 Water System Master Plan and 2005 Urban Water Management Plan identify a number of potential alternative water supplies to supplement its existing groundwater well system should it become necessary in the future. According to these documents, the City could purchase water from one or more of the following sources.

Purchase Class 1 Water

The City could purchase Class 1 water from the Central Valley Project (CVP) via Millerton Lake, the Friant-Kern and Madera canals, and/or the San Joaquin River. This source provides a dependable water supply each year. MID has a contractual entitlement for 109,000 acre-feet of Class 1 CVP water and has historically received an average of 98 percent of its entitlement. Class 1 water could be purchased and transferred to the City from MID or other CVP contractors in the U.S. Bureau of Reclamation's Friant Unit (City of Madera, 2005).

Purchase Class 2 Water

This supply of CVP water is from the same sources but is in addition to the Class 1 water supply described above. The availability of Class 2 water is highly variable from year to year, is characteristically undependable, and is available as determined by USBR's Contracting Officer. MID has a contractual entitlement to 186,000 acre-feet of Class 2 water. Class 2 water could be purchased and transferred to the City from MID or other CVP contractors in USBR's Friant Unit. However, due to the uncertainty of annual supply and timing of availability, this source may be more appropriate for a direct recharge program rather than for direct use (City of Madera, 2005).

Purchase Section 215 Water

If USBR's Contracting Officer determines that there is a CVP water surplus as the result of an unusually large water supply not otherwise storable for CVP purposes or infrequent and otherwise unmanaged flood flows of short duration, these waters may be made available to CVP contractors as Section 215 water. This availability occurs infrequently and unreliably and should be considered only as a potential supplemental source. Section 215 water, when available, could potentially be purchased from MID, as a CVP contractor (City of Madera, 2005).

Purchase Nonproject Water

Nonproject water is water that is held by non-CVP and non-State Water Project (SWP) water users subject to state law. One source in the Fresno River Basin that could be potentially used by the City is MID's Soquel water. The Soquel water right is a pre-1914 right that was acquired by MID from a mining company in the upper San Joaquin River watershed. This water right was diverted to the Fresno River for a period of time through a series of channels and delivered to users within MID. MID presently has an agreement with Pacific Gas and Electric (PG&E) for use of the water for hydropower generation in PG&E facilities upstream from Millerton Lake. The water is released into Millerton Lake after being used by PG&E. The Soquel water right is for a continuous flow of 50 cubic feet per second (cfs), when available, and yields about 10,000 acre-feet annually. Because MID is a CVP contractor and the Soquel water would be delivered through USBR facilities, USBR may consider a transfer of Soquel water to be subject to the Central Valley Project Improvement Act (CVPIA). The key to obtaining the Soquel water for groundwater recharge by the City is linked to MID's willingness to negotiate with the City of

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Madera. Further, since the Soquel water is presently used by MID within their service area, the benefit to the groundwater or the total area water supply in the vicinity of Madera may be at the expense of adverse impacts (additional groundwater pumping) elsewhere within MID. The potential benefits and adverse impacts need to be carefully analyzed.

Another source of nonproject water within the Fresno River Basin is MID's Fresno River water rights. MID has a right to the first 200 cfs in the river. The Fresno River's adjudicated and appropriated average annual supply is approximately 20,000 acre-feet. The same issues regarding availability and potential benefits of acquiring a portion of MID's Soquel water also apply to the Fresno River (City of Madera, 2005).

Finally, the City could potentially purchase water from a water purveyor located outside the area and have it wheeled into the Planning Area via existing water distribution facilities such as the Madera Canal. This approach may be more viable as water could be purchased from wetter regions that may have excess water available for purchase. However, the City would need to negotiate wheeling agreements with MID and/or other agencies for use of their distribution facilities.

Environmental Effects Associated with Secondary Water Supply Opportunities

The purchase and delivery of any surface water supplies to Madera could only be utilized in the near term for groundwater recharge or for nonpotable uses as the City does not currently have a water treatment facility. Most of the supply opportunities described above would require extensive new and expanded infrastructure to transport water to the city, including canals, pipelines, pump stations, and transmission lines. In addition, the construction and operation of a new water treatment plant would be required prior to the direct use of any purchased water as a potable water supply. **Table 4.9-3** summarizes the potential environmental impacts that could occur from planned and other future new water supply options that could be pursued to serve the Planning Area.

TABLE 4.9-3
TYPES OF POTENTIAL ENVIRONMENTAL IMPACTS THAT COULD BE CAUSED BY NEW WATER SUPPLY PROJECTS, WATER RIGHTS TRANSFERS, AND RELATED INFRASTRUCTURE

Types of Potentially Affected Resources	Related and Potential Effects
Surface Water Hydrology	Changes in the magnitude and timing of flows in affected streams; changes in the level of affected reservoirs and lakes.
Water Quality	Changes in stream and reservoir/lake temperature, dissolved oxygen levels, turbidity, total suspended solids, and other water quality parameters of concern during construction and operation of new facilities.
Fishery Resources including Special-status Species	Change in the amount and quality of fishery habitat in affected streams and reservoirs/lakes, and potential fish entrainment at possible diversion sites in lakes and streams.
Wetlands and Riparian Habitat	Changes in the amount or functions and values of various types of wetlands from the construction of new facilities or in riparian areas from changes in the operation of reservoirs/lakes and changes in stream flows. Riparian habitat could be affected by hydrology changes or new construction and is especially important habitat for wildlife and botanical species.

Types of Potentially Affected Resources	Related and Potential Effects
Botanical Resources including Special-status Species	Disturbance to rare plants and their habitat and other types of vegetation from construction activities or changes in hydrology along streams and at reservoirs and lakes.
Wildlife Resources including Special-status Species	Changes in the amount and quality of affected wildlife habitat near affected reservoirs/lakes and streams and where appurtenant facilities would be located.
Geology and Soils	Increase in erosion and sedimentation from construction activities; change in sediment transport in streams; geologic hazards could cause problems for new facilities and their operators if they are not sited carefully.
Recreation	Changes in the quantity or quality of recreation opportunities, including fishing, boating, hiking, and whitewater rafting in affected reservoirs/lakes and streams; some impacts could also occur during construction and operation of new conveyance, treatment, storage, and pumping facilities.
Visual Resources	Changes in reservoir/lake levels and stream flows and the addition of new project facilities could affect the visual environment. New pipelines, pumping stations, or transmission lines near or in residential areas or highly visited areas would cause negative impacts.
Agriculture	Some irrigated land or grazing land could be taken out of production where project conveyance facilities need to be located and to accommodate growth. The availability of water supplies for agricultural uses could decrease.
Cultural Resources	Historic, prehistoric, and ethnographic resources could be affected by hydrology changes or the construction and maintenance of new facilities.
Compatibility with Existing Land Uses and Other Policies and Plans	Some new project facilities may not be compatible with surrounding land uses or may be inconsistent with related federal, state, tribal, and local plans and policies (including those of the U.S. Fish and Wildlife Service and California Department of Fish and Game).
Mineral Resources	New project facilities could interfere with the extraction of minerals at known or yet-to-be-discovered mineral sites.
Public Utilities	The routing and siting of new project facilities could interfere with the operation or maintenance of existing or planned public utilities, including communication and energy infrastructure.
Socioeconomic Resources	Water service customers of the City and others would enjoy the socioeconomic benefits associated with a more reliable water supply and related economic growth. Water rates would likely increase to help pay for new facilities. Facility construction would cause short-term and beneficial employment and income impacts. Energy or mineral impacts would also cause related socioeconomic effects.
Air Quality and Noise	Air emissions and excessive noise from construction equipment and traffic could occur during the construction phase of new projects. New pumping stations would likely cause adverse noise impacts for nearby residents and recreationists. This could also result in additional greenhouse gas emissions.
Transportation	Local roads would experience traffic increases during construction.
Public Health and Safety	Construction activities could create some short-term safety hazards.
Growth-inducing Effects	New system infrastructure and water supply projects would likely cause growth-inducing impacts.

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Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this water quality impact. The following list contains those policies and action items that include specific, enforceable requirements and/or restrictions and corresponding performance standards that assist in reducing (though not eliminating) this impact.

Policy CON-1: The City will coordinate with local, regional, and state water suppliers and water resource managers to identify water management strategies and issues that ensure a clean and sustainable water supply.

Action Item CON-3.1: Prepare a groundwater recharge program which identifies specific recharge strategies and projects, and consider the establishment of a fee-based system for new development to implement these strategies to offset the water demand created by such development.

Policy CON-4: The City will coordinate water resource management planning with other conservation planning efforts, such as those related to open space, parkland, and agricultural preservation.

Action Item CON-5.3: Develop a program to accelerate the City's water meter installation program to reach the goal of installation of meters for all customers before the current 2025 deadline.

Policy CI-51: Water supply and delivery systems shall be available in time to meet the demand created by new development, or shall be assured through the use of bonds or other sureties to the City's satisfaction.

Action Item CI-51.1: The following shall be required for all development projects, excluding subdivisions:

- An assured water supply and delivery system shall be available at the time of project approval. If a choice of alternative methods of supply and/or delivery is selected, each shall be capable individually of providing water to the project.*
- All required water infrastructure for the project shall be in place at the time of project approval, or shall be assured through the use of bonds or other sureties to the City's satisfaction. Water infrastructure may be phased to coincide with the phased development of large-scale projects.*

Action Item CI-51.2: The following shall be required for all subdivisions to the extent permitted by state law:

- Proposed water supply and delivery systems shall be identified at the time of tentative map approval to the satisfaction of the City. Alternative methods of supply and/or delivery may be*

proposed, provided that each is capable individually of providing water to the project.

- Prior to the approval of a final map by the City, sufficient capacity shall be available to accommodate the subdivision plus existing development, and other approved projects in the same service area, and other projects which have received commitments for water service.*
- Offsite and onsite water infrastructure sufficient to provide adequate water to the subdivision shall be in place prior to the approval of a final map or their financing shall be assured to the satisfaction of the City, consistent with the requirements of the Subdivision Map Act.*
- Offsite and onsite water distribution systems required to serve the subdivision shall be in place and contain water at sufficient quantity and pressure prior to the issuance of any building permits. Model homes may be exempted from this policy as determined appropriate by the City, and subject to approval by the City.*

Policy CI-53:

The City shall seek to protect the quality and quantity of groundwater resources, including those which serve households and businesses which rely on private wells.

Policy CI-54:

The City shall require that water flow and pressure be provided at sufficient levels to meet domestic, commercial, industrial, and firefighting needs.

The efforts undertaken by the City and County to eliminate or reduce the overdraft condition of the Madera Subbasin, as well as implementation of the proposed General Plan policies listed above, would reduce this impact by recharging the aquifer and by reducing the water demands of future development. The proposed policies would also ensure that new development under the General Plan would not proceed without verification and determination that an adequate water supply exists. It is speculative to state that a reliable water supply source would be available to serve buildout of the entire Planning Area due to the overdraft condition of the Madera Subbasin and the significant obstacles and costs associated with obtaining surface water supplies. In addition, the proposed General Plan would contribute to significant environmental impacts (see **Table 4.9-3**) associated with planned water supply projects as well as other potential future water supply sources. Given these conditions, this impact is considered **significant and unavoidable**.

The reader is referred to Section 4.12, Public Services and Utilities, for a discussion of potential environmental effects associated with the construction and expansion of water supply infrastructure.

Mitigation Measures

No additional feasible mitigation is available.

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4.9.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for the proposed General Plan as it relates to surface hydrology and water quality is the 15,880 square mile San Joaquin River watershed. Major surface water features within the Planning Area are the Fresno River, Cottonwood Creek, Dry Creek, Schmidt Creek, and Madera Lake. The cumulative setting for groundwater hydrology is the Madera Groundwater Subbasin which has a surface area of about 614 square miles. The City relies on groundwater as its sole water supply; therefore, the cumulative water supply analysis focuses on water demand projections in the Madera Groundwater Subbasin including buildout of the Planning Area. Buildout of the proposed General Plan Update is not expected to occur until roughly 2065, based on a projected residential growth rate of around 2.65 percent per year.

As discussed in Section 4.0, Introduction to the Environmental Analysis and Assumptions Used, potential development within the region could have an effect on hydrology and water quality. This could result in potential effects to hydrology and water quality in the geographic extent of Madera County.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Water Quality Impacts

Impact 4.9.7 Implementation of the proposed General Plan, in combination with cumulative development in the watershed, would contribute to a cumulative degradation of water quality from construction activities and increased urban runoff. This is considered a **less than cumulatively considerable** impact.

As described under Impact 4.9.1 and 4.9.2, approximately 7,637 acres within the Planning Area are anticipated to be substantially disturbed with urban levels of development within the 2030 General Plan horizon. This would add to other potential development activities within Madera County and adjacent areas, as described in Section 4.0, depending on the timing and rate of development. Such development would result in cumulative water quality impacts to both surface and groundwater supplies.

All development projects that would disturb one acre or more would be subject to the state's NPDES program which requires the implementation of BMPs to protect water quality. Once these projects are operational, they would be required to comply with the City's Stormwater Quality Management Program.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this water quality impact. The policies and action items containing specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact are listed under Impacts 4.9.1, 4.9.2, and 4.9.3.

Continued compliance with applicable SWRCB statewide water quality permits and the City's Storm Water Quality Management Program would minimize the pollutant load of storm drainage within the Planning Area. Implementation of General Plan policies (see Impacts 4.9.1, 4.9.2, and 4.9.3) would further protect surface and groundwater quality and mitigate the City's contribution to this impact by protecting natural streams and drainages, reducing potential

sources of pollutants, and requiring the use of landscaping and other BMPs to prevent pollutants from entering surface and groundwater resources. As such, the City's contribution to cumulative water quality impacts is considered a **less than cumulatively considerable** impact.

Mitigation Measures

None required.

Cumulative Flood Hazards

Impact 4.9.8 Implementation of the proposed General Plan would increase impervious surfaces and alter drainage conditions and rates in the Planning Area, which could contribute to cumulative flood conditions along the Fresno River and local waterways. This is considered a **less than cumulatively considerable** impact.

As discussed under Impacts 4.9.4 and 4.9.5, development within the Planning Area and throughout the San Joaquin River watershed would increase runoff and restrict natural percolation by creating new impervious surfaces such as roadways and building roofs. Therefore, implementation of the proposed General Plan, in combination with cumulative development in the watershed, could increase flood conditions for area waterways. In addition, future development could potentially be located within existing flood zones delineated by FEMA, creating a potential for flood safety risks. Finally, development under the proposed General Plan and in surrounding areas may be at risk of inundation in the event of failure of an upstream dam.

The City maintains a public storm drainage system to manage stormwater runoff and prevent flooding. The system will continue to be expanded upon and improved as the Planning Area is developed and stormwater volumes increase. Future development within the Planning Area, and throughout the state, planned for construction within FEMA-identified flood zones would be required to comply with National Flood Insurance Program (NFIP) standards to ensure safety. In addition, dams throughout the watershed are regulated at either the federal or state level (depending on purpose and size) to ensure proper design and maintenance to prevent failure and subsequent flooding hazards. Failure of Hidden Dam is considered extremely unlikely as it is maintained by the U.S. Army Corp of Engineers to ensure safety. In addition, dams are regulated by the California Department of Water Resources, Division of Safety of Dams and are routinely inspected during their impoundment life, which includes monitoring for compliance with seismic stability standards.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing flooding impacts. The policies and action items containing specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact are listed under Impact 4.9.4.

As described under Impact 4.9.4, continued maintenance and expansion of the City's municipal storm drain system, review of drainage plans for future development projects, participation in the NFIP, and implementation of the additional measures required by the General Plan policies listed under Impact 4.9.4 would reduce the City's contribution to potential flood hazard impacts within the Planning Area to a less than significant level. Therefore, the proposed General Plan would not contribute to regional flood impacts within the larger San Joaquin River watershed and this impact is considered **less than cumulatively considerable**.

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Mitigation Measures

None required.

Cumulative Water Supply Impacts

Impact 4.9.9 Implementation of the proposed General Plan, in combination with cumulative development in the subbasin, would contribute to an increased demand for water supply, requiring increased groundwater production and potentially worsening the overdraft condition of the basin. This is considered a **cumulatively considerable** impact.

As noted under Impact 4.9.6, the Madera Subbasin is in overdraft condition due to pumping for agricultural and urban uses. Growth in the subbasin will increase demands for groundwater pumping, potentially resulting in continued drawdown of water levels leading to localized cones of depression, changes in groundwater flow direction, concentration of contaminants, and land subsidence. This is a regional problem caused by agriculture and urban development throughout Madera County and adjacent areas and, as described under Impact 4.9.6, could be significantly worsened by implementation of the proposed General Plan Update.

Buildout of the Planning Area, which would occur sometime after 2030, would result in an ultimate city population of about 263,278 (206,572 new residents). Based on the city's per capita water demand rate of 280 gpcd (City of Madera, 1997), at buildout the city would have a total water demand of approximately 82,575 acre-feet per year. Other areas served by groundwater supplies from the Madera Subbasin are also projected to grow, resulting in greater demands for groundwater supplies. As noted under Impact 4.9.6, water demand rates for new urban development will likely be far less than existing development as new development is generally denser with reduced irrigation requirements and uses less water for municipal purposes due to mandatory water meters and low-flow kitchen and bath fixtures.

The City of Madera implements several water conservation and groundwater recharge programs to reduce demands for groundwater and protect the Madera Subbasin. Implementation of the proposed General Plan would expand upon these programs.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing water supply impacts. The policies and action items containing specific, enforceable requirements and/or restrictions and corresponding performance standards that address (though not fully mitigate) this impact are listed under Impact 4.9.6.

Cumulative agricultural and urban growth within the greater San Joaquin Valley Groundwater Basin would result in a cumulatively considerable impact on the Madera Subbasin as the overall demand for water increases. Additionally, the construction and operation of new water supply projects could have significant impacts on the environment related to hydrology, wildlife habitat, soils, air quality, noise, traffic, and other issues. As determined in Impact 4.9.6, implementation of the proposed General Plan Update would significantly contribute to this cumulative impact regardless of the City's current and planned water conservation policies and programs and the proposed General Plan policies listed under Impact 4.9.6. This impact is considered **cumulative considerable** and **significant and unavoidable**.

Mitigation Measures

No additional feasible mitigation is available.

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4.10 BIOLOGICAL RESOURCES

This section discusses and analyzes biological resources in the City of Madera General Plan Planning Area. The purpose of this section is to describe onsite vegetation communities, including sensitive habitats and communities, and assess the potential for occurrence of special-status plant and wildlife species within the Planning Area. This section also evaluates potential impacts to biological resources associated with the proposed land use designations of the General Plan Update. The information provided in this section is based primarily on a review of database search results pertaining to natural resources within the Planning Area and on field investigations.

4.10.1 EXISTING SETTING

REGIONAL SETTING

The City of Madera is located in the northern San Joaquin Valley. Bounded on the east by the Sierra Nevada foothills and on the west by the Coast Ranges, the landscape of Madera is relatively flat, consisting of basins, plains, terraces, alluvial fans, and scattered hills or buttes. The predominant landscape feature of the valley is a wide variety of agricultural croplands. The San Joaquin Valley is intensely farmed and produces over 250 crops shipped to worldwide markets (USGS 2003). The productivity of the valley is made possible through irrigation water supplied by a network of delivery canals and reservoirs. In recent years the valley has experienced tremendous urban growth, which has created additional pressures on dwindling habitat resources (USGS 2003). The San Joaquin Valley once supported a variety of vegetation communities and habitats including wide alkali scrubs, annual and perennial grasslands, marshes, and riparian forests. Much of the natural habitat of the valley now persists as fragments due to agricultural and other development (USGS 2003).

Local Setting

Prior to development, the natural vegetation within the vicinity of the City of Madera was characterized by vast stretches of savanna traversed by the riparian stands of the Fresno River and other waterways. The range of natural vegetation communities has been significantly reduced from historic levels as a result of conversion of these lands to urban and agricultural uses. Only scant disturbed remnants of these natural communities remain within the Planning Area. Agricultural and suburban development has nearly eliminated most historic natural communities. Nonetheless, riparian and wetland habitats persist within the Planning Area.

These habitats are considered sensitive by the California Department of Fish Game (CDFG) and have the potential to contain special-status species. Riparian habitat is found along the Fresno River, Schmidt Creek, Cottonwood Creek, and Dry Creek, as well as some of the smaller canals and drainages within the Planning Area. In addition, the annual grassland habitat within the grazing lands in the eastern portion of the Planning Area has potential to contain vernal pool and seasonal wetland complexes. Northern hardpan vernal pool habitat has been mapped and documented in CDFG's California Natural Diversity Database (CNDDDB) as occurring just east of the Planning Area (CDFG 2008a/b). Reconnaissance-level surveys identified additional areas where these sensitive resources could occur.

Figure 4.10-1 shows the communities identified within the Planning Area that have the potential to support special-status species or may be considered sensitive habitats. Extensive surveys were not completed for the entire Planning Area. Additional areas of sensitive habitat or areas where special-status species may occur could be identified during subsequent project-level analysis.

The summers are hot and dry and winters are mild. Precipitation is highly variable from year to year; within the City of Madera rainfall averages 11.32 inches per year (Western Regional

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Climate Center 2008). Mean annual temperature is about 59 to 62 degrees Fahrenheit. The mean freeze-free period is about 250 to 300 days (Miles and Goudey 1997).

PLANT COMMUNITIES AND WILDLIFE HABITATS

Plant communities are found where groups of plant species occur together in the same geographic area. These plant communities are organized into cover types that constitute categories of typical land covers and in some cases the uses of those areas such as wastewater treatment plants and Madera Lake, which is used as a recharge area by the Madera Irrigation District. Specific wildlife habitats are created by these cover types. Wildlife habitats provide cover, food, and water, which are necessary in order to support a particular animal species or groups of species. Changes in these habitats, both significant and minor, can impact a species' abundance, distribution, and diversity as well as interactions between different species. **Table 4.10-1** lists the cover types mapped in the Planning Area from aerial photography and reconnaissance-level surveys. The locations of these communities are depicted on **Figure 4.10-1**.

TABLE 4.10-1
COVER TYPES IDENTIFIED IN THE CITY OF MADERA PLANNING AREA BY TOTAL ACRES

Cover Types	Acres Within City Boundary	Acres Outside City Boundary and Inside Sphere of Influence	Acres Outside Sphere of Influence and Inside Planning Area	Percentage of Planning Area
Annual Grasslands ¹ (Pasture)	159.94	562.58	7,540.60	11.2%
Agricultural Lands ²	954.10	6,234.06	29,589.92	43.9%
Wetlands / Open Water	13.64	79.89	86.84	0.1%
Riverine / Riparian	145.96	182.70	717.61	1.1%
Madera Lake ³	0.00	0.00	1,097.96	1.6%
Wastewater Treatment Plant Ponds	0.00	245.57	281.11	0.4%
Ruderal ⁴	1,452.83	1,144.06	380.34	0.6%
Total	2,726.47	8,448.85	39,694.38	58.9%

Source: USDA FSA NAIP 2005 (communities identified from aerial photography and ground-truthed when accessible). The remaining lands within the Planning Area include urban developed lands or areas not mapped.

¹ Annual grassland habitat within the Planning Area has the potential to support vernal pool and seasonal wetland habitat.

² Agricultural lands include orchards, vineyards, and croplands, as well as leveled or irrigated pasture. The annual grasslands designation only includes pasture that has not been significantly disturbed.

³ Madera Lake is included as a separate cover type since activities within this area are not under the jurisdiction of the City but this area does contain potential habitat for special-status species.

⁴ Ruderal habitat includes those areas identified as vacant lands within the existing Land Use Map. This may include partially built areas or areas disced.

The following discussion describes the cover types listed above. Included in the discussion of each cover type is a description of the community or habitat and any pertinent information on the plant and wildlife species found within the cover type, where applicable. In addition to the cover types identified, urban and built environment are present within the Planning Area but are not discussed in detail since these areas generally do not provide suitable habitat for sensitive special-status species.

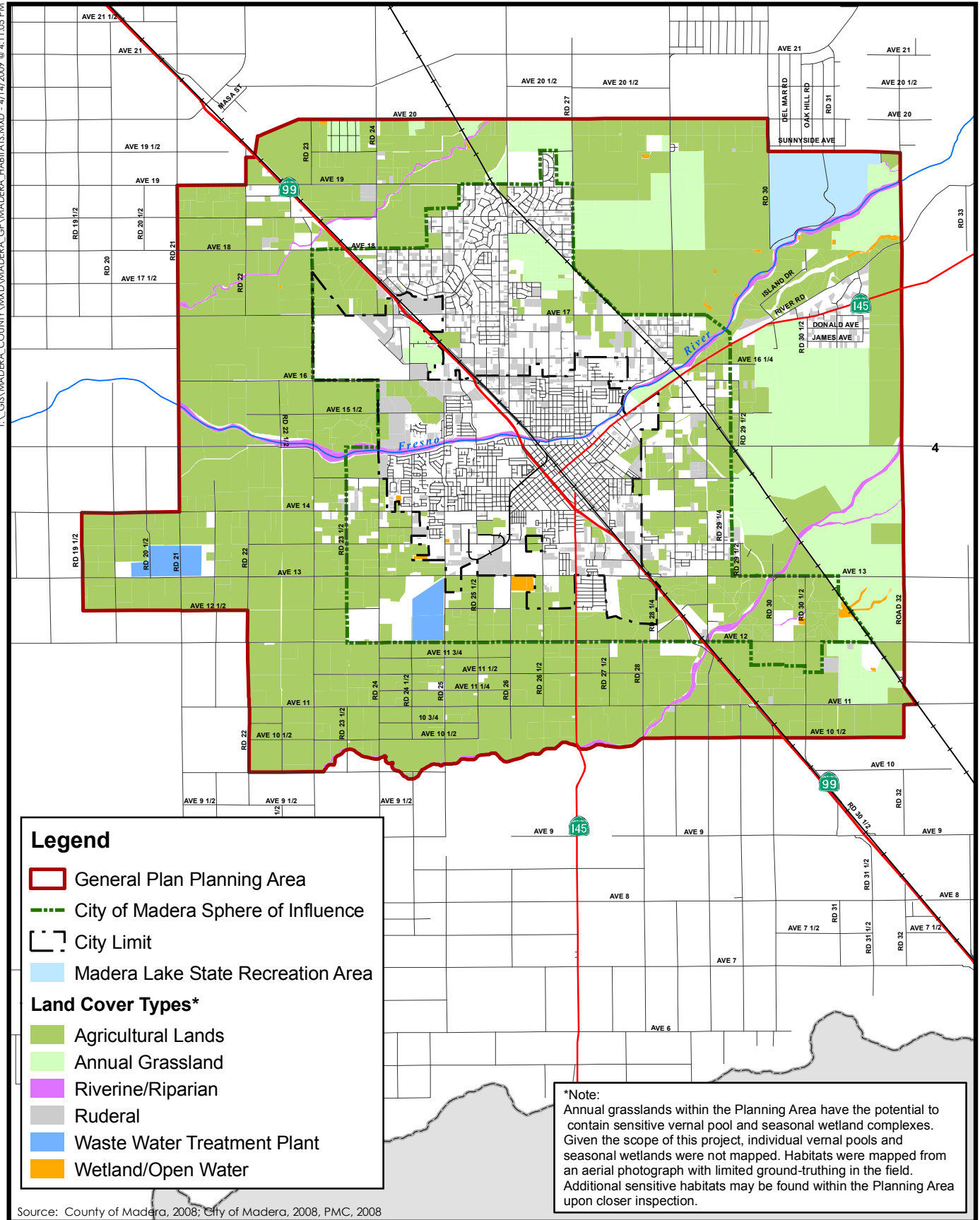


Figure 4.10-1
Plant Communities and Wildlife Habitats

Annual Grasslands

Annual grassland habitat consists of open grasslands in rolling terrain composed primarily of introduced annual plant species. Structure in annual grassland depends largely on weather patterns and livestock grazing. Grazing by livestock typically supports a greater abundance of shorter grass (less than 12 inches tall), such as filaree (*Erodium* spp.) and turkey mullein (*Eremocarpus setigerus*). Without the presence of livestock, annual grassland generally grows tall (greater than 12 inches) and is dense with species such as ripgut brome (*Bromus rigidus*) and wild oat (*Avena fatua*). Other plant species found within this habitat type include soft chess (*Bromus hordeaceus*), red brome (*B. rubens*), wild barley (*Hordeum vulgare*), Mediterranean barley (*H. marinum*), perennial ryegrass (*Lolium perenne*), and foxtail fescue (*Vulpia myuros*). Common forbs include broadleaf filaree (*Erodium botrys*), true clovers (*Trifolium* spp.), popcorn flower (*Plagiobothrys* sp.), and many others. The annual grassland habitat within the Planning Area has potential to contain vernal pools and other seasonal wetlands. Vernal pools support downingia (*Downingia* sp.), meadowfoam (*Limnanthes* sp.), and other species. Vernal pools are discussed in more detail below.

Many wildlife species use annual grasslands for foraging, but some require special habitat features such as cliffs, caves, ponds, or habitats with woody plants for breeding, resting, and cover. Characteristic reptiles that breed in annual grasslands include the western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*) and western rattlesnake (*Crotalus viridis helleri*). Mammals typically found in this habitat include the black-tailed jackrabbit (*Lepus californicus*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), and coyote (*Canis latrans*). California ground squirrels (*Spermophilus beecheyi*) were abundant within the annual grassland and other habitats with friable soils in the Planning Area. Birds known to breed in annual grasslands include a California species of special concern, the burrowing owl (*Athene cunicularia*), as well as horned lark (*Eremophila alpestris*) and western meadowlark (*Sturnella neglecta*). This habitat also provides important foraging habitat for turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), and the state-threatened Swainson's hawk (*Buteo swainsoni*). Several red-tail hawks (*Buteo jamaicensis*) were observed foraging within the Planning Area.

Vernal Pool

A vernal pool is a type of seasonal wetland habitat that exhibits a four-stage hydrologic cycle and develops as a result of complex interactions between climate, geology, soils, the hydrologic cycle of the area, and chemical and evolutionary processes. The four hydrologic stages include a wetting phase, an aquatic or inundation phase, a water-logged terrestrial phase, and a dry or drought phase. Specifically, vernal pools found in the Planning Area are of the northern hardpan vernal pool classification and vary in size and soil depth. Higher and drier pools integrate closely with wetland and grassland cover types, while more stable, deeper vernal pools are often integrated with freshwater marsh cover types.

Many animal species found in the grassland cover type are also found in the vernal pool grassland cover type. Some species found in vernal pool and vernal pool grassland cover types have adapted to specific conditions and are thus only found in those cover types. Of those types, some of these species may utilize the vernal pool and vernal pool grassland habitats only during specific stages of vernal pools and others can be found year-round.

A group of aquatic crustaceans, known as branchiopods, has adapted to rely almost exclusively on the unique hydrology of vernal pools for their survival. Three species of branchiopods are

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found within the Planning Area: California linderiella (*Linderiella occidentalis*) and federally listed conservancy fairy shrimp (*Branchinecta conservatio*) and vernal pool fairy shrimp (*Branchinecta lynchi*).

Several species of amphibians and birds are found within the vernal pool and vernal pool grassland cover types. Amphibians, such as the federally threatened California tiger salamander (*Ambystoma californiense*), use vernal pools for breeding and for tadpole habitat during the wet periods, as vernal pools are more viable breeding and rearing sites due to the fact that they do not support predatory fish species, which feed on tadpoles and young amphibians.

Birds and vernal pools rely on each other as the pools provide nesting as well as high-protein food sources (especially important for migrating species), while birds spread plant seeds as well as invertebrate eggs from pool to pool as they feed. The dispersal of seeds and eggs is key to maintaining ecological diversity and integrity within the vernal pools. The exact nature of the relationship between mammals and vernal pools is not documented, but some evidence is available that shows that smaller species such as rabbits may spread seeds and eggs and that abandoned burrows dug by burrowing mammals may provide shelter for some amphibians.

Agricultural Lands

Agricultural lands in the Planning Area can be divided into four categories: orchard, cropland, vineyard, and pasture. Within this designation only irrigated pasture that has been altered from its original terrain is included under agricultural lands. Pasture that has not been altered is included in the annual grasslands designation. Orchard, cropland, and vineyard generally provide less suitable habitat for wildlife than do pastures because of weed control, tilling, and insect control practices. Agricultural lands generally occur in areas that once supported productive and diverse biological communities. The conversion of native vegetation to agricultural lands has greatly reduced the wildlife species diversity and habitat value. However, some common and agricultural “pest” species forage in these habitats, and cultivated vegetation can provide benefits such as cover, shade, and moisture for these and other species during hot summer months. Typical species found in agricultural lands include red-tailed hawk, barn owl (*Tyto alba*), American crow (*Corvus brachyrhynchos*), Brewer's blackbird (*Euphagus cyanocephalus*), house finch (*Carpodacus mexicanus*), California ground squirrel, and western harvest mouse (*Reithrodontomys megalotis*).

Wetlands and Open Water

In addition to the vernal pools described above, wetlands also occur adjacent to flood control channels and other areas where freshwater runs off from the urban areas. A number of potential wetland sites occur within the agricultural lands in the Planning Area. It is likely that a number of wetlands of a small size occur in isolated locations without hydrologic connections to subsurface flows. Madera Lake contains open water habitat associated with the lake but may also include other wetlands adjacent to or leading to the lake. The Madera Lake designation was not mapped to a finer scale in **Figure 4.10-1** since activities within this area are not under the jurisdiction of the City.

Other wetland features are present within the Planning Area but were not mapped during reconnaissance-level surveys. Additional wetland features may include, but are not limited to, seasonal wetlands or emergent wetlands, wetlands within the riparian corridor, detention basins, and stock ponds. Acreage estimates for this habitat may be calculated during field reconnaissance on a project-by-project basis for future development projects permitted under the updated General Plan.

Riverine/Riparian

The riverine habitat in the Planning Area is found contiguous to fresh emergent wetland and riparian habitats. Riverine habitat only includes the open water areas and areas under the ordinary high water mark, whereas riparian habitat includes the vegetation surrounding these waterways. Riparian vegetation within the Planning Area is characterized by patches of willow scrub, riparian forest, and scattered trees and shrubs. Fremont cottonwood (*Populus fremontii*) and willows (*Salix* spp.) dominate the riparian habitat within the Planning Area. Common plant species found along the banks of waterways include blackberry (*Rubus* spp.), cattails (*Typha* spp.) box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), California sycamore (*Platanus racemosa*), valley oak (*Quercus lobata*), and mule fat (*Baccharis salicifolia*). Openings within this community also contain blue elderberry (*Sambucus mexicana*). The blue elderberry is the host plant for the federally threatened valley elderberry longhorn beetle (VELB; *Desmocerus californicus dimorphus*). Perennial grasses such as creeping wildrye (*Elymus repens*) and Santa Barbara sedge (*Carex barbae*) form dense pockets in the understory. Several introduced and invasive species are also present, such as Russian thistle (*Salsola tragus*), giant European reed (*Arundo donax*), tree of heaven (*Ailanthus altissima*), melon vines or calabazilla (*Cucurbita foetidissima*), pokeweed (*Phytolacca americana*), and yellow star-thistle (*Centaurea solstitialis*).

The Fresno River is dry throughout much of the year, with flow depending mainly on water releases from upstream water agencies (City of Madera 2005). Additionally the flow in the Fresno River is different upstream, as a result of the Madera Irrigation District's weir, from the flow downstream in the city limits. Cottonwood Creek flows in the southern portion of the Planning Area and forms part of its boundary (see **Figure 4.8.1**). Dry Creek traverses the northwestern portion of the Planning Area. The last few miles of Dry Creek are channelized. Schmidt Creek is a minor creek in the northern portion of the Planning Area, flowing through the Madera Country Club golf course. Schmidt Creek ends west of State Route 99 and, while not clearly linked, may ultimately discharge into Dry Creek. All three creeks are classified intermittent streams on U.S. Geological Survey topographic maps, indicating that they are dry for part of the year; however runoff from agricultural lands and stormwater drains may change the natural hydrology of these waterways. These streams qualify as jurisdictional waters of the United States, to the extent they flow into the San Joaquin River. Impacts to jurisdictional features would require a 404 permit from the U.S. Army Corps of Engineers (USACE) and a 401 Water Quality certification from the Regional Water Quality Control Board. Potential trenching of rivers and streams within the Planning Area would also require a Streambed Alteration Agreement (DFG Code Section 1603).

In addition to these waterways, there are also several manmade irrigation channels in the Planning Area, which may contain riparian vegetation and also may qualify as jurisdictional features; these are discussed in greater detail under Irrigation Channels. Additional information on the hydrological features within the Planning Area is included in Section 4.9, Hydrology and Water Quality.

Of the habitats found within the Planning Area, riparian habitat is expected to support the greatest diversity of wildlife because the vegetative structure and composition provides foraging and breeding habitat for many of the species found in the San Joaquin Valley. A number of wildlife species are expected within this habitat.

Bird species found in riparian habitat include ash-throated flycatcher (*Myiarchus cinerascens*), northern oriole (*Icterus galbula*), black-chinned hummingbird (*Archilochus alexandri*), belted kingfisher (*Ceryle alcyon*), wild turkey (*Meleagris gallopavo*), screech owl (*Megascops kennicottii*), great horned owl (*Bubo virginianus*), and California quail (*Callipepla californica*).

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Mammal species include beaver (*Castor canadensis*), western gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), coyote, and Audubon's cottontail (*Sylvilagus audubonii*).

In addition to supporting numerous wildlife species, the riparian habitats within the Planning Area also function as movement corridors for wildlife. Mammals that could use this corridor to move through the area include white-tailed deer (*Odocoileus virginianus*), gray fox (*Urocyon cinereoargenteus*), and the federally endangered and state-threatened San Joaquin kit fox (*Vulpes macrotis mutica*).

Irrigation Channels

Irrigation channels are located primarily in agricultural lands. Acreages for this habitat were not calculated because the Geographic Information System (GIS) data layer used for the analysis only contained line drawings and did not provide acreage estimates. Acreage estimates for this particular habitat may be calculated during field reconnaissance on a project-by-project basis for future development projects permitted under the updated General Plan. They are highly modified channels that vary in species composition and persistence of water. Irrigation channels and ditches may have been naturalized in the past, which means they were natural drainages prior to being realigned to serve a different function; presently they are used as a means of irrigation. The banks are mostly dominated by exotic species such as Himalayan blackberry (*Rubus discolor*) and Johnson grass (*Sorghum halepense*). Some areas of native vegetation include broad-leaved cattail (*Typha latifolia*), hard-stemmed bulrush (*Scirpus acutus* var. *occidentalis*), pacific rush (*Juncus effusus* var. *pacificus*), and tall nutsedge (*Cyperus eragrostis*).

Irrigation channels located adjacent to agricultural lands provide water, cover, and foraging habitat for wildlife in adjacent habitats. Aquatic species include mosquito fish (*Gambusia affinis*) and carp (*Cyprinus carpio*). Bullfrog (*Rana catesbeiana*) tadpoles and adults may also occur within the irrigation channels. Common garter snake (*Thamnophis sirtalis*) utilizes these areas for foraging as well.

Wastewater Treatment Ponds

Wastewater treatment ponds can be valuable habitat for wildlife. Some of the wastewater treatment ponds within the Planning Area contain emergent wetland vegetation such as cattails and bulrushes (*Scirpus* spp.) and, although manmade, look and function like natural emergent wetlands. Wastewater treatment ponds within the Planning Area may provide foraging habitat for herons, egrets, cranes, and other waterfowl and shorebirds. Species that may occur within and around these ponds include black phoebe (*Sayornis nigricans*), western kingbird (*Tyrannus verticalis*), mallard (*Anas platyrhynchos*), greater yellowlegs (*Tringa melanoleuca*), black-necked stilt (*Himantopus mexicanus*), killdeer (*Charadrius vociferus*), and western pond turtle (*Actinemys marmorata*, a California species of special concern).

Ruderal (Disturbed)

Ruderal (roadside) communities occur in areas of disturbance such as along roadsides, trails, and parking lots. These communities are subjected to ongoing or past disturbances (e.g., vehicle activities, mountain bikes, mowing). Ruderal habitat in these disturbed areas supports diverse weedy flora. Vascular plant species associated with these areas typically include Johnson grass, Canadian horseweed (*Conyza canadensis*), milk thistle (*Silybum marianum*), yellow star-thistle, wild radish (*Raphanus sativus*), mustards (e.g., *Brassica nigra*), winter vetch (*Vicia villosa*), and field bindweed (*Convolvulus arvensis*). Fallow fields support field bindweed,

turkey mullein, wild lettuce (*Lactuca serriola*), prickly sow thistle (*Sonchus arvensis*), and common mallow (*Malva neglecta*). Mediterranean hoary-mustard (*Hirschfeldia incana*) and curly dock (*Rumex crispus*) are also typical of this area.

Ruderal habitats, because of their disturbed nature, support a mixture of native and exotic plant and wildlife species. Exotic plant species may provide valuable habitat elements such as cover for nesting and roosting, as well as food sources such as nuts or berries. Native and introduced wildlife species that are tolerant of disturbances and/or human activities often thrive in ruderal habitats. Birds and mammals that occur in these areas typically include introduced species adapted to human habitation, including rock pigeon (*Columba livia*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), house mouse (*Mus musculus*), and Norway rat (*Rattus norvegicus*). Some native species persist in ruderal habitat, including western toad (*Bufo boreas*), western fence lizard (*Sceloporus occidentalis*), Brewer's blackbird, house finch, western scrub jay (*Aphelocoma californica*), yellow-billed magpie (*Pica nuttalli*), and American crow.

SENSITIVE HABITATS

Sensitive habitats include:

- areas of special concern to resource agencies;
- areas protected under CEQA;
- areas designated as sensitive natural communities by CDFG;
- areas outlined in Section 1600 of the California Fish and Game Code;
- areas regulated under Section 404 of the federal CWA;
- areas protected under Section 402 of the CWA; and
- areas protected under local regulations and policies.

Some of the cover types found in the Planning Area are sensitive habitats protected by various agencies. These include vernal pools (identified by the CDFG as "Northern Hardpan Vernal Pools"), which are considered by CDFG to be "rare or uncommon but not imperiled." Seasonal wetlands, including vernal pools, are potential habitat for listed vernal pool crustaceans.

In addition, the riverine and riparian habitats within the Planning Area are sensitive habitats under the jurisdiction of CDFG and USACE. Freshwater emergent wetland and other wetland areas are potentially protected under USACE and provide potential habitat for special-status species. Special-status species and their habitat is described in more detail under the heading Special-status Species.

U.S. Fish and Wildlife Service (USFWS) defines critical habitat as a specific area that is essential for the conservation of a federally-listed species and which may require special management considerations or protection. A very small portion of USFWS "critical habitat" for hairy Orcutt grass (*Orcuttia pilosa*), San Joaquin Orcutt grass (*Orcuttia inequalis*), and vernal pool fairy shrimp (*Branchinecta lynchi*) occurs within the northeastern portion of the Planning Area based on critical habitat maps for federally listed species (USFWS 2008b). **Figure 4.10-2** shows the critical habitat within and directly surrounding the Planning Area. Critical habitat for Greene's tuctoria (*Tuctoria greenei*) and succulent owl's clover (*Castilleja campestris* ssp. *succulenta*) is also located outside of the Planning Area to the northeast.

While not specifically identified by the resource agencies as sensitive habitat, farmlands in the Planning Area provide important habitat utilized by state and federally listed species including the Swainson's hawk and San Joaquin kit fox.

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WILDLIFE CORRIDORS

Wildlife corridors are established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Corridors are present in a variety of habitats and link otherwise fragmented acres of undisturbed area and can be in a natural form or manmade infrastructure such as roads and railroads.

Maintaining the continuity of established wildlife corridors is important to (a) sustain species with specific foraging requirements, (b) preserve a species' distribution potential, and (c) retain diversity among many wildlife populations. Therefore, resource agencies consider wildlife corridors to be a sensitive resource. Irrigation channels and agricultural land may provide enough cover to function as a migratory corridor for some species.

The riparian corridors along the waterways within the Planning Area serve as an aquatic and terrestrial wildlife migration corridor for areas within and surrounding the Planning Area. The agricultural and open space lands may also be used by a variety of wildlife species as wildlife corridors.

SPECIAL-STATUS SPECIES

Special-status plant and wildlife species are those that are afforded special recognition by federal, state, or local resource agencies or organizations. Listed and other special-status species are of relatively limited distribution and generally require specialized habitat conditions. Listed and special-status species are defined as:

- Species listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA).
- Species considered as candidates for listing as threatened or endangered under FESA or CESA.
- Plants listed as Endangered or Rare under the California Native Plant Protection Act.
- Plants on the California Native Plant Society (CNPS) List 1B (plants, rare, threatened, or endangered in California and elsewhere) or List 2 (plants rare, threatened or endangered in California but more common elsewhere).
- Species identified by the CDFG as California Species of Special Concern.
- Wildlife fully protected in California under the California Fish and Game Code.

Special-status species were considered for this analysis based on field survey results and on a review of the CNDDDB, USFWS and CNPS database searches including species within *The Recovery Plan for the San Joaquin Valley* (USFWS 1998). **Figure 4.10-3** shows the location of the recorded occurrences of special-status species within a one-mile radius of the Planning Area. It should be noted that **Figure 4.10-3** shows all occurrences of species dating back to 1889 and thus not all species shown on this figure presently occur within the Planning Area. A complete list of special-status species from the database searches is located in **Appendix H**.

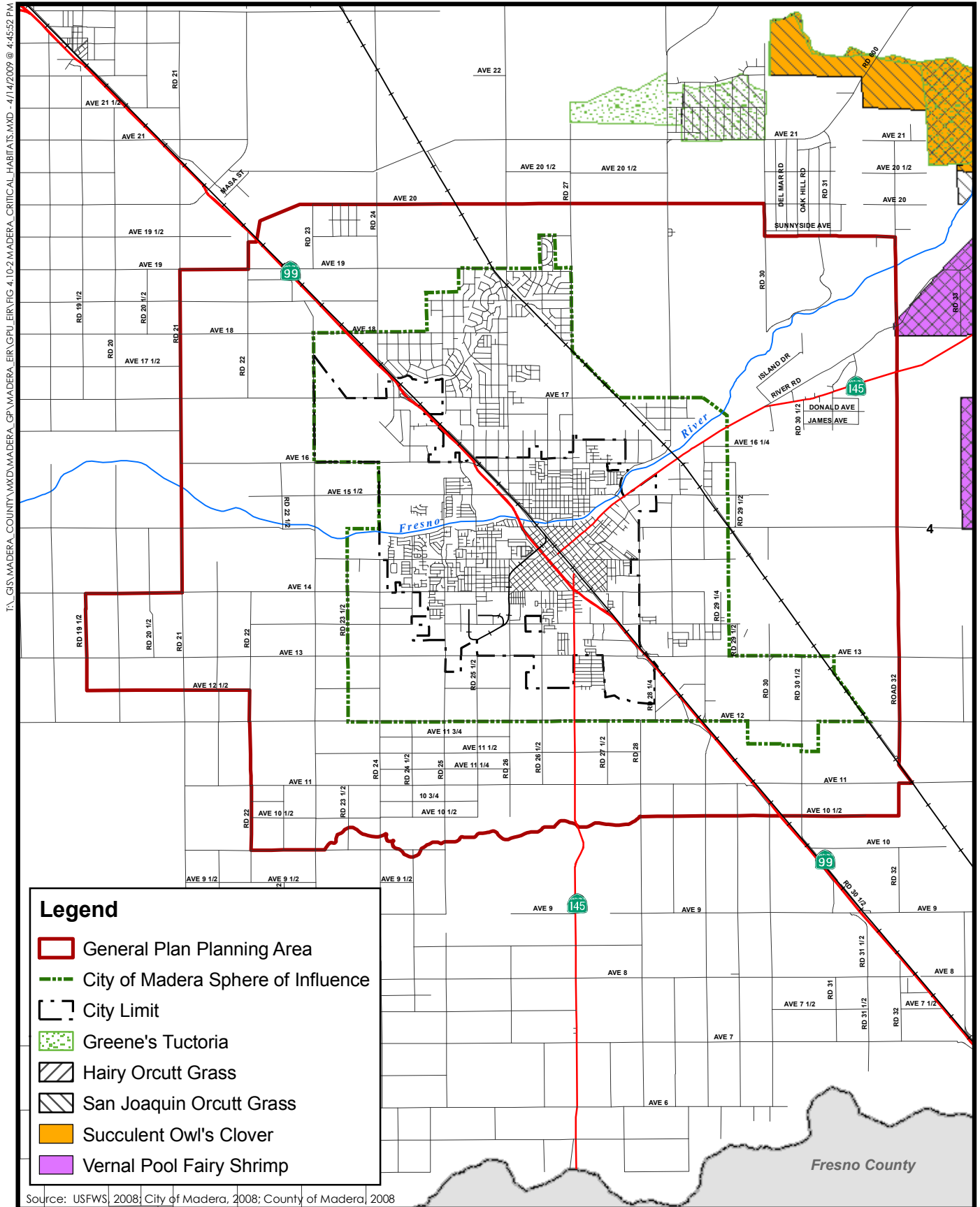


Figure 4.10-2
Critical Habitat Areas

Special-status Plant Species

Table 4.10-2 lists the special-status plant species that may occur within the Planning Area. Each special-status plant species that is considered in the impact analysis is discussed in more detail below. The following discussion provides detail of special-status plant species which have potential to occur in the Planning Area.

TABLE 4.10-2
SPECIAL-STATUS PLANT SPECIES POTENTIALLY OCCURRING WITHIN THE PLANNING AREA

Habitat Type	Scientific Name	Common Name	Status		
			Federal ¹	State ²	CNPS ³
Annual Grassland	<i>Atriplex cordulata</i>	Heartscale	~	~	1B
	<i>Atriplex minuscula</i>	Lesser saltscale	SLC	~	1B
	<i>Atriplex subtilis</i>	Subtle orache	SLC	~	1B
	<i>Cordylanthus palmatus</i>	Palmate-bracted bird's-beak	FE; SLC	SE	1B
	<i>Delphinium recurvatum</i>	Recurved larkspur	~	~	1B
Vernal Pool	<i>Atriplex persistens</i>	Vernal pool smallscale	SLC	~	1B
	<i>Atriplex vallicola</i>	Lost Hills crownscale	~	~	1B
	<i>Castilleja campestris</i> ssp. <i>succulenta</i>	succulent owl's-clover	FT	SE	1B
	<i>Orcuttia inaequalis</i>	San Joaquin Valley orcutt grass	FT	SE	1B
	<i>Orcuttia pilosa</i>	hairy orcutt grass	FE	SE	1B
	<i>Tuctoria greenei</i>	Greene's tuctoria	FE	Rare	1B
Emergent Wetland	<i>Sagittaria sanfordii</i>	Sanford's arrowhead	~	~	1B

Status Codes:

Federal status¹

FE = Listed as endangered under the federal Endangered Species Act

FT = Listed as threatened under the federal Endangered Species Act

State status²

SE = Listed as endangered under the California Endangered Species Act

Rare = Species identified as rare by CDFG

CNPS³

List 1B = Plant species that are rare, threatened, or endangered in California and elsewhere.

Heartscale (*Atriplex cordulata*) is designated by CNPS as a List 1B species. It is an annual herb found in chenopod scrub, meadows and seeps, valley and foothill annual grassland with sandy soils between 1 and 375 meters above mean sea level (msl). This species' blooming period is from April to October. There are six previously recorded occurrences within a 5-mile radius of the Planning Area (CDFG 2008a/b). Suitable habitat is present within the annual grassland habitat in the Planning Area.

Lesser saltscale (*Atriplex minuscula*) is designated by CNPS as a List 1B species. This species is also a species of local concern in the San Joaquin Valley Recovery Plan (USFWS 1998). It is an annual herb in the goosefoot family (*Chenopodiaceae*) that inhabits chenopod scrub, playas, valley and foothill grassland, among alkaline or sandy soils. This species' blooming period is from May to October. This species has been known to occur between 15 and 200 meters above msl. There are five previously recorded occurrences within a 5-mile radius of the annual grassland in the Planning Area (CDFG 2008a/b). Suitable habitat is present within the Planning Area.

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Vernal pool smallscale (*Atriplex persistens*) is designated by CNPS as a List 1B species. This species is also a species of local concern in the San Joaquin Valley Recovery Plan (USFWS 1998). It is an annual herb in the goosefoot family (*Chenopodiaceae*) that inhabits vernal pools, among alkaline soils. This species is endemic to California. This species' blooming period is from June to October. This species has been known to occur between 10 and 115 meters above msl. There are four previously recorded occurrences within a 5-mile radius of the Planning Area (CDFG 2008a/b). Suitable habitat is present within vernal pools and seasonal wetlands in the Planning Area.

Subtle orache (*Atriplex subtilis*) is designated by CNPS as a List 1B species. This annual herb in the goosefoot family (*Chenopodiaceae*) inhabits valley and foothill grassland. This species is known from approximately 25 occurrences. This species' blooming period is from June and August (October). This species has been known to occur between 40 and 100 meters above msl. There are three previously recorded occurrences within a 5-mile radius of the Planning Area (CDFG 2008a/b). Suitable habitat is present within the annual grassland habitat in the Planning Area.

Lost Hills crownscale (*Atriplex vallicola*) is designated by CNPS as a List 1B species. It is an annual herb in the goosefoot family (*Chenopodiaceae*) that inhabits chenopod scrub, valley and foothill grassland, in alkaline vernal pools. This species' blooming period is from April to August. This species has been known to occur between 50 and 635 meters above msl. Suitable habitat is present within vernal pool and annual grassland habitats in the Planning Area. According to CNPS, there are no occurrences in Madera County but there are a few in nearby Fresno County (CNPS 2008).

Succulent owl's-clover (*Castilleja campestris* ssp. *succulenta*) is federally listed as threatened, state-listed as endangered, and designated by CNPS as a List 1B species. It is a hemi-parasitic annual herb in the figwort family (*Scrophulariaceae*) that is restricted to vernal pools (often acidic) in the southern portion of the Central Valley of California. This species' blooming period is in May. This species has been known to occur between 50 and 750 meters above msl. There are four previously recorded occurrences within a 5-mile radius of the Planning Area, one of which is within the Planning Area. This previously recorded occurrence is located near Cottonwood Creek and Dry Creek and is presumed extant from 1982 (CDFG 2008a/b). Suitable habitat is present within the annual grasslands in the Planning Area.

Palmate-bracted bird's-beak (*Cordylanthus palmatus*) is federally and state-listed as endangered and designated by CNPS as a List 1B species. This species is also a species of local concern in the San Joaquin Valley Recovery Plan (USFWS 1998). It is a hemi-parasitic annual herb in the figwort family (*Scrophulariaceae*) that inhabits chenopod scrub, valley and foothill grassland in alkaline soils. This species' blooming period is from May to October. This species has been known to occur between 5 and 155 meters above msl. There is one previously recorded occurrence within a 5-mile radius of the Planning Area (CDFG 2008a/b). Suitable habitat is present within annual grasslands in the Planning Area.

Recurved larkspur (*Delphinium recurvatum*) is designated by CNPS as a List 1B species. It is a perennial herb in the buttercup family (*Ranunculaceae*) that inhabits chenopod scrub, cismontane woodland, valley and foothill grassland in alkaline soils. This species' blooming period is from March to June. This species has been known to occur between 3 and 750 meters above msl. There are two previously recorded occurrences within a 5-mile radius of the Planning Area (CDFG 2008a/b). Suitable habitat is present within annual grasslands in the Planning Area.

Madera leptosiphon (*Leptosiphon serrulatus*) is designated by CNPS as List 1B. It occurs in cismontane woodland and lower montane coniferous forest between 300 and 1,300 meters

above mean sea level. This species blooming period is from April to May (CNPS 2009). Although there is a previously recorded occurrence within the Planning Area, this record represents a museum specimen from 1889 (CDFG 2009). The record does not include a specific collection location; it merely says it is from a location near Madera. This is the only record of this species occurring below 300 meters in elevation. It is unlikely that this species occurs within the Planning Area since suitable habitat is not present and this species does not occur within the elevation range of the Planning Area; therefore this species will not be discussed further.

San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*) is federally listed as threatened, state-listed as endangered, and designated by CNPS as a List 1B species. It is an annual herb in the grass family (*Poaceae*) that inhabits vernal pools. This species' blooming period is from April to September. This species has been known to occur between 55 and 200 meters above msl. There are three previously recorded occurrences within a 5-mile radius of the Planning Area, one of which is within the Planning Area (CDFG 2008a/b). Suitable habitat is present within vernal pools in the Planning Area.

Hairy Orcutt grass (*Orcuttia pilosa*) is federally and state-listed as endangered and designated by CNPS as a List 1B species. It is an annual herb in the grass family (*Poaceae*) that inhabits vernal pools. This species' blooming period is from May to September. This species has been known to occur between 55 and 200 meters above msl. There are nine previously recorded occurrences within a 5-mile radius of the Planning Area, four of which are within the Planning Area. There is one previously recorded occurrence extirpated from 1987 along State Route 145 (CDFG 2008a/b). Suitable habitat is present within vernal pools in the Planning Area.

Sanford's arrowhead (*Sagittaria sanfordii*) is designated by CNPS as a List 1B species. It is an emergent rhizomatous herb in the water-plantain family (*Alismataceae*) that inhabits assorted shallow freshwater emergent wetlands and swamps. It has been extirpated from southern California and mostly extirpated from the Central Valley. This species' blooming period is from May to October. This species has been known to occur between 0 and 610 meters above msl. Suitable habitat is present within wetland habitats in the Planning Area.

Greene's tuctoria (*Tuctoria greenei*) is federally listed as endangered, rare in California, and designated by CNPS as a List 1B species. It is an annual herb in the grass family (*Poaceae*) that inhabits vernal pools. This species' blooming period is from May to July and rarely in September. This species has been known to occur between 30 and 1,070 meters above msl. There is one previously recorded occurrence within a 1-mile radius of the Planning Area (CDFG 2008a/b). Suitable habitat is present within vernal pools in the Planning Area.

Special-Status Wildlife Species

Table 4.10-3 lists the special-status wildlife species that according have potential to occur in the Planning Area. The following discussion provides detail of special-status plant species which have potential to occur in the Planning Area.

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**TABLE 4.10-3
SPECIAL-STATUS WILDLIFE SPECIES POTENTIALLY OCCURRING WITHIN THE PLANNING AREA**

Scientific Name	Common Name	Status	
		Federal	State
Branchinecta conservatio	Conservancy fairy shrimp	FE	~
Branchinecta lynchi	Vernal pool fairy shrimp	FT	~
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	FT, PD	~
Linderiella occidentalis	California linderiella	~	~
Lytta molesta	Molestan blister beetle	~	~
Oncorhynchus mykiss	Central Valley steelhead	FT	~
Ambystoma californiense	California tiger salamander	FT	~
Spea hammondi	Western spadefoot toad	~	CSC
Actinemys marmorata	Western pond turtle	~	CSC
Gambelia sila	Blunt-nosed leopard lizard	FE; SLC	SE; CFP
Thamnophis gigas	Giant garter snake	FT	ST
Agelaius tricolor	Tri-colored blackbird	MNBMC	CSC
Lanius ludovicianus	Loggerhead shrike	MNBMC	CSC
Eremophila alpestris actia	California horned lark	MNBMC	CSC
Athene cunicularia	Burrowing owl	MNBMC	CSC
Buteo swainsoni	Swainson's hawk	MNBMC	ST
Dipodomys nitratoides exilis	Fresno kangaroo rat	FE; SLC	SE
Eumops perotis californicus	Western mastiff bat	~	CSC
Lasiurus cinereus	Hoary bat	~	CSC
Perognathus inornatus inornatus	San Joaquin pocket mouse	~	~
Taxidea taxus	American badger	~	CSC
Vulpes macrotis mutica	San Joaquin kit fox	FE;SLC	ST

Status Codes:

Federal status¹

FE = Listed as endangered under the Endangered Species Act

FT = Listed as threatened under the Endangered Species Act

PD = Proposed for delisting

SLC = Species in the Recovery Plan for Upland Species of the San Joaquin Valley (USFWS 1998).

MNBMC = Migratory Nongame Bird of Management Concern, protected under the Migratory Bird Treaty Act

State status²

SE = Listed as endangered under the California Endangered Species Act

ST = Listed as threatened under the California Endangered Species Act

CSC = Species of Concern as identified by the CDFG

CFP = Listed as fully protected under CDFG Code

Invertebrates

Vernal Pool Crustaceans

Vernal pool crustaceans are found in ephemeral freshwater habitats, and their life cycles have adapted to the unique habitat conditions of vernal pools and other seasonal ponded areas. Following the winter rains, vernal pools become inundated, and in conjunction with the appropriate environmental cues (temperature, total dissolved solids, alkalinity, etc.), the hatching of vernal pool crustacean eggs is initiated. Vernal pool crustaceans then mature rapidly into adults. Vernal pool crustaceans are ecologically dependent on wetlands with seasonal fluctuations in water levels during specific times of the year with seasonal inundation and subsequent desiccation. A suitable aquatic environment is necessary for egg incubation and hatching, growth and maturation, reproduction, feeding, sheltering, and dispersal. Appropriate periods of desiccation are necessary for egg dormancy and to eliminate predators such as bullfrogs, fish, and other aquatic predators that depend on year-round inundation of wetland habitats to survive (USFWS 2003). Vernal pool crustaceans cannot persist in wetlands that are inundated for the majority of the year or in wetlands without periodic seasonal inundation, although they do occur in pools that do not inundate every year (USFWS 2003).

Vernal pool fairy shrimp is federally listed as threatened. They occupy a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools. Although the species has been collected from large vernal pools, including one exceeding 25 acres, it tends to occur in smaller pools. It is most frequently found in pools measuring less than 0.05 acre, most commonly in grass- or mud-bottomed swales, or basalt flow depression pools in unplowed grasslands. Vernal pool fairy shrimp have been collected from early December to early May. There are 16 previously recorded occurrences within a 5-mile radius of the Planning Area, three of which are within the Planning Area. There is one previously recorded occurrence presumed extant from 2001 along State Route 145 and another near the railroad and Avenue 13 presumed extant from 1994 (CDFG 2008a/b). Suitable habitat (vernal pools and seasonal wetlands) is present within the Planning Area.

Conservancy fairy shrimp is listed as federally endangered. This species inhabits rather large, cool-water vernal pools with moderately turbid water. They have been collected from early November to early April. Currently, the USFWS is aware of eight populations of Conservancy fairy shrimp, which include (from north to south): (1) Vina Plains, Butte and Tehama counties; (2) Sacramento National Wildlife Refuge, Glenn County; (3) Yolo Bypass Wildlife Area, Yolo County; (4) Jepson Prairie, Solano County; (5) Mapes Ranch, Stanislaus County; (6) University of California, Merced, Merced County; (7) Grasslands Ecological Area, Merced County; and (8) Los Padres National Forest, Ventura County. Although there are no known populations within the Planning Area (CDFG 2008a/b), suitable habitat is present within seasonally ponded areas in the Planning Area.

California linderiella does not have a listing status but is tracked by CNDDDB. It inhabits large, fairly clear vernal pools and lakes. The California fairy shrimp is the most common fairy shrimp in the Central Valley. It has been documented on most land forms, geologic formations, and soil types supporting vernal pools in California, at elevations as high as 3,800 feet above msl. There are 26 previously recorded occurrences within a 5-mile radius of the Planning Area, one of which is within the Planning Area (CDFG 2008a/b). This occurrence is near the Sante Fe railroad tracks and Avenue 13; it is presumed extant from 1994. Suitable habitat is present within seasonally ponded water within the Planning Area.

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Molestan blister beetle (*Lytta molesta*) does not have a listing status but is also tracked by CNDDDB. All specimens of this species have been collected from vernal pool vegetation. Very little is known about the life cycle or other requirements of the Molestan blister beetle. There are two previously recorded occurrences within the Planning Area (CDFG 2008a/b). There is one previously recorded occurrence within the Planning Area that is presumed to be extirpated.

Valley Elderberry Longhorn Beetle

The **valley elderberry longhorn beetle** (VELB) is a federally threatened species (proposed for delisting) that occurs in the Central Valley of California only where its host plant, the blue elderberry, is found. In the Central Valley, elderberry shrubs are primarily associated with riparian forests, but may be found anywhere since birds readily disperse the seeds found within the berries. The entire life cycle of the VELB revolves around the elderberry. Adults eat the elderberry foliage until about June when they mate. The females lay eggs in crevices in the bark. Upon hatching, the larvae then begin to tunnel into the tree, where they will spend one to two years eating the interior wood, which is their sole food source. Use of the elderberry by the beetle, a wood borer, is rarely apparent. Frequently, the only exterior evidence of the elderberry's use by the beetle is an exit hole created by the larva just prior to the pupal stage. The exit holes made by the emerging adults are distinctive one-half to one centimeter round or oval openings. Adult emergence is from late March through June; about the same time the elderberry produces flowers. The range of the VELB extends throughout California's Central Valley and associated foothills, from about the 3,000-foot elevation contour on the east and the watershed of the Central Valley on the west (USFWS 1999a). There is one previously recorded occurrence within a 5-mile radius of the Planning Area (CDFG 2008a/b). Elderberry shrubs were observed within the Planning Area.

Fish

Central Valley ESU steelhead (*Oncorhynchus mykiss*) is a federally threatened species. This fish species is found within the Sacramento and San Joaquin rivers and their tributaries. Resident populations inhabit small headwater streams, large rivers, lakes, or reservoirs, often in cool clear lakes and cool swift streams with silt-free substrate. In streams, deep, low velocity pools are important wintering habitats. While the Fresno River is a tributary to the San Joaquin River, it is characterized by low flows and would not likely support this species. This species has the potential to occur within the waterways in the Planning Area. The Planning Area is within the current and historic range of this species.

Amphibians

California tiger salamander is a federally threatened species and a California species of special concern. This species is typically found in annual grasslands of lower hills and valleys. It breeds in temporary and permanent ponds and in streams and uses rodent burrows and other subterranean retreats in surrounding uplands for shelter. It appears to be absent in waters containing predatory game fish. The California tiger salamander spends most of its life cycle estivating underground in adjacent woodland or grassland habitat, primarily in abandoned rodent burrows. Research has shown that dispersing juveniles can roam up to 2 miles from their breeding ponds and that a minimum of several hundred acres of upland habitat is needed surrounding a breeding pond in order for the species to survive over the long term. There are 17 previously recorded occurrences within a 5-mile radius of the Planning Area, one of which is within the Planning Area. This previously recorded occurrence is from 1944 and is presumed to be extirpated (CDFG 2008a/b). Suitable habitat is present within the wetland areas and surrounding upland habitat within the Planning Area.

Western spadefoot toad (*Spea hammondi*) is a California species of special concern. Generally this species may be found in either aquatic breeding ponds or associated upland non-breeding habitat. During much of the year, they are found in upland grassland, chaparral, and woodland communities. They will travel long distances to ephemeral breeding pools. Breeding typically takes place January to May. Historically, western spadefoot ranged from Redding to northwestern Baja California. In California, the species was found throughout the Central Valley and in the Coast Ranges and coastal lowlands from San Francisco Bay to Mexico. There are six previously recorded occurrences within a 5-mile radius of the Planning Area (CDFG 2008a/b). Suitable habitat is present within the wetland areas and surrounding upland habitat within the Planning Area.

Reptiles

Western pond turtle is a California species of special concern. Suitable habitat for pond turtles includes ponds or slowly moving bodies of water with aquatic vegetation, debris within the water or banks for basking, and invertebrate and vertebrate prey. This species is highly aquatic but nests on land up to several hundred yards from water. Although there are no previously recorded occurrences within a 10-mile radius of the Planning Area (CDFG 2008a/b), the Planning Area is within the range for this species and suitable habitat is present within ponded areas and surrounding upland habitat within the Planning Area.

Blunt-nosed leopard lizard (*Gambelia sila*) is federally and state-listed as endangered and is a California fully protected species. This species is also a species of local concern in the San Joaquin Valley Recovery Plan (USFWS 1998). This species inhabits semiarid grasslands, alkali flats, low foothills, canyon floors, large washes, and arroyos, usually on sandy, gravelly, or loamy substrate, sometimes on hardpan. It is common where there are abundant rodent burrows, rare or absent in dense vegetation or tall grass. Habitats in order of decreasing favorability: (1) clump grass and saltbush grassland, with sandy soil, (2) washes with brush, in grassland, with sandy soil, (3) alkali flats, with saltbush in sandy or gravelly soil, and (4) grassland with hardpan soil. This lizard cannot survive on lands under cultivation (may use edges adjacent to suitable habitat); repopulation of an area after tilling ends requires at least 10 years. It basks on kangaroo rat (*Dipodomys* spp.) mounds and often seeks cover at the base of shrubs, in the burrows of small mammals, or in rock piles. Adults may excavate shallow burrows for shelter but depend on deeper burrows of rodents for hibernation (and egg-laying). Eggs typically are laid in an abandoned rodent burrow, at a depth of about 50 centimeters. There are 12 previously recorded occurrences within a 5-mile radius of the Planning Area, one of which is within the Planning Area (CDFG 2008a/b). The Planning Area is within the current range for this species. Suitable habitat is present within the Planning Area.

Giant garter snake (*Thamnophis gigas*) is federally and state-listed as threatened. This species inhabits freshwater sloughs, marshes, canals, and wetlands, but may also use rice fields, drainage canals and irrigation ditches for hunting. This species inhabits small mammal burrows and other soil crevices above prevailing flood elevations throughout its winter dormancy period. Suitable habitat consists of (1) adequate water during the snake's active season (early spring through mid-fall) to provide food and cover, (2) emergent, herbaceous wetland vegetation, such as bulrush and cattail for escape cover and foraging habitat during the active season, (3) grassy banks and openings in waterside vegetation for basking, and (4) higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter (Hansen 1988). Giant garter snakes are absent from larger rivers and other water bodies that support introduced populations of large, predatory fish, and from wetlands with sand, gravel, or rock substrates (Hansen 1980, Rossman and Stewart 1987, Brode 1988, Hansen 1988). Riparian woodlands do not typically provide suitable habitat because of excessive shade, lack of

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basking sites, and absence of prey populations (Hansen 1980). There are no previously recorded occurrences within a 10-mile radius of the Planning Area (CDFG 2008a/b); however suitable habitat throughout the Planning Area and the Planning Area is within the southern range for this species.

Birds

Swainson's hawk (*Buteo swainsoni*) is listed as threatened in California and is a Migratory Nongame Bird of Management Concern, protected under the Migratory Bird Treaty Act. The preferred breeding habitat of this raptor consists of large trees, which serve as nesting sites, proximate to extensive areas of grassland and/or open fields, which serve as foraging habitat. Swainson's hawks begin to arrive in the Central Valley from South America in March to breed and raise their young. They typically nest in large, mature trees such as eucalyptus (*Eucalyptus* spp.), valley oak, Fremont's cottonwood, willow, and native black walnut (*Juglans nigra*). Selected trees are typically located near suitable foraging habitat and often within riparian corridors. Swainson's hawks forage in open grasslands, agricultural fields, and pastures. Alfalfa, row crops, grain fields, and irrigated pastures are the Swainson's hawk's preferred foraging habitats, where they take advantage of the opportunities that harvesting and irrigating practices provide for the easy capture of small rodents. They do not forage in vineyards, orchards, or flooded rice fields. There are two previously recorded occurrences within a 10-mile radius of the Planning Area (CDFG 2008a/b). Suitable nesting and foraging habitat is present throughout the Planning Area.

Tri-colored blackbird (*Agelaius tricolor*) is a California species of special concern and a Migratory Nongame Bird of Management Concern, protected under the Migratory Bird Treaty Act. This species is endemic to California and southern Oregon and is a year-round resident of California. The tri-colored blackbird nests colonially in stands of cattails, bulrush, blackberries, or other dense herbaceous vegetation. This species may be found foraging in grasslands or croplands. There is one previously recorded occurrence within a 10-mile radius of the Planning Area (CDFG 2008a/b). Suitable habitat is present within emergent wetland habitats and other areas with dense vegetation.

California horned lark (*Eremophila alpestris actia*) is a California species of special concern and a Migratory Nongame Bird of Management Concern, protected under the Migratory Bird Treaty Act. A widespread occupant of open habitats across North America, horned larks prefer areas with sparse vegetation and exposed soil. It nests in open, sparsely vegetated grasslands. In western North America, this species is associated with desert brushlands, grasslands, and similar open habitats, as well as alpine meadows. This species occupies short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, and alkali flats in coastal regions, chiefly from Sonoma County to San Diego County, but also within the San Joaquin Valley. Throughout their range, horned larks avoid all habitats dominated by dense vegetation and become scarce and locally distributed in heavily forested areas. This species was observed in the Gateway Village area,, which is located southeast of the Planning Area (ESA 2006), east of State Route 41 and north of Avenue 12.

Loggerhead shrike (*Lanius ludovicianus*) is a California species of special concern and a Migratory Nongame Bird of Management Concern, protected under the Migratory Bird Treaty Act. This species is a common resident and winter visitor in lowlands and foothills throughout California that inhabits open areas with clear visibility for hunting, perches for scanning, and fairly dense shrubs and brush for nesting. This species is found in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats. Egg-laying occurs from March to May. The Planning Area is

within the breeding range for this species (Shuford and Gardali 2008). Suitable habitat is present within the annual grassland habitat within the Planning Area. This species was observed in the Gateway Village area, which is southeast of the Planning Area (ESA 2006).

Burrowing owl (*Athene cunicularia*) is a California species of special concern and a Migratory Nongame Bird of Management Concern, protected under the Migratory Bird Treaty Act. Burrowing owls are year-round residents in the open, dry grasslands of the Central Valley. During fall and winter, local residents may move from nesting areas and migrants may move in. Burrowing owls nest and take shelter in burrows in the ground, typically burrows excavated by other species such as ground squirrels. They forage in grasslands and agricultural fields. Suitable habitat is present within the ruderal and annual grassland habitat within the Planning Area. Numerous ground squirrels were observed in the Planning Area. There are seven previously recorded occurrences within a 10-mile radius of the Planning Area, one of which is within the Planning Area; however this previously recorded occurrence from 2005 located near the airport is possibly extirpated (CDFG 2008a/b).

Raptors and Other Migratory Birds

Many bird species are migratory and fall under the jurisdiction of the MBTA. Various migratory birds and raptor species, in addition to those described in detail above, have the potential to inhabit the Planning Area. Northern harriers (*Circus cyaneus*), great blue herons (*Ardea herodias*), and short-eared owls (*Asio flammeus*) may occur within the vicinity of the Planning Area. Some raptor species, such as red-tailed hawk and northern harrier, are not considered special-status species because they are not rare or protected under FESA or CESA; however, the nests of all raptor species are protected under the Migratory Bird Treaty Act (MBTA) and Section 3503.5 of the California Fish and Game Code. Migratory birds forage and nest in multiple habitats. The nests of all migratory birds are protected under the MBTA, which makes it illegal to destroy any active migratory bird nest. The habitat found within the vicinity of the Planning Area provides potential nesting habitat for raptors and migratory birds. Consequently, raptor and migratory bird species are likely to forage and nest in the Planning Area.

Mammals

Several **special-status bat species** could occur in various habitat throughout the Planning Area, including pallid bat (*Antrozous pallidus*), hoary bat (*Lasiurus cinereus*), yuma myotis (*Myotis yumanensis*), western red bat (*Lasiurus blossevillii*), and western mastiff bat (*Eumops perotis*). These species are widely distributed throughout California; however, many of these species are rare within these overall ranges. Habitat for bat species consists of foraging habitat, night roosting cover, day roosting sites, maternity roost sites, and winter hibernacula. These bat species may forage within a variety of habitats, including riparian, annual grasslands, agricultural lands, and over bodies of water. Suitable roosting sites within these habitats include caves, rock crevices, cliffs, buildings, tree bark, and snags. Some or all of these bat species are likely to forage and roost within the Planning Area. Tree bark, snags, and human structures within the Planning Area could provide roosting habitat for special-status bat species.

Fresno kangaroo rat (*Dipodomys nitratooides exilis*) is federally and state-listed as endangered. The historic range of this species encompassed an area of grassland and shrublands that are dominated by plants in the goosefoot family (*Chenopodiaceae*) (chenopod scrub) communities on the San Joaquin Valley floor, from about the Merced River in Merced County on the north, to the northern edge of the marshes surrounding Tulare Lake, Kings County, on the south, and extending from the edge of the valley floor near Livingston, Madera, Fresno, and Selma, westward to the wetlands of Fresno Slough and the San Joaquin River (USFWS 1998). They

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prefer nearly level, light friable soils including sands and saline sandy soils. Mating appears to begin in the winter. The Planning Area is within the historic range for this species. Suitable habitat is present within the annual grassland habitat in the Planning Area. There is one previously recorded occurrence within a 5-mile radius of the Planning Area (CDFG 2008a/b).

San Joaquin pocket mouse (*Perognathus inornatus inornatus*) does not have a listing status but is also tracked by CNDDDB. This species is typically found in grasslands and blue oak savannas. This species needs friable soils for burrows. This species will consume earthworms and soft-bodied insects, but its diet is mainly very tiny seeds of grasses, forbs, and shrubs. Its burrows are conspicuous in the short grass where it lives, in west-central California. Although there are no previously recorded occurrences within a 10-mile radius of the Planning Area (CDFG 2008a/b), suitable habitat is present within the Planning Area and the Planning Area is within the range of this species.

American badger (*Taxidea taxus*) is a California species of special concern that occupies dry, open, treeless regions, prairies, parklands, and cold desert areas. They require sufficient food (burrowing rodents), friable soils for burrowing, and open, uncultivated ground. Suitable habitat is present within the annual grassland habitat and possibly agricultural and vacant lands in the Planning Area. There are two previously recorded occurrences within a 5-mile radius of the Planning Area (CDFG 2008a/b).

San Joaquin kit fox (*Vulpes macrotis mutica*) is federally and state-listed as endangered. This species is also a species of local concern in the San Joaquin Valley Recovery Plan (USFWS 1998). This species inhabits alkali sink, foothill woodland, annual grasslands, or grassy open areas with scattered shrubby vegetation. They have also been found in orchards, vineyards, and row crops (USFWS 1998). This species hunts in areas with low sparse vegetation that allows good visibility and mobility. They also use irrigation canals and ditches as movement corridors. They prefer areas of loose-textured sandy soils for burrowing and a suitable prey base. They use multiple underground dens throughout the year. Sometimes they will use pipes or culverts as den sites. The Planning Area is within the historic range for this species. Since kit fox have been found in agricultural land, ruderal habitat, annual grassland, and irrigation channels, there is suitable habitat within the Planning Area for this species. There are four previously recorded occurrences within a 10-mile radius of the Planning Area (CDFG 2008a/b).

4.10.2 REGULATORY FRAMEWORK

The following section describes the federal, state, and local environmental laws, policies, plans, and agencies that are relevant to the proposed General Plan Update and the Planning Area.

FEDERAL

Federal Endangered Species Act

The United States Congress passed the federal Endangered Species Act (16 United States Code Sections 460 et seq.) in 1973 to protect those species that are endangered or threatened with extinction. The FESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend.

The FESA prohibits the “take” of endangered or threatened wildlife species. “Take” is defined as harassing, harming (including significantly modifying or degrading habitat), pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to

engage in such conduct (16 U.S.C. Section 1532, 50 Code Fed. Regs. Section 17.3). Actions that result in a take can result in civil or criminal penalties.

Under the FESA, federal agencies must ensure that the actions they fund, authorize, or carry out are not likely to jeopardize protected species. For example, the FESA and Section 404 of the federal Clean Water Act (CWA) prohibit the issuance of wetland permits for projects that would result in the take of a threatened or endangered wildlife or plant species. Under FESA, the U.S. Army Corps of Engineers (USACE) must inquire of the USFWS and/or the National Marine Fisheries Service (NMFS) whether any protected species or their critical habitat may be present in the area of the proposed federal action [16 U.S.C. Sections 1536(a)(2), (c)(1)]. If they may be present, USACE must prepare a biological assessment analyzing whether the action is likely to affect such species. If the assessment concludes that a protected species or a critical habitat is likely to be affected, the agency must formally consult with the USFWS or NMFS. In the context of the General Plan Planning Area, the FESA would be triggered if development resulted in take of a threatened or endangered species or if issuance of a Section 404 permit or other federal agency action could result in the take of a threatened or endangered species.

Clean Water Act

USACE regulates discharge of dredged or fill material into “waters of the United States” under Section 404 of the CWA. “Discharges of fill material” are defined as the addition of fill material into waters of the U.S., including, but not limited to, placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and subaqueous utility lines [33 C.F.R. Section 328.2(f)]. In addition, Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain certification that the intended dredge or fill activity will comply with the state’s effluent limitations and water quality standards.

Jurisdictional Waters of the U.S.

Waters of the U.S. that are subject to the jurisdiction of USACE include navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Wetlands are defined as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” [33 C.F.R. Section 328.3(b)]. Presently, to be considered a wetland, a site must exhibit all three criteria—hydrophytic vegetation, hydric soils, and wetland hydrology—existing under the “normal circumstances” for the site. Furthermore, jurisdictional waters of the U.S. can be defined by exhibiting a defined bed and bank and ordinary high water mark.

The lateral extent of non-tidal waters is determined by delineating the ordinary high water mark (OHWM) [33 C.F.R. Section 328.41(1)]. The OHWM is defined by the Corps as “that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” [33 C.F.R. Section 328.3(e)].

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Isolated wetlands are not subject to USACE jurisdiction under Section 404 of the CWA, pursuant to the "SWANCC" decision (*Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers* (2001) 531 U.S. 159). According to the SWANCC decision, wetlands that are non-navigable, isolated, and intrastate may not be subject to USACE jurisdiction. Although isolated wetlands are not subject to USACE jurisdiction under Section 404 of the CWA, they are considered "waters of the State" under California's Porter Cologne Act (Cal. Water Code Sections 13020 et seq.) and, as such, are subject to regulation by the Central Valley Regional Water Quality Control Board (RWQCB). The RWQCB generally takes jurisdiction over "waters of the State" that are not subject to USACE jurisdiction under the federal CWA in cases where USACE has determined that certain features do not fall under its jurisdiction. Mitigation requiring a no-net-loss of wetlands functions and values of waters of the State is typically required.

Other Federal Requirements

The Migratory Bird Treaty Act (MBTA) (42 U.S.C. Sections 703–712) implements international treaties between the United States and other nations devised to protect migratory birds, their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the Fish and Game Code (FGC). Section 3503.5 of the California Fish and Game Code states that it is "unlawful to take, possess, or destroy any birds in the order *Falconiformes* or *Strigiformes* or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." All raptors and their nests are protected from take or disturbance under the MBTA (16 United States Code [USC], Section 703 et seq.) and California statute (FGC Section 3503.5).

The golden eagle (*Aquila chrysaetos*) and bald eagle (*Haliaeetus leucocephalus*) are also afforded additional protection under the Eagle Protection Act, amended in 1973 (16 USC, Section 669 et seq.).

Executive Order 13112 - Invasive Species directs all federal agencies to refrain from authorizing, funding, or carrying out actions or projects that may spread invasive species. The order further directs federal agencies to prevent the introduction of invasive species, control and monitor existing invasive species populations, restore native species to invaded ecosystems, research and develop prevention and control methods for invasive species, and promote public education on invasive species. As part of the proposed action, USFWS and USACE would issue permits and therefore would be responsible for ensuring that the proposed action complies with Executive Order 13112 and does not contribute to the spread of invasive species.

The Recovery Plan for Upland Species of the San Joaquin Valley, California

The Planning Area lies within the coverage area of the Recovery Plan for Upland Species of the San Joaquin Valley, California (USFWS 1998). The primary objective of this recovery plan is the recovery of 11 endangered and threatened species, along with protection and long-term conservation of candidate species and species of special concern. The species covered in the plan inhabit grasslands and scrublands of the San Joaquin Valley, adjacent foothills, and small valleys. Species covered within this plan are classified as species of local concern (SLC) in this report. The Recovery Plan does not identify the area within and surrounding the Planning Area as having regional biological significance for the species covered within the plan. The Planning Area is not near or within areas proposed for reserves or where connectivity and linkages should be promoted.

U.S. Fish and Wildlife Service Draft Vernal Pool Recovery Plan

USFWS designated critical habitat for certain vernal pool crustaceans and plants in 34 counties in California and identified such habitat in its final rule of the vernal pool recovery plan on February 10, 2006, entitled Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants in California and Southern Oregon; Evaluation of Economic Exclusions From August 2003 Final Designation [71 Fed. Reg. 28 (2006) (to be codified at 50 CFR Part 17)]. The Recovery Plan identifies a five-part strategy to ameliorate or eliminate threats to affected species and to preserve intact vernal pools. The five key elements of the Recovery Plan are habitat protection; adaptive habitat management, restoration, and monitoring; status surveys; research; and participation and outreach. The Recovery Plan identifies habitat loss, fragmentation, and isolation of functional vernal pool ecosystems as the greatest threat to the survival and recovery of listed species and species of concern that are found in vernal pools. According to the Recovery Plan, habitat loss is generally the result of urbanization, agricultural conversion, and mining. Habitat loss may also occur from habitat alteration and degradation as a result of changes to natural hydrology; invasive species; incompatible grazing regimes, including insufficient grazing for prolonged periods; and infrastructure projects such as roads, water storage and conveyance, and utilities. In addition, recreational activities such as off-highway vehicles and hiking, erosion, contamination, and inadequate management and monitoring may result in habitat loss. Habitat fragmentation is generally the result of activities associated with habitat loss due to road and other infrastructure projects that contribute to the isolation and fragmentation of vernal pool habitats.

STATE

California Endangered Species Act

Under the California Endangered Species Act (CESA), the California Department of Fish and Game has the responsibility for maintaining a list of endangered and threatened species (Fish and Game Code – FGC 2070). Sections 2050 through 2098 of the FGC outline the protection provided to California's rare, endangered, and threatened species. Section 2080 of the FGC prohibits the taking of plants and animals listed under the CESA. Section 2081 established an incidental take permit program for state-listed species. CDFG maintains a list of "candidate species" which are species that CDFG formally notices as being under review for addition to the list of endangered or threatened species.

Native Plant Protection Act of 1977

The Native Plant Protection Act of 1977 (FGC Section 1900 et seq.) prohibits the taking, possessing, or sale within the state of any plants with a state designation of rare, threatened, or endangered (as defined by CDFG). An exception to this prohibition in the act allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify CDFG and give that state agency at least 10 days to come and retrieve (and presumably replant) the plants before they are plowed under or otherwise destroyed (FGC, Section 1913 exempts from take prohibition "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way"). Project impacts to these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the proposed project.

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Other State Requirements

CDFG maintains lists of "species of special concern" which serve as species "watch lists." CDFG has also identified many species of special concern. Species with this status have limited distribution or the extent of their habitats has been reduced substantially, such that their populations may be threatened. Thus, their populations are monitored, and they may receive special attention during environmental review. While they do not have statutory protection, they may be considered rare under CEQA and thereby warrant specific protection measures.

Sensitive species that would qualify for listing but are not currently listed are afforded protection under CEQA. CEQA Guidelines Section 15065 (Mandatory Findings of Significance) requires that a substantial reduction in numbers of a rare or endangered species be considered a significant effect. CEQA Guidelines Section 15380 (Rare or Endangered Species) provides for assessment of unlisted species as rare or endangered under CEQA if the species can be shown to meet the criteria for listing. Unlisted plant species on the California Native Plant Society's Lists 1A, 1B, and 2 would typically be considered under CEQA.

Sections 3500 to 5500 of the FGC outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these Sections may not be taken or possessed at any time. CDFG cannot issue permits or licenses that authorize the take of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock.

Under Section 3503.5 of the FGC it is unlawful to take, possess, or destroy any birds in the orders of *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.

Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project study area and determine whether the proposed project will have a potentially significant impact on such species. In addition, CDFG encourages informal consultation on any proposed project that may impact a candidate species.

Impacts to species associated with projects implemented under the General Plan Update on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of the CESA. Take of protected species incidental to otherwise lawful management activities may be authorized under FGC Section 206.591. Authorization from CDFG would be in the form of an Incidental Take Permit.

State and local public agencies are subject to Section 1602 of the FGC, which governs construction activities that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the CDFG. Under Section 1602, a discretionary Stream Alteration Agreement permit from CDFG (Region 4 for the General Plan Update) must be issued by CDFG to the project applicant for subsequent projects under the General Plan Update prior to the initiation of construction activities within lands under CDFG jurisdiction.

NON-GOVERNMENTAL AGENCY**California Native Plant Society**

The California Native Plant Society (CNPS) maintains a list of plant species native to California that are found in low numbers, have limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. Potential impacts to populations of CNPS-listed plants receive consideration under CEQA review. The following identifies the definitions of the CNPS listings:

- List 1A: Plants Believed Extinct.
- List 1B: Plants Rare, Threatened, or Endangered in California and elsewhere.
- List 2: Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere.
- List 3: Plants about Which We Need More Information - A Review List.
- List 4: Plants of Limited Distribution - A Watch List.

Plant species designated as List 3 and 4 will not be discussed in this section since they do not generally receive protection from any government agencies.

LOCAL**Madera County General Plan**

The unincorporated areas outside the city limits but within the Planning Area are not governed by the City of Madera but are governed by Madera County. The goals, objectives, and policies within the Madera County General Plan are applicable to the unincorporated parts of the City of Madera General Plan Planning Area. The Madera County General Plan Agricultural and Natural Resources Chapter includes goals and policies relating to wetlands and riparian areas, fish and wildlife habitat, vegetation and open space for the preservation of natural resources (Madera County 1995).

- To protect and enhance the natural quality of Madera County's streams, creeks, and groundwater (Goal 5.C).
- To protect wetland communities and related riparian areas throughout Madera County as valuable resources (Goal 5.D).
- The County shall comply with the wetlands policies of USACE, USFWS, and CDFG. Coordination with these agencies at all levels of project review shall continue to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed (Policy 5.D.1).
- The County shall require new development to mitigate wetland loss in both regulated and non-regulated wetlands through any combination of avoidance, minimization, or compensation. The County shall support mitigation banking programs that can provide the opportunity to mitigate impacts to rare, threatened and endangered species and/or the habitat which supports these species in wetland and riparian areas (Policy 5.D.2).

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4.10.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies or regulations, or by CDFG or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFG 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.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.
- Substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare or threatened species.

METHODOLOGY

Prior to initiating field surveys, a database search for special-status species that have the potential to occur within the vicinity of the Planning Area was conducted for the Bonita Ranch and Madera, California USGS 7.5-minute topographic quadrangles and surrounding quadrangles (Chowchilla, Berenda, Kismet, Daulton, Firebaugh NE, Gregg, Mendota Dam, Gravelly Ford, Biola, and Herndon). **Appendix H** presents the results of the CNDDDB, CNPS, and USFWS queries for special-status species that are known to occur or have the potential to occur within the Planning Area and vicinity. A special-status species was determined to have the potential to occur in the Planning Area if its documented geographic range from the literature and database searches includes the project vicinity, if there is a known occurrence near the Planning Area, and if suitable habitat for the species was identified within or near the Planning Area. A complete list of special-status species from the database searches, their conservation status, general habitat requirements, and rationale for including them in the impact analysis is summarized in **Appendix H**. Range and habitat information of special-status plant and wildlife species was obtained from the California Wildlife Habitat Relationships (CWHR) program version 8 (CDFG 2002) as well as other sources. No species-specific or protocol-level surveys for special-status species were conducted for this report.

The California Department of Fish and Game's CNDDDB was queried on October 28, 2008, for a list of special-status wildlife, botanical, and fisheries resources previously documented as occurring within the vicinity of the Planning Area (**Appendix H**; CDFG 2008a/b). The database search was performed for special-status species within the USGS 7.5-minute quadrangles listed above. Locations of special-status species occurrences within a one-mile radius of the Planning Area as recorded in CNDDDB are shown on **Figure 4.10-3**.

The CNPS inventory was also searched for rare or endangered plants that may occur in the vicinity of the Planning Area. This query was performed for CNPS List 1A, List 1B, List 2, and List 3 special-status plants occurring in the surrounding USGS 7.5-minute quadrangles listed above (**Appendix H**; CNPS 2008). Since CNPS List 4 species are not included in the CNPS online inventory query, the only List 4 species included in this discussion are those species recorded in the vicinity of the Planning Area within the CNDDDB.

In addition, the USFWS Sacramento Office was consulted for a list of federally listed or candidate plant and wildlife species that may occur within the region of the Planning Area (USFWS 2008a). A request was submitted to USFWS for a list of federal special-status species potentially occurring within the USGS 7.5-minute quadrangles listed above. **Appendix H** includes a copy of the USFWS list and letter.

When USFWS lists a species as threatened or endangered under FESA, areas of habitat considered essential to its conservation and survival may be designated as critical habitat. These areas may require special consideration and/or protection due to their ecological importance. In October 2008, potential critical habitat designations within the general vicinity of the Planning Area were checked using the USFWS Critical Habitat Portal (USFWS 2008b).

A PMC biologist undertook reconnaissance-level "windshield" surveys in portions of the Planning Area likely to contain species on November 5, 2008, to identify the presence/absence of sensitive biological resources. Natural communities were noted on an aerial photograph and digitized using ArcGIS software. The resulting map is shown as **Figure 4.10-1**. All plant and wildlife species observed were recorded during surveys and are included in **Appendix H**. No species-specific surveys were conducted; however, plants and wildlife observed during the habitat mapping efforts were documented.

Assumptions

The exact detail of all development and associated impacts associated with the proposed General Plan Update is not known at this time. Although it is likely that some level of natural resources would be retained within future projects implemented under the General Plan Update, the location and extent of these resources cannot be determined. Therefore, the more conservative impact approach was taken to ensure that impacts are not underestimated. A basic assumption of this conservative approach is that all natural resources within each proposed project could be removed or otherwise modified by activities allowed under the proposed General Plan Update. The analysis takes into account the density and type of land uses proposed, as well as proposed and anticipated development in the City of Madera as well as in the Planning Area.

Table 4.10-4 below provides the base land use assumptions that were utilized to assess potential impacts to biological resources. The impact assessment was produced by comparing the existing land uses and cover types and the proposed land uses under the General Plan Update. Areas of conflict between Existing Land Use/Cover Types and Proposed Land Use were analyzed

4.10 BIOLOGICAL RESOURCES

using ArcGIS. When there was no change to land use (e.g., Resource Conservation), the acreage was removed from the analysis.

TABLE 4.10-4
PROPOSED GENERAL PLAN UPDATE DESIGNATION CHANGES FROM EXISTING LAND USES TO DEVELOPED LAND USES

Existing Land Use/Cover Types	Proposed Land Use	Acres
Within the City Limits		
Agricultural Lands ¹	Commercial	85.65
	Industrial	65.42
	Other Built Environment*	25.77
	Residential	471.43
	Open Space: Parks and Recreation	0.11
	<i>Total</i>	648.38
Annual Grasslands ²	Commercial	19.71
	Industrial	140.23
	<i>Total</i>	159.94
Riverine/Riparian	Residential	20.87
	Open Space: Parks and Recreation	3.50
	Other Built Environment*	0.47
	<i>Total</i>	24.84
Ruderal ³	Commercial	394.52
	Residential	627.49
	Industrial	305.10
	Open Space: Parks and Recreation	2.71
	Other Built Environment*	10.99
	<i>Total</i>	1,380.81
Wetlands/Open Water ⁴	Industrial	1.64
	Residential	4.18
	<i>Total</i>	5.81
City Limits Total Impact Acreage		2,179.79
Between the City Limits and the Sphere of Influence		
Agricultural Lands ¹	Commercial	309.25
	Residential	2,652.25
	Industrial	1,004.79
	Other Built Environment*	1,408.48
	Open Space: Parks and Recreation	138.26
	<i>Total</i>	5,513.03

Existing Land Use/Cover Types	Proposed Land Use	Acres
Annual Grasslands ² <i>Total</i>	Commercial	15.45
	Residential	512.79
	Industrial	1.27
	Other Built Environment*	8.51
		538.02
Riverine/Riparian <i>Total</i>	Industrial	0.37
	Residential	11.81
	Open Space: Parks and Recreation	19.40
	Other Built Environment*	23.92
		55.50
Ruderal ³ <i>Total</i>	Commercial	52.71
	Residential	970.16
	Industrial	70.97
	Other Built Environment*	39.51
		1,133.35
Wetlands/Open Water ⁴ <i>Total</i>	Industrial	33.82
	Residential	17.02
	Other Built Environment*	6.73
		57.58
Sphere of Influence Total Impact Acreage		7,297.48
Between the Sphere of Influence and the Planning Area		
Agricultural Lands ¹ <i>Total</i>	Commercial	15.40
	Residential	608.68
	Industrial	397.67
	Other Built Environment*	3,622.06
	Open Space: Parks and Recreation	19.71
		4,663.52
Annual Grasslands ² <i>Total</i>	Commercial	1.49
	Industrial	743.45
	Residential	125.94
	Other Built Environment*	280.86
		1,151.74
Riverine/Riparian	Commercial	0.10
	Industrial	25.73
	Residential	0.51
	Other Built Environment*	32.91

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Existing Land Use/Cover Types	Proposed Land Use	Acres
<i>Total</i>		59.25
Ruderal ³	Commercial	1.75
	Industrial	48.47
	Residential	215.27
	Other Built Environment*	0.33
<i>Total</i>		265.82
Wetlands/Open Water ⁴	Industrial	2.42
	Residential	8.32
<i>Total</i>		10.75
Planning Area Total Impact Acreage		6,151.08
Grand Total		15,628.34

* "Other Built Environment" includes neighborhood mixed use, public and semi-public, Village Reserve, and Village mixed use.

1 Agricultural lands include orchards, vineyards, and croplands, as well as leveled or irrigated pasture. The annual grasslands designation only includes pasture that has not been significantly disturbed.

2 Annual grasslands have the potential to support vernal pool and seasonal wetland habitat.

3 Ruderal includes those areas identified as vacant lands within the existing Land Use Map. This may include partially built areas or areas disced.

4 Wetlands and Open Water only include those areas identified by aerial photography.

PROJECT IMPACTS AND MITIGATION MEASURES

Impacts to Special-Status Species

Impact 4.10.1 Implementation of the proposed General Plan Update could result in direct and indirect loss of habitat and individuals of endangered, threatened, rare, proposed, or candidate status or of California fully protected species, as well as plant species identified by the California Native Plant Society as a List 1A or 1B species (i.e., rare, threatened or endangered plants). However, the proposed General Plan Update includes policies and action items that would ensure that impacts to special-status species are adequately mitigated. This impact would be **less than significant**.

Direct Impacts of the Proposed General Plan Update

As discussed above, suitable habitat for plant and wildlife species listed as endangered, threatened, rare, proposed, candidate, or listed as "fully protected" in the California Fish and Game Code (Sections 3511, 4700, 5050, 5515) or List 1A or 1B (collectively referred to in this DEIR as "listed species") is found within the Planning Area. Development under the proposed General Plan Update could directly impact such habitat. Most direct biological resource impacts would occur from development of large areas of generally undeveloped agricultural land and annual grassland and the areas adjacent to the riparian corridors; however, additional impacts would occur from infill development and redevelopment in the city's center.

Development under the proposed General Plan Update could potentially cause direct impacts to approximately 15,628 acres of ruderal (vacant), agricultural land, annual grasslands,

wetlands/open waters, and riverine/riparian habitat that may serve as occupied or potential habitat for listed species. As the final design and extent of future development is not currently known, the acreages listed in **Table 4.10-5**, below, represent the maximum area that could be directly affected. Actual direct impacts to these land cover types may be less, depending on the ultimate design of individual developments as determined through application of proposed General Plan Update policies on a project-specific basis and project-specific compliance with state and federal agency requirements.

As discussed in further detail in Section 1.0, Introduction, this DEIR is a programmatic analysis of the broad environmental effects of the overall proposed General Plan Update. Goals, policies, and action items contained within the proposed General Plan Update would apply to all future development and infrastructure projects considered by the City within the Planning Area. Future proposed projects that have the potential to cause a direct or reasonably foreseeable indirect physical change in the environment will undergo additional, project-specific CEQA review, as required by statute. Those future projects will also be subject to the FESA and CESA, as appropriate.

TABLE 4.10-5
LISTED SPECIAL-STATUS SPECIES ORGANIZED BY
IMPACTED LAND COVER TYPES WITHIN THE PLANNING AREA

Land Cover Type	Common Name	Impacted Acreage within the Planning Area
Agricultural Lands	Blunt-nosed leopard lizard Giant garter snake San Joaquin kit fox	10,825
Annual Grasslands	Succulent owl's-clover* Palmate-bracted bird's-beak San Joaquin Valley Orcutt grass* Hairy Orcutt grass* Greene's tuctoria* Conservancy fairy shrimp Vernal pool fairy shrimp California tiger salamander Blunt-nosed leopard lizard Giant garter snake Fresno kangaroo rat San Joaquin kit fox	1,850
Ruderal	Blunt-nosed leopard lizard Fresno kangaroo rat San Joaquin kit fox	2,740
Riverine/Riparian	Valley elderberry longhorn beetle** Central Valley steelhead Blunt-nosed leopard lizard Giant garter snake	140

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Land Cover Type	Common Name	Impacted Acreage within the Planning Area
	San Joaquin kit fox	
Wetlands/Open Water	Succulent owl's-clover* Palmate-bracted bird's-beak San Joaquin Valley Orcutt grass* Hairy Orcutt grass* Greene's tuctoria* Conservancy fairy shrimp Vernal pool fairy shrimp California tiger salamander Giant garter snake	74
TOTAL		15,628

*These species are restricted to vernal pool habitat.

**Suitable habitat for the VELB only includes elderberry shrubs.

Discussion of Direct Impacts to Listed Plant Species

Listed plant species with the potential to occur in the Planning Area include palmate-bracted bird's-beak, succulent owl's-clover, San Joaquin Valley Orcutt grass, hairy Orcutt grass, and Greene's tuctoria. Implementation of the General Plan Update may directly impact these species by direct take (removal or trampling) during construction or through destruction or degradation of these species' habitat(s). Direct and indirect impacts to remaining natural communities (vernal pools and annual grassland habitat) where these species are found would occur as a result of implementation of the General Plan Update. Subsequent development under the General Plan Update could result in direct take of these species or direct loss of habitat associated with these listed and/or candidate plant species, since these habitat conditions do occur within the Planning Area.

Discussion of Direct Impacts to Valley Elderberry Longhorn Beetle

Implementation of the General Plan Update may result in the disturbance and/or removal of elderberry shrubs, which are the host plant for the federally threatened VELB. The proposed General Plan Update Land Use Map identifies commercial, industrial, residential, and park/open space designations along the riparian corridors within the Planning Area. Conflicting designations occur within approximately 140 acres of riverine and riparian habitat which would degrade the habitat where this species and its host plant is known to occur. Implementation of the General Plan Update could result in direct loss (or take) of a VELB through habitat (elderberry shrub) removal.

Discussion of Direct Impacts to Listed Vernal Pool Crustaceans

Vernal pool crustaceans are dependent upon seasonally ponded water such as vernal pools and seasonal wetlands for their entire life cycle. The Land Use Element proposes development to occur on approximately 1,850 acres of annual grassland habitat within the Planning Area where seasonally ponded water is likely to support these species. Direct removal of vernal pools, a CDFG sensitive habitat, or other seasonally ponded area that is likely to support these species

would result in direct take of federally listed species. Development around these sensitive habitat areas would likely result in degradation of habitat and take of federally listed species.

Discussion of Direct Impacts to Special-status Fish Species such as Central Valley ESU steelhead

While the General Plan Update strives to protect riparian areas (Policy PR-1) that currently support these special-status fish, the General Plan Update Land Use Map identifies potentially conflicting land use designations (commercial, residential) along the riparian corridors within the Planning Area. Adverse impacts to steelhead and other fish species can arise from improperly designed sand and gravel extraction projects (loss of existing spawning riffles, loss of rock/gravel recruitment for maintenance of spawning areas, entrapment of adult and young steelhead in gravel pits during high river flows, etc.). In addition, recreational and residential developments which reduce riparian vegetation and/or increase urban runoff (fertilizers, pesticides, oils, etc.) into the Fresno River and other waterways may also affect local populations (see Section 4.9, Hydrology and Water Quality). However, it should be noted that the Fresno River would not likely support special-status fish species given its low flow conditions. Other construction such as road and bridge construction may negatively impact special-status fish.

Discussion of Direct Impacts to California Tiger Salamander

Implementation of the General Plan Update would result in disturbance and degradation of aquatic breeding and associated upland habitat for California tiger salamander, a federally threatened species. California tiger salamanders are dependent upon vernal pools and seasonal wetlands as aquatic breeding habitat. The Land Use Element proposes to build upon 1,850 acres of annual grassland habitat within the Planning Area where seasonally ponded water is likely to support breeding habitat for these species. Direct removal of vernal pools, a CDFG sensitive habitat, or other seasonally ponded area that is likely to support this species could potentially result in direct take of a federally listed species. Development around these sensitive habitat areas would likely result in degradation of habitat and the potential take of a federally listed species.

Discussion of Direct Impacts to Blunt-nosed Leopard Lizard

Implementation of the General Plan Update would result in disturbance and degradation of approximately 1,850 acres of annual grasslands where this species might inhabit. This species is also found in large washes like that found in the riverine habitat of the Fresno River. Development around annual grassland and riverine habitat may result in direct take of the species or degradation of their habitat.

Discussion of Direct Impacts to Giant Garter Snake

Implementation of the General Plan Update would result in disturbance and degradation of the waterways, wetlands, and associated upland habitat where this species may forage and estivate. Development around wetlands and waterways may result in direct take of the species or degradation of their habitat. Since this species estivates in underground burrows, construction activities during this species wintering season may result in direct take of the species.

Discussion of Direct Impacts to Swainson's Hawk

Implementation of the General Plan Update would result in disturbance and degradation of foraging habitat for Swainson's hawk and removal of large trees for nesting. The state-listed

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Swainson's hawk prefers low-growing cropland such as alfalfa and fallow fields for foraging but will forage on most vacant lands. The croplands, ruderal habitat (vacant lands), and annual grasslands within the Planning Area are suitable foraging habitat for this species. Conversion of farmland and open space into residential and commercial development or incompatible farmland (e.g., orchard or vineyard) would significantly reduce the foraging habitat for this special-status raptor species. The Swainson's hawk prefers large trees within riparian corridors but will nest in trees throughout the Planning Area. Removal of vegetation or other construction activities during the nesting season may cause direct impacts to nesting Swainson's hawk if the species is nesting within 250 feet of construction activities through direct take of the species (e.g., removal of tree with active nest), disturbance to nesting activities (e.g., noise, vibration, or activity near the nest) or degradation of foraging habitat causing nest failure.

Discussion of Direct Impacts to Fresno Kangaroo Rat

The Fresno kangaroo rat prefers nearly level, light friable soils in grasslands and chaparral. The Planning Area is within the historic range for this species and contains suitable habitat for this species in the ruderal habitat (vacant land) and annual grassland within the Planning Area. Implementation of the General Plan Update would result in the loss of habitat and possibly direct take if the species is present during construction activities.

Discussion of Direct Impacts to San Joaquin Kit Fox

The San Joaquin kit fox inhabits alkali sink, valley grassland, and foothill woodland. This species may den or forage in the annual grassland and ruderal habitat within the Planning Area. In addition, this species may use the riparian corridor or the irrigation channels as movement corridors. This species forages in areas with low sparse vegetation that allows good visibility and mobility, which may also include the agricultural lands within the Planning Area. Implementation of the General Plan Update could result in a direct take if the species is present during construction activities.

Indirect Impacts of the Proposed General Plan Update

Suitable habitat for listed plant and wildlife species exists within the Planning Area and could be indirectly impacted by development under the proposed General Plan Update (as identified in the Land Use Element). Indirect impacts include increased human/wildlife interactions, habitat fragmentation, encroachment by exotic weeds, and area-wide changes in surface water flows due to development of previously undeveloped areas.

Increased Human/Wildlife Interactions

The major circulation features identified in the proposed General Plan Update would result in increased vehicular traffic (auto and pedestrian), increasing the amount and severity of indirect impacts to wildlife and habitat in the Planning Area. Development of residential and nonresidential uses would result in increased human presence in areas formerly uninhabited by humans. Additionally, development of previously undeveloped land for residential uses can expose species to impacts from feral and unconfined pets.

Habitat Fragmentation

Much of the habitat within the Planning Area used by listed species is currently interconnected with large areas of agricultural land and sparse development that has a minor impact on plant and wildlife species in the Planning Area; however, wide-scale development of the Planning

Area consistent with the proposed General Plan Update could result in small pockets of conserved habitat that are no longer connected by streams and open space, resulting in indirect impacts to species diversity and movement within the Planning Area. Habitat fragmentation may result in reduced home ranges and loss of foraging habitat that could decimate a population or reduce the fitness of an individual, resulting in indirect take of listed species.

Encroachment by Exotic Weeds

Generally, landscaping installed as part of development in the region has relied heavily on exotic, non-native plant species for decoration. However, some of these species can spread to natural areas, causing native plant life to be replaced by exotic species. Construction activities, grading, and other ground- or vegetation-clearing disturbances can eliminate the native plant population and allow invasive non-native species to become established. As native plants are replaced by exotic species, indirect impacts to the habitat of listed species would occur, such as modification or degradation of habitat.

Changes in Surface Water Flows

As development occurs, surface water flows normally increase due to an increase in impermeable surfaces through, for example, the placement of building materials and paving over permeable surfaces. In addition, surface water flows are modified due to changes in surface flow by point source stormwater infrastructure installed in order to handle greater flows from the increasing impermeable surfaces as well as from the introduction of drainage flows during seasons when waterways and wetland features are typically dry (commonly referred to as "summer nuisance flows"). Some cover types that contain habitat for listed species can be indirectly impacted by such changes. For example, seasonal wetland and vernal pool communities survive along a rigid set of soil, water, and climatic conditions. Alteration of current inundation and desiccation regimes due to altered hydrology could substantially alter the characteristics of seasonal wetland habitat, resulting in loss or degradation of seasonal wetland and vernal pool habitat in developed and undeveloped areas of the Planning Area.

Table 4.10-5 shows quantities of these habitats that may be impacted by development of the proposed General Plan Update Land Use Map as well as which listed species would be impacted. The actual acreage ultimately impacted may be less than the estimates shown in **Table 4.10-5**, because future development design proposals will be subject to the application of General Plan Update policies that address protection of biological resources, as well as possible further review on a project-by-project basis. These policies and possible further review are expected to reduce the impacts estimated in **Table 4.10-5**, which ensure that the worst-case impacts are considered in this DEIR. As discussed previously, subsequent environmental review may be necessary, depending on whether the potential environmental impacts of future proposed projects within the Planning Area have the potential to cause one or more direct or reasonably foreseeable indirect physical change in the environment that has not already been adequately considered in this DEIR.

Discussion of Indirect Impacts to Listed Plant Species

Indirect impacts to special-status plant species could occur with implementation of the General Plan Update which may include habitat degradation as a result of impacts to water quality (see Section 4.9, Hydrology and Water Quality, regarding water quality impacts) and increased human presence. With the conversion of annual grasslands and open space into farmland or residential and commercial development, there is increased potential for construction and landscaping activities to introduce invasive exotic plant species to the area, causing native

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plant life to be replaced by exotic species. As native plants are replaced by exotic species, indirect impacts to the habitat of special-status species would occur, such as modification or degradation of habitat.

Discussion of Indirect Impacts to Listed Wildlife Species

Implementation of the proposed General Plan Update would increase incidental take from additional traffic, increased human presence, increased urban runoff, and degradation of the riparian area and other suitable habitat. In addition, roads and other development can be a barrier to movements and can effectively isolate populations. Indirect impacts such as noise or vibration may cause nest/den failure or abandonment of a nest/den of listed species.

Proposed General Plan Policies, Objectives and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this impact. The following list contains those policies and action items that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact. The reader is referred to Section 4.9, Hydrology and Water Quality, for existing City standards and programs as well as proposed General Plan Update policy provisions that address water quality.

Policy CON-22: Residential, commercial, industrial and recreational projects shall avoid impacts to native wildlife and plant habitat to the extent feasible.

Action Item CON-22.1: Restrict or modify proposed development in areas that contain wetlands, as defined by U.S. Army Corps of Engineers delineations, as necessary to ensure the continued health and survival of special-status species and sensitive areas. The preference will be to modify projects to avoid impacts on sensitive resources, then to adequately mitigate impacts by providing on-site replacement, or (as a lowest priority) off-site replacement at a higher ratio.

Policy CON-24: To offset possible additional losses of native wildlife and plant habitat due to development projects, developers shall be responsible for mitigation. Such mitigation measures may include providing and permanently maintaining similar quality and quantity of replacement habitat, enhancing existing habitat areas or paying in-lieu funds to an approved wildlife habitat improvement and acquisition fund. Replacement habitat may occur either on site or at approved offsite locations, but preference shall be given to on-site replacement.

Action Item CON-24.1: The City shall require a biological resources evaluation for private and public development projects in areas identified to contain or possibly contain listed plant and/or wildlife species based upon the City's biological resource mapping provided in the General Plan EIR or other technical materials. This evaluation shall be conducted prior to the authorization of any ground disturbance.

Action Item CON-24.2: For those areas in which special-status species are found or likely to occur or likely to occur, the City shall require feasible mitigation of impacts to those species that ensure that the activity does not

contribute to the decline of the affected species such that their decline would impact the viability of the species. Mitigation shall be determined by the City after the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) are provided an opportunity to comment.

Implementation of the policies and action items listed above and those identified for water quality impacts in Section 4.9, Hydrology and Water Quality, would ensure that impacts to special-status species are identified and mitigated to ensure viability of the species, and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Mitigation Measures

None required.

Impacts to Species of Concern and Other Non-Listed Special-status Species

Impact 4.10.2 Implementation of the proposed General Plan Update could result in direct and indirect loss of habitat and individuals of animal and plant species of concern and other non-listed special-status species. However, the proposed General Plan Update includes policies and action items that would ensure that impacts to species of concern are adequately mitigated. This impact would be **less than significant**.

Direct Impacts of the Proposed General Plan Update

Suitable habitat exists in the Planning Area for unlisted but nonetheless special-status species. These species are designated as a species of concern by USFWS or CDFG and/or listed in CNPS's online inventory as List 2. Direct impacts to these species would occur for the same reasons and in the same manner as direct impacts to listed species as identified and discussed in Impact 4.10.1 above. See **Table 4.10.5** and **Table 4.10-6**, below, for information on the acreage of suitable habitat that would be affected by implementation of the proposed General Plan Update.

**TABLE 4.10-6
SPECIES OF CONCERN AND NON-LISTED SPECIAL-STATUS SPECIES
ORGANIZED BY LAND COVER TYPES WITHIN THE PLANNING AREA**

Land Cover Type	Common Name	Impacted Acreage within the Planning Area
Agricultural Lands	Loggerhead shrike California horned lark Burrowing owl Migratory Non-game Birds of Management Concern Special-status bat species	10,825
Annual Grasslands	California linderiella Molestan blister beetle Western spadefoot toad	1,850

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Land Cover Type	Common Name	Impacted Acreage within the Planning Area
	Western pond turtle Tri-colored blackbird (foraging) Loggerhead shrike California horned lark Burrowing owl Migratory Non-game Birds of Management Concern American badger Special-status bat species American badger	
Ruderal	Loggerhead shrike California horned lark Burrowing owl Migratory Non-game Birds of Management Concern Special-status bat species	2,740
Riverine/Riparian	Loggerhead shrike California horned lark Western pond turtle Tri-colored blackbird Special-status bat species	140
Wetlands/Open Water	California linderiella Molestan blister beetle Western spadefoot toad Western pond turtle Migratory Non-game Birds of Management Concern Tri-colored blackbird	74
TOTAL		15,628

Discussion of Direct Impacts to Special-status Plant Species

Direct impacts to non-listed special-status plant species would occur for the same reasons and in the same manner as they would for listed special-status plant species. See Impact 4.10.1 for a discussion of impacts to special-status plant species.

Discussion of Direct Impacts to Western Spadefoot Toad

Western spadefoot toad, a California species of special concern, is found in seasonally ponded water and associated upland habitat. The direct removal or degradation of 1,850 acres of annual grassland habitat may result in direct take of the species. If species is present during construction activities, adverse effects from construction activities could result in the mortality or injury to western spadefoot toad.

Discussion of Direct Impacts to Western Pond Turtle

Suitable habitat for western pond turtle, a California species of special concern, occurs in the Planning Area. It is the goal of CDFG to maintain viable populations of this species as declining population levels, limited ranges, and/or continuing threats have made them increasingly vulnerable to regional extirpation. The western pond turtle requires the protection of suitable nesting sites and the reduction of mortality in the younger age groups to maintain viable populations. If construction activities occur in aquatic habitat (e.g., wetland, riparian, pond) or upland habitat (e.g., surrounding annual grassland or woodlands), direct effects could occur if individual western pond turtles were present. Adverse effects from construction activities could result in killing or injuring western pond turtles or the disturbance/destruction of habitat.

Discussion of Direct Impacts to Tri-colored Blackbird

Tri-colored blackbirds nest in dense vegetation such as tules, cattails, or blackberries. Removal of vegetation during nesting activities could result in direct mortality of this species. In addition, noise, vibration, and other construction activities could disrupt nesting and foraging activities, which may inadvertently cause nest failure.

Discussion of Direct Impacts to Burrowing Owl

During construction activities, subsequent projects under the General Plan Update have the potential to cause direct mortality of or harm to burrowing owl (a California species of special concern) if this species is present during grading or earthmoving work. The Planning Area contains numerous sites where there are small mammal burrows that this species may inhabit. Burrowing owl habitat is present within the ruderal habitat (vacant lands) and annual grasslands within the Planning Area. Burrowing owls frequently occur in areas used by ground squirrels and will excavate old burrows to use as their own. Construction of the subsequent projects under the General Plan Update may interfere with nesting activities, if nests are present within 150 meters (500 feet) of construction activities. There is potential that project construction could inadvertently compact occupied burrows. These actions could result in direct loss (or take) of a burrowing owl if construction activities disrupt the breeding of this special-status species or destroy a burrow that is actively being used by a burrowing owl.

Discussion of Direct Impacts to Migratory Birds and Raptors

Implementation of the General Plan Update would result in disturbance, degradation, and removal of large trees for nesting and foraging habitat. Large trees provide nesting habitat for migratory birds and raptors including great egret, great blue heron, killdeer, red-tailed hawk, red-shouldered hawk, and American kestrel. The General Plan Update would result in potential development of approximately 15,628 acres of open space. Many raptors or birds of prey prefer low-growing cropland such as alfalfa fields and grassland for foraging. Increased conversion of farmland into residential and commercial development would significantly reduce the foraging habitat for these raptor species. In addition, development of the Planning Area would reduce the number of trees available as suitable nesting sites. These actions could result in direct loss (or take) of protected migratory birds and raptors through direct removal of an active nest or habitat degradation.

Discussion of Direct Impacts to Special-status Bats

The hoary bat, western mastiff bat, and other special-status bat species have the potential to occur within the Planning Area. Habitat for these species vary and include snags, the loose bark

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of a tree, other vegetation, rock overhangs, manmade structures, caves, and culverts. Construction activities can result in direct mortality of individuals or the entire roosting colony. Disturbance of significant roost sites can result in a significant impact on regional populations.

Discussion of Direct Impacts to American Badger

Direct mortality of an American badger may occur if this species is present during construction activities. This species retreats to underground dens if threatened. There is the potential that the badger could be affected during construction due to compaction or earthmoving activities. Additionally, if construction activities occur during the breeding season, badger pups in maternal dens could also be impacted by compaction or earthmoving activities. If a badger den is located within or adjacent to construction activities, there is potential that direct take of the species could occur.

Indirect Impacts of the General Plan Update

Indirect impacts to these species would occur for similar reasons as those identified in Impact 4.10.1. Indirect impacts to habitat for non-listed, special-status species would most likely be less than the total impact identified above. The mitigating effect of many of the policies and action items in the proposed General Plan Update, addressing protection of biological resources, would ultimately reduce actual impacts. In estimating the amount of acreage potentially impacted, this discussion considers the worst-case outcome of implementation of the proposed General Plan Update to ensure that potential environmental impacts are fully considered. In addition, some future development design proposals will be subject to additional environmental review, depending on whether all of the impacts of such proposals have been adequately considered in this DEIR. This environmental review may further reduce the indirect impacts of the proposed General Plan Update on non-listed special-status species. Therefore, the total acreage of indirect impacts likely would be less. As the final design of development and roadways to be constructed under the General Plan Update cannot be known, the actual quantity of habitat impacted may vary greatly.

Discussion of Indirect Impacts to Special-status Plant Species

See Impact 4.10.1 for a discussion of impacts to special-status plant species.

Discussion of Indirect Impacts to Special-status Wildlife Species

In addition to the indirect impacts to special-status wildlife species discussed under Impact 4.10.1, additional indirect impacts may occur to western pond turtle and special-status bat species with the implementation of the General Plan Update. Indirect effects to western pond turtle habitat downstream of subsequent projects under the General Plan Update could occur if water quality were degraded by sediment transported downstream. Sediment derived from construction activities or erosion could also eliminate food sources in the waterways within the Planning Area; however, existing programs and standards as well as proposed General Plan Update policy provisions outlined in the Section 4.9, Hydrology and Water Quality, will ensure that water quality will not be significantly degraded by the project. For special-status bat species, construction activities near or adjacent to a roosting site may indirectly impact the species. Disturbance may include removal of vegetation surrounding or immediately adjacent to a cave or tunnel entrance, changes to airflow within the cave, or alteration of water flows and ground hydrology in the surrounding area. Changes in their habitat, including increase in noise and vibrations, can severely affect the survivorship of the young if construction occurs

adjacent to maternity colonies during spring and summer breeding and the subsequent raising of young.

Proposed General Plan Policies, Objectives and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this impact. Impact 4.10.1 lists those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact. The reader is referred to Section 4.9, Hydrology and Water Quality, for existing City standards and programs as well as proposed General Plan Update policy provisions that address water quality.

Implementation of the policies and action items listed above in addition to those identified for water quality impacts in Section 4.9, Hydrology and Water Quality, would ensure that impacts to special-status species are identified and mitigated to ensure viability of the species, and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Mitigation Measures

None required.

Impacts to Sensitive Habitats

Impact 4.10.3 Implementation of the proposed General Plan Update would result in disturbance, degradation, and removal of sensitive habitats/biological communities. This would be a **significant** impact.

Implementation of the proposed General Plan Update could result in disturbance, degradation, and removal of up to 1,850 acres of annual grassland habitat which has a high potential to support vernal pools, a CDFG sensitive habitat. Vernal pools require the surrounding upland habitat to maintain their habitat value and function. Approximately 74 acres of wetland and open water habitat would also be in direct conflict with the proposed land use designation (e.g., industrial, residential, and other built environment) (see **Table 4.10-4**).

Implementation of the General Plan Update could also result in disturbance, degradation, and removal of riparian habitat (potentially up to 2,740 acres), and would result in the conversion of farmland (approximately 10,825 acres) that provides habitat to listed species such as the Swainson's hawk and San Joaquin kit fox.

Proposed General Plan Policies, Objectives and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing (though not eliminating) this impact. Impact 4.10.1 lists those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact. The reader is referred to Section 4.9, Hydrology and Water Quality, for existing City standards and programs as well as proposed General Plan Update policy provisions that address water quality.

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Mitigation Measures

Implementation of the above-referenced General Plan Update policies and action items (in addition to those identified for water quality impacts in Section 4.9, Hydrology and Water Quality) would limit sensitive habitat impacts. However, implementation of the proposed General Plan Update could still result in the loss of substantial sensitive habitat areas and farmland utilized by state and federally listed species. Given the extent of this potential conversion (approximately 15,415 acres of habitat), this impact is considered **significant and unavoidable**. No feasible mitigation is available to offset the extent of this impact of the proposed General Plan Update.

Impacts to Migratory Corridors

Impact 4.10.4 Implementation of the proposed General Plan Update could interfere substantially with the movement of native resident or migratory fish or wildlife species. However, the proposed General Plan Update includes policies and action items that would ensure that impacts to special-status species are adequately mitigated. This impact would be **less than significant**.

Although this portion of the San Joaquin Valley is a part of the Pacific Flyway, implementation of the General Plan Update would not result in the obstruction of the movement of migratory birds. Migratory birds may, however, use the wetlands, waterways, agricultural lands, detention ponds, irrigation ditches, and wastewater treatment ponds during migration. The major area with remaining natural lands includes the riparian corridors which provide adequate cover and vegetation to be used as a migratory corridor for common and special-status wildlife species. Corridors provided by streams and drainages within the Planning Area provide important routes for species moving through the area as well as local species that use these corridors to spread to new habitat, to mate, and to disperse genetic material. Large riparian areas such as the Fresno River provide movement corridors as well. In addition to ephemeral drainages, streams, and rivers, large areas of undeveloped land such as those found in the western and eastern portions of the Planning Area provide habitat and cover for other species moving through the area and between habitats within the Planning Area. Implementation of the proposed General Plan Update could result in disturbance, degradation, and removal of riparian corridors, an important corridor for the movement of common and special-status species. In addition open space, including agricultural lands and annual grasslands, provide an opportunity for dispersal and migration of wildlife species.

Large-scale development of the Planning Area (approximately 15,628 acres of undeveloped land) identified in the General Plan Update could isolate these areas and impact movement corridors. Additionally, construction of roadways and improvement of existing roadways could serve to sever and/or further sever connections between habitats and cover types in the Planning Area.

Proposed General Plan Policies, Objectives and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing this impact. Impact 4.10.1 lists those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Implementation of the policies and action items referenced above would ensure that impacts to special-status species are mitigated to ensure viability of the species (which would include

consideration of movement needs) and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Mitigation Measures

None required.

Conflict with Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Any Adopted Biological Resources Recovery or Conservation Plan of Any Federal or State Agency

Impact 4.10.5 Implementation of the proposed General Plan Update would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or any adopted biological resources recovery or conservation plan of any federal or state agency. There would be **no impact**.

The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Although the City of Madera is within the boundaries of the Recovery Plan for Upland Species of the San Joaquin Valley (USFWS 1998), the General Plan Update does not conflict with the Recovery Plan. A discussion of potential impacts to sensitive habitats within the Planning Area can be found in the Recovery Plan for Upland Species of the San Joaquin Valley, California, and the U.S Fish and Wildlife Service Draft Vernal Pool Recovery Plan. No further analysis of the issue is required.

Mitigation Measures

None required.

4.10.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The City of Madera Planning Area is located in the southern portion of Madera County. The land use policies in the proposed City of Madera General Plan Update would provide direction for growth within the city limits, while the Madera County General Plan policies provides direction for growth outside the city limits but within the Planning Area boundaries (until land areas are annexed to the city). Thus, the setting for this cumulative analysis includes existing, proposed, approved, and planned projects in the City of Madera General Plan Planning Area and surrounding portions of unincorporated Madera County. Development in the region identified in Section 4.0 would change the intensity of land uses in the region. In particular, this cumulative development scenario would increase development in the southern portion of Madera County and would provide additional housing, employment, shopping, and recreational opportunities.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Biological Resource Impacts

Impact 4.10.6 When considered with existing, proposed, approved, and planned development in the region, implementation of the proposed City of Madera General Plan Update has the potential to further contribute to cumulative

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impacts to special-status species and habitat loss. This is considered a **cumulatively considerable** and **significant and unavoidable** impact.

The proposed General Plan Update land use pattern and development intensity would substantially contribute to regional impacts to special-status species and habitat loss as identified for the project under Impacts 4.10.1 through 4.10.4.

Proposed General Plan Policies, Objectives and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing (though not eliminating) the General Plan Update's contribution to this impact. Impact 4.10.1 lists those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that would lessen the General Plan Update's contribution to this impact. The reader is referred to Section 4.9, Hydrology and Water Quality, for existing City standards and programs as well as proposed General Plan Update policy provisions that address water quality.

Mitigation Measures

Implementation of the above-referenced General Plan Update policies and action items (in addition to those identified for water quality impacts in Section 4.9, Hydrology and Water Quality) would limit sensitive habitat impacts. However, implementation of the proposed General Plan Update could still result in the loss of substantial sensitive habitat areas and farmland utilized by state and federally listed species that would add to cumulative loss of such habitat. Given the extent of this potential conversion (approximately 15,415 acres of habitat), this impact is considered **cumulatively considerable** and a **significant and unavoidable**. No feasible mitigation is available to offset the extent of this impact of the proposed General Plan Update.

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4. 11 CULTURAL AND PALEONTOLOGICAL RESOURCES

4. 11 CULTURAL AND PALEONTOLOGICAL RESOURCES

INTRODUCTION

This section considers and evaluates the potential impacts of the proposed City of Madera General Plan Update on cultural and paleontological (fossil) resources. Cultural resources include historic buildings and structures, historic districts, historic sites, prehistoric and historic archaeological sites, and other prehistoric and historic objects and artifacts. Paleontological resources include vertebrate, invertebrate, or plant fossils.

This Draft Environmental Impact Report (DEIR) uses technical information and analyses from previous studies which are supported by the State CEQA Guidelines (see Sections 15148 [Citation] and 15150 [Incorporation by Reference]).

CONCEPTS AND TERMINOLOGY FOR EVALUATION OF CULTURAL RESOURCES

The following definitions are common terms used to discuss the regulatory requirements and treatment of cultural resources:

Cultural resources is the term used to describe several different types of properties: prehistoric and historical archaeological sites; architectural properties such as buildings, bridges, and infrastructure; and resources of importance to Native Americans.

Historic properties is a term defined by the National Historic Preservation Act (NHPA) as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on, the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such a property.

Historical resource is a California Environmental Quality Act (CEQA) term that includes buildings, sites, structures, objects, or districts, each of which may have historical, prehistoric, architectural, archaeological, cultural, or scientific importance and is eligible for listing or is listed in the California Register of Historical Resources (CRHR).

Paleontological resource is defined as including fossilized remains of vertebrate and invertebrate organisms, fossil tracks and trackways, and plant fossils. A unique paleontological site would include a known area of fossil-bearing rock strata.

4.11.1 EXISTING SETTING

PREHISTORY

There is a long history of regional archaeological research for the project area. The earliest archaeological surveys in the San Joaquin Valley date to the 1920s and were accomplished by Gifford and Schenck (1926) and Schenck and Dawson (1929). This work was followed in 1941 by Hewes' survey of a 160-mile-long stretch of the central San Joaquin Valley and the adjacent foothills of the Sierra Nevada range. Subsequent research broadened both the scope and database of earlier work and also became more systematic and intensive. Some of this more recent research includes work at Little Panoche Reservoir (Olsen and Payen, 1969) and Buchanan Reservoir (Moratto, 1972).

The prehistory of the San Joaquin Valley is generally divided into three periods (Wallace, 1978; Moratto, 1984). The first period is characterized by big game hunting and is dated approximately 8,000 years ago. The second period is dated from approximately 5,000 B.P. (Before Present) to A.D. 1200 and is characterized by a shift in subsistence strategy from hunting

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to the collection of plant resources. This shift in economic pursuits is evidenced in typical artifact assemblages from this period that include seed-grinding implements. The third period dates from approximately A.D. 1200 to 1700 and represents habitation of the area by Yokuts.

Olsen and Payen (1969) presented a cultural chronology for the eastern edge of the San Joaquin Valley based on their investigations at Little Panoche Reservoir. They identified the Positas Complex, 5,300–2,800 B.P.; Pacheco Complex, 2,800 B.P.–A.D. 300; Gonzaga Complex 300 A.D.–1000; and Panoche Complex, 1500–1850. Similarly, Moratto (1972) presented a cultural chronology for the eastern edge of the San Joaquin Valley and foothills of the southern Sierra Nevada based on investigations at Buchanan Reservoir. Moratto identified the Chowchilla Phase, 2,300 B.P.–A.D. 300, Raymond Phase A.D. 300–1500, and Madera Phase 1500–1850.

The Pacheco, Gonzaga, and Panoche Complex and the Raymond and Madera Phase are generally characterized by the use of relatively small projectile points that are probably associated with the introduction of the bow and arrow and an economic shift toward increasing exploitation of plant resources including the acorn. The Panoche Complex and Madera Phase also appear to represent occupation of the area by ethnographically documented groups of Native Americans.

ETHNOGRAPHY

Prior to the arrival of Euroamericans in the region, California was inhabited by groups of Native Americans speaking more than 100 different languages and occupying a variety of ecological settings. Because records from that era are limited, it is difficult to obtain and verify information about Native American groups. Kroeber (1925, 1936) subdivided California into four subculture areas: Northwestern, Northeastern, Southern, and Central. The Planning Area is within the Central subculture area, which includes the territory of Northern Valley Yokuts, North Fork Mono during their seasonal migrations, and potentially Miwoks.

Northern Valley Yokuts inhabited the Central Valley surrounding the San Joaquin River from Mendota in the south to the area between the Calaveras and Mokelumne rivers in the north (Wallace, 1978). According to Latta (1977) the City of Madera and the surrounding area are within the territory of the Ausumne group of Northern Valley Yokuts.

The basic social and economic group of Northern Valley Yokuts is the family or household unit, with the nuclear and/or extended family forming a corporate unit. These basic units were combined into distinct, named village or hamlet groups which functioned as headquarters of a localized patrilineage (Wallace, 1978). Lineage groups were important political and economic units that combined to form tribelets numbering between 300 and 500 persons. Each tribelet had a chief or headman who exercised political control over the villages that comprised it. The office of tribelet chief was hereditary, with the chieftainship being the property of a single patrilineage within the tribelet.

Subsistence activities of Northern Valley Yokuts included hunting, fishing, and collection of plant resources, particularly acorns. They built a variety of structures including residential dwellings, ceremonial structures, and semi-subterranean sweat lodges (Wallace, 1978). The typical dwelling was a thatched house covered by brush, grass, or tules. A variety of flaked and ground stone tools (e.g., knives, arrow and spear points, and rough cobble and shaped pestles) were common among Northern Valley Yokuts. Obsidian was a highly valued material for tool manufacture and was generally imported. Northern Valley Yokuts also engaged in trading relationships with surrounding groups for commodities such as salt, marine shells, and basketry.

North Fork Mono inhabited the San Joaquin Valley and Sierra foothills, migrating from their foothills homeland down to the Valley for hunting and fishing, working with other tribes along the way, such as the Yokuts and Miwoks (Tatum, 2006).

Euroamerican contact with Native American groups living in the Central Valley of California began during the last half of the eighteenth century. At this time, the attention of Spanish missionaries shifted away from the coast, and its dwindling Native American population, to the missionization of interior populations such as Northern Valley Yokuts, North Fork Mono, and Miwoks. The efforts of the Spanish to missionize the Native American population began a history of destructive Euroamerican interactions with Native Americans that eventually led to the loss of traditional Native American culture.

HISTORIC PERIOD

Initial expeditions into the San Joaquin Valley were exploratory in nature but were soon followed by campaigns to either convert and/or relocate Native Americans to missions. Missions dominated the social, political, and economic lives of both Spanish and Native Americans across much of California during the Spanish Period (ca. 1769–1821). Many Native American groups, however, were reluctant to adapt to the mission “system” and convert to Catholicism. This factor, in combination with the onset of many European diseases, virtually ended the traditional lifeways of many Native American groups in California.

The Mexican Period (ca. 1821–1848) in California was an outgrowth of the Mexican Revolution, and its accompanying social and political views affected the mission system. In 1833 the missions were secularized and their lands divided among the *Californios* as *ranchos* in the form of land grants. The *ranchos* facilitated the growth of a semi-aristocratic group that controlled large *ranchos* or land grants. Local Native American populations, who were essentially used as forced labor, worked on these large tracts of land. This was a period of growing antagonism of Native Americans toward Euroamericans and also decline in Native American populations due to both disease and abuse.

The American Period (ca. 1848–present) in California history began with the end of the Mexican-American War and the signing of the Treaty of Guadalupe Hidalgo in 1848. The onset of this period, however, did not improve the economic condition of most Native American populations. For example, militia groups such as the Mariposa Battalion were established to “control” Native Americans (Crampton, 1957). The Mariposa Battalion reports armed encounters with Native Americans in the upper drainage of the Kings and Kaweah Rivers (Crampton, 1957). The *rancho* system also generally remained intact until 1862–1864 when a drought forced many landowners to sell off or subdivide their holdings. At this time open ranges began to be fenced and the economy started to shift from cattle ranching to dairy farming and agriculture based on new crops such as wheat. Regardless of a change of economic focus, the plight of Native American populations remained, at best, relatively unchanged. In 1851 and 1852, the U.S. Senate rejected treaties between the government and Native Americans, and during this time period military reserves were established to maintain various groups (Heizer, 1974). Subsequent conflicts regarding reservation lands and local and federal recognition continue to the present day.

The Gold Rush was the catalyst for major settlement and development of the region. As miners migrated south from the Columbia-Sonora goldfields, many settled on the valley floor. Madera County encompasses a fairly large area from west to east, including the foothill region, the plains, and the high Sierra. Although each region offered its own resources and opportunities,

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the mountains were tapped for their enormous timber reserves. The population increased steadily as the Central Pacific Railroad established lines in the San Joaquin Valley in 1872.

Rising demand for timber prompted the construction of a vast flume that ran 63 miles from the Soquel Basin into the valley (Hoover et al., 1996). Built in 1874, the flume made it possible to move millions of feet of lumber annually. The flume was originally planned to end at Borden, a community already established along the Central Pacific Railroad. However, high property prices and land level issues prompted mill investors to locate elsewhere (Madera County Historical Society, 2007). The new end-point for the flume was named Madera, Spanish for "wood" or "timber."

With the construction of the flume, Madera grew significantly, and in 1876 the California Lumber Company officially laid out the town (Hoover et al., 1966). The Town of Madera became the county seat when the county was established in 1893 (Hoover et al., 1996).

KNOWN CULTURAL RESOURCES IN THE GENERAL PLAN UPDATE PLANNING AREA

Previous archaeological and historical investigations have covered only about 5 percent of the City of Madera Planning Area. These investigations identified 54 historic buildings/structures and a historic site (i.e., remnants of a building/structure).

Areas of Potential Cultural Resources and Interest

There are likely cultural artifacts that can be found along waterways in the Central Valley, including the City of Madera area, items left over from native tribes such as handmade fishing and food gathering tools. Places centered on waterways were used for fishing, hunting, and other food resources. In addition, the waterways historically were made useful as a mode of transportation between settlements. Three of the known historic buildings/structures within the Planning Area are either listed in or eligible for listing in the National Register of Historic Places (NRHP) (**Table 4.11-1**). A cultural resource listed in the NRHP is also included in the California Register of Historical Resources (CRHR).

TABLE 4.11-1
HISTORICAL RESOURCES IN THE CITY OF MADERA GENERAL PLAN UPDATE PLANNING AREA

Site Number	Site Identification	Year Built	Location	NRHP Eligibility Status
P-20-002516	Madera County Courthouse	1900	210 W. Yosemite Avenue	Listed
P-20-002497	Luther Burbank School	1925	328 Madera Avenue	Eligible
P-20-002494	Dixie Motel	1934	1100 S. Gateway Drive	Eligible

KNOWN PALEONTOLOGICAL RESOURCES IN THE GENERAL PLAN UPDATE PLANNING AREA

Paleontology is the study of prehistoric life, including organisms' evolution and interactions with each other and their environments. Paleontological resources include fossil remains, as well as fossil localities and formations that have produced fossil material. These resources can be important educational resources and are nonrenewable once destroyed. Therefore CEQA offers protection for these sensitive resources and requires that they be addressed during the EIR process.

A search of the University of California Museum of Paleontology (UCMP) collections database identified 199 locations in Madera County where paleontological resources have been identified. The majority (192) of these were discovered at the Fairmead Landfill which is approximately 18 miles northwest of the General Plan Update Planning Area (City of Madera, 2009). The database search did not identify any paleontological resources in the Planning Area, and the geography and geology of the area suggest that it most likely does not contain fossil resources.

4.11.2 REGULATORY FRAMEWORK

STATE

California Environmental Quality Act

Under CEQA, public agencies must consider the effects of their actions on both “historical resources” and “unique archaeological resources.” Pursuant to Public Resources Code Section 21084.1, a “project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” Section 21083.2 requires agencies to determine whether proposed projects would have effects on “unique archaeological resources.”

“Historical resource” is a term with a legally defined meaning (Public Resources Code, Section 21084.1 and State CEQA Guidelines, Section 15064.5 [a], [b]). As defined by state law, “historical resource” includes any resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR). The CRHR includes resources listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be “historical resources” for purposes of CEQA unless a preponderance of evidence indicates otherwise (Pub. Resources Code, Section 5024.1 and California Code of Regulations, Title 14, Section 4850). Unless a resource listed in a survey has been demolished, lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource to be potentially eligible for the CRHR.

In addition to assessing whether historical resources potentially impacted by a proposed project are listed or have been identified in a survey process (Public Resources Code 5024.1 [g]), lead agencies have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project's impacts to historical resources (Public Resources Code, Section 21084.1 and State CEQA Guidelines, Section 15064.5 [a][3]). Following CEQA Guidelines Section 21084.5 (a) and (b) a historical resource is defined as any object, building, structure, site, area, place, record, or manuscript that:

- a) Is historically or archeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political or cultural annals of California; and
- b) Meets any of the following criteria:

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- 1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- 2) Is associated with the lives of persons important in our past;
- 3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- 4) Has yielded, or may be likely to yield, information important in prehistory or history.

Archaeological resources may also qualify as "historical resources" and Public Resources Code 5024 requires consultation with the Office of Historic Preservation when a project may impact historical resources located on State-owned land.

For historic structures, State CEQA Guidelines Section 15064.5, subdivision (b)(3), indicates that a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings, or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995) shall mitigate impacts to a level of less than significant. Potential eligibility also rests upon the integrity of the resource.¹ Integrity is determined through considering the setting, design, workmanship, materials, location, feeling, and association of the resource.

CEQA also requires lead agencies to consider whether projects will impact "unique archaeological resources." Public Resources Code Section 21083.2, subdivision (g), states that "'unique archaeological resource' means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Treatment options under Section 21083.2 include activities that preserve such resources in place in an undisturbed state. Other acceptable methods of mitigation under Section 21083.2 include excavation and curation or study in place without excavation and curation (if the study finds that the artifacts would not meet one or more of the criteria for defining a "unique archaeological resource").

Advice on procedures to identify cultural resources, evaluate their importance and estimate potential effects is given in several official publications, such as the series produced by the Governor's Office of Planning and Research (OPR). The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested

¹"Integrity" is the retention of the resource's physical identity that existed during its period of significance.

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persons and corporate entities, including, but not limited to, museums, historical commissions, associations and societies, be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains.

Section 7050.5(b) of the California Health and Safety code specifies protocol when human remains are discovered. The code states:

In the event of discovery or recognition of any human remains 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 remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

State CEQA Guidelines Section 15064.5, subdivision (e), requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the Native American Heritage Commission must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as timely identified by the Native American Heritage Commission. Section 15064.5 directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

In addition to the mitigation provisions pertaining to accidental discovery of human remains, the State CEQA Guidelines also require that a lead agency make provisions for the accidental discovery of historical or archaeological resources, generally. Pursuant to Section 15064.5, subdivision (f), these provisions should include "an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical or unique archaeological resource, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place."

Senate Bill 18 (Gov. Code, Sections 65352.3 and 65352.4) requires that, prior to the adoption or amendment of a general plan or specific plan proposed on or after March 1, 2005, a city or county must consult with Native American tribes with respect to the possible preservation of, or the mitigation of impacts to, specified Native American places, features, and objects located within that jurisdiction. The City of Madera initiated the consultation process as required under these provisions of the Government Code.

Paleontological resources are classified as non-renewable scientific resources and are protected by state statute (Public Resources Code Chapter 1.7, Section 5097.5, Archeological, Paleontological, and Historical Sites and Appendix G). No state or local agencies have specific

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jurisdiction over paleontological resources. No state or local agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered as a result of construction-related earth moving on state or private land in a project site.

4.11.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

Following PRC Sections 21083.2 and 21084.1, and State CEQA Guidelines Section 15064.5 and Appendix G, cultural resource impacts are considered to be significant if implementation of the proposed project would result in any of the following:

- Cause a substantial adverse change in the significance of an archaeological resource or a historical resource as defined in PRC section 21083.2 and CEQA Guidelines Section 15064.5, respectively;
- Directly or indirectly destroy a unique paleontological resource or site or unique geological feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

State CEQA Guidelines Section 15064.5 defines "substantial adverse change" as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource is materially impaired.

METHODOLOGY

Cultural resources staff at PMC performed all archaeological and historical investigations for the City of Madera General Plan Update. These investigations included a records search conducted by the Southern San Joaquin Valley Information Center (SSJVIC) at California State University, Bakersfield on January 8, 2008, a sacred lands search conducted by the Native American Heritage Commission (NAHC) on November 13, 2007, and consultation with the Native American community.

The record search for the planning area identified 40 previous surveys, 54 historic buildings/structures, and a historic site (i.e., remnants of a building/structure) within it. The previous surveys covered approximately 5 percent of the Planning Area. Three of the known historic buildings/structures within the Planning Area are either listed in or eligible for listing in the National Register of Historic Places and the California Register of Historical Resources. These buildings/structures include the Madera County Courthouse, site P-20-002516, the Luther Burbank School, site P-20-002497, and the Dixie Motel, site P-20-002494.

The sacred lands search did not identify any sensitive Native American cultural resources either within or near the Planning Area. All Native American groups and individuals identified by the NAHC were contacted by letter regarding the project. The City of Madera understands the importance of contacting local tribes and values their participation in the planning process. The City contacted all Native American groups and/or individuals identified on the SB 18 consultation list for the General Plan Update area by the Native American Heritage Commission, and tribes were asked to consult regarding the General Plan Update.

A search of the University of California Museum of Paleontology collections database did not identify any paleontological resources in or near the General Plan Update area. The search of

the UCMP collections database identified 199 locations in Madera County where paleontological resources have been identified. The majority (192) of these were discovered at a single location 20 miles northeast of the General Plan Update area.

PROJECT IMPACTS AND MITIGATION MEASURES

Prehistoric Resources, Historic Resources, and Human Remains

Impact 4.11.1 Implementation of the proposed General Plan Update could result in the potential disturbance of cultural resources (i.e., prehistoric sites, historic sites, and isolated artifacts and features) and human remains. However, policy provisions of the proposed General Plan Update would mitigate potential impacts to these resources. This would be a **less than significant** impact.

Archaeological and historical investigations identified six known cultural resources within the proposed General Plan Update Planning Area. However, comprehensive archaeological and historical investigations have not been conducted for the entire Planning Area. Consequently, adoption of the proposed General Plan Update could impact known cultural resources and undiscovered cultural resources and human remains.

As identified below, the proposed General Plan Update policies and action items in the Historic and Cultural Resources Element include provisions that would ensure cultural resources are protected. Thus, this impact is **less than significant**.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The following list contains those policies and action items that include specific, enforceable requirements and/or restrictions and corresponding performance standards that assist in mitigating potential cultural resource impacts. Specifically, policies HC-2, HC-5, HC-7, and HC-8 and Action Item HC-5.1 requires the use of the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties for the preservation of historic structures as well as requirements regarding the preservation of the Downtown historic integrity. Action items HC-9.1 and HC-9.2 require the evaluation and mitigation for potential impacts to archaeological sites.

Policy HC-2: The City supports the goals and objectives for the Comprehensive Statewide Historic Preservation Plan for California 2000-2005. (See info box below).

Policy HC-5: Maintain and improve buildings which help contribute to the downtown's historic character.

Action Item HC-5.1: Use the latest Secretary of the Interior's Standards for the Treatment of Historic Properties as a guideline for the preservation of historic buildings. (See info box above.)

Policy HC-7: The City shall require quality architecture that preserves the Downtown's historic integrity. "Franchise architecture" that detracts from the unique and distinctive setting of the Downtown shall not be allowed.

Policy HC-8: Building renovations in the Downtown shall be complementary to the character of historic Downtown architecture.

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Action Item HC-9.1: In areas identified with a significant potential for containing archaeological artifacts, require completion of a detailed on-site study as part of the environmental review process. Implement all feasible mitigation measures.

Action Item HC-9.2: Impose the following conditions on all discretionary projects which may cause ground disturbance:

"The Planning Department shall be notified immediately if any prehistoric, archaeological, or fossil artifact or resource is uncovered during construction. All construction must stop and an archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology shall be retained to evaluate the finds and recommend appropriate action."

"All construction must stop if any human remains are uncovered, and the County Coroner must be notified according to Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the procedures outlined in CEQA Section 15064.5 (d) and (e) shall be followed."

The U.S. Secretary of the Interior's **Standards for the Treatment of Historic Properties** is a set of guidelines that outlines four potential approaches for historic structures: **Preservation**, **Rehabilitation**, **Restoration**, and **Reconstruction**.

- The first treatment, **Preservation**, places a high premium on the retention of all historic fabric through conservation, maintenance and repair. It reflects a building's continuum over time, through successive occupancies, and the respectful changes and alterations that are made.
- **Rehabilitation**, the second treatment, emphasizes the retention and repair of historic materials, but more latitude is provided for replacement because it is assumed the property is more deteriorated prior to work. (Both Preservation and Rehabilitation standards focus attention on the preservation of those materials, features, finishes, spaces, and spatial relationships that, together, give a property its historic character.)
- **Restoration**, the third treatment, focuses on the retention of materials from the most significant time in a property's history, while permitting the removal of materials from other periods.
- **Reconstruction**, the fourth treatment, establishes limited opportunities to re-create a non-surviving site, landscape, building, structure, or object in all new materials.

Source: National Parks Service at www.nps.gov

Mitigation Measures

None required.

Paleontological Resources

Impact 4.11.2 Implementation of the proposed General Plan Update could result in the potential disturbance of paleontological resources (i.e., fossils and fossil formations). However, policy provisions of the proposed General Plan Update would mitigate potential impacts to these resources. This would be a **less than significant** impact.

A search of the University of California, Berkeley Museum of Paleontology collections database did not identify any paleontological resources within the boundaries of the City of Madera and its Sphere of Influence. The sensitivity of the area for paleontological resources, however, has not been assessed and no formal paleontological investigations were identified for the area. Consequently, implementation of the proposed project could impact undiscovered paleontological resources.

As identified below, the proposed General Plan Update policies and action items in the Historic and Cultural Resources Element include provisions that would ensure paleontological resources are protected. Thus, this impact is **less than significant**.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

Action Item HC-9.2 requires the evaluation and mitigation for fossils uncovered during subsequent project construction activity.

Action Item HC-9.2: Impose the following conditions on all discretionary projects which may cause ground disturbance:

"The Planning Department shall be notified immediately if any prehistoric, archaeological, or fossil artifact or resource is uncovered during construction. All construction must stop and an archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology shall be retained to evaluate the finds and recommend appropriate action."

"All construction must stop if any human remains are uncovered, and the County Coroner must be notified according to Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the procedures outlined in CEQA Section 15064.5 (d) and (e) shall be followed."

Mitigation Measures

None required.

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4.11.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting associated with adoption of the General Plan Update includes proposed, planned, reasonably foreseeable, and approved projects within the region (see Section 4.0), as well as full buildout of the City of Madera General Plan Planning Area as proposed in the General Plan Update (occurring after year 2030). Regional growth and development would contribute to potential conflicts with cultural and paleontological resources. These resources include archaeological resources associated with Native American activities and historic resources associated settlement, farming, and economic development.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Prehistoric Resources, Historic Resources, and Human Remains

Impact 4.11.3 Implementation of the proposed General Plan Update along with foreseeable development in the region could contribute to further disturbance of cultural resources (i.e., prehistoric sites, historic sites, and isolated artifacts and features) and human remains. However, policy provisions of the proposed General Plan Update would mitigate its contribution to potential impacts to these resources. This would be a **less than cumulatively considerable** impact.

Cumulative development in the region would result in the loss and/or degradation of cultural resources. These cumulative effects of development on cultural resources would be significant. As less than 5 percent of the Planning Area has been surveyed for cultural resources, there is the potential for future development to uncover previously undiscovered cultural resources because of the area's historic occupation by Native Americans, Spanish, and other groups of settlers. Buildout of the Planning Area could contribute to the cumulative loss of cultural resources in the region.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan contains several policies and action items that would mitigate its contribution to this cumulative impact. The reader is referred to Impact 4.11.1 for those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards mitigate this impact.

Mitigation Measures

None required.

Paleontological Resources

Impact 4.11.4 Implementation of the General Plan Update along with other foreseeable development in the region could result in the disturbance of paleontological resources (i.e., fossils and fossil formations). However, policy provisions of the proposed General Plan Update would mitigate its contribution to potential impacts to these resources. This would be a **less than cumulatively considerable** impact.

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A search of the University of California, Berkeley Museum of Paleontology collections database did not identify any paleontological resources within the boundaries of the City of Madera and its Sphere of Influence. Regardless, subsequent development of the Planning Area could impact undiscovered paleontological resources. The projects might contribute to the cumulative loss of paleontological resources in the region.

Proposed General Plan Update Policies and Action Items that Provide Mitigation

The proposed General Plan contains Action Item HC-9.2 that requires the evaluation and mitigation for fossils uncovered during subsequent project construction activity. The reader is referred to Impact 4.11.1 for the full text of this action item that would mitigate the proposed General Plan Update's contribution to this impact.

Mitigation Measures

None required.

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4.12 PUBLIC SERVICES AND UTILITIES

This section of the DEIR describes the existing public facilities and services in the City of Madera and the greater General Plan Planning Area and evaluates the effects associated with General Plan Update. This analysis addresses citywide and regional impacts to these facilities and services and identifies mitigation measures to lessen those impacts. Please note that the following discussion has been broken into subsections associated with the public service/utility services provided by the City of Madera and other agencies:

- Fire protection
- Law enforcement
- Water supply
- Sewer
- Solid waste disposal
- Public schools
- Electricity, natural gas, and other services
- Parks and recreation

4.12.1 FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES

4.12.1.1 EXISTING SETTING

FIRE PROTECTION

Fire protection and emergency medical services are provided by the Madera City Fire Department, which is administered by the California Department of Forestry and Fire Protection (CalFire) through a cooperative fire protection agreement. Policy direction remains with the Madera City Council and all permanent Fire Department staff are CalFire employees. The department provides a multitude of emergency and nonemergency services to the community. Services include fire prevention and suppression, emergency medical assistance (though not ambulance service), rescue, public assistance, fire menace standby, safety inspections, and review of building plans for compliance with applicable codes and ordinances.

The two City fire stations, located at 317 North Lake and 200 South Schnoor, are staffed 24 hours a day. The Fire Department staffs two fire engines and one mini-pumper. One of the engines features a 50-foot tele-squirt aerial ladder. The City is currently in the initial stages of planning for the addition of a Fire Station in the northern portion of the City (Madera City Fire Department, 2008).

Pursuant to a Memorandum of Understanding between the City and the County of Madera, the City enjoys automatic aid responses from County Fire Station #1 and #3. Station #1 is located near the intersection of Road 28 and Avenue 14, and Station #3 is located near the intersection of Road 26 and Avenue 18½. Both of these County stations are staffed with one full-time firefighter augmented by paid call, or volunteer, firefighters.

The ISO Public Protection Classification Program, created by the Insurance Services Office, Inc., grades a community's fire protection on a scale of 1 to 10, based on ISO's Fire Suppression Rating Schedule with 1 being the highest rating possible. According to Stan Craig of the Madera City Fire Department, the City's current ISO rating is 4.

The Fire Department is currently in the process of studying fire protection service delivery for the city. A goal of that project is to establish standards for City Council adoption. The Fire Department is currently using National Fire Protection Association (NFPA) 1710 standards of response for urban areas with populations exceeding 1,000 per square mile as a planning guide.

4.12 PUBLIC SERVICES AND UTILITIES

These guidelines call for a first response to the emergency scene within 7 minutes of the receipt of the call for service. The Madera City Fire Department's average time, from receipt of alarm to arrival of the first unit, is 6.56 minutes (Madera City Fire Department, 2008).

Ninety-eight percent of the Fire Department's funding comes from the City General Fund. The remaining 2 percent comes from funding from the Public Works Department in exchange for routine fire hydrant maintenance work performed by the Fire Department. Because the department is primarily funded by the General Fund, the City Council sets the annual funding levels based on discretionary dollars available.

Emergency Medical Services

Ambulance services in the Madera area are provided by Pistoiresi Paramedics located at 113 North R Street in Madera. This company provides three ambulatory units 24 hours a day as well as one additional on-call unit.

Two hospitals are located in or near Madera:

- Madera Community Hospital, a 100-bed health care institution featuring a 16-bed emergency room and comprehensive medical care, is located on East Almond Avenue in Madera along State Route 99. Additional special care facilities, including convalescence facilities, are also available.
- The Children's Hospital Central California is a 338-bed hospital on a 50-acre campus near Madera (southeast of the Planning Area) with a medical staff of more than 450 physicians.

4.12.1.2 REGULATORY FRAMEWORK

STATE

California Occupational Safety and Health Administration

In accordance with California Code of Regulations Title 8 Sections 1270 "Fire Prevention" and 6773 "Fire Protection and Fire Equipment," the California Occupational Safety and Health Administration (CAL-OSHA) has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance and use of all firefighting and emergency medical equipment.

Emergency Response/Evacuation Plans

State law authorizes the Office of Emergency Services (OES) to prepare a Standard Emergency Management System (SEMS) program, which sets forth measures by which a jurisdiction should handle emergency disasters. Noncompliance with SEMS could result in the State withholding disaster relief from the noncomplying jurisdiction in the event of an emergency disaster. The preservation of life, property, and the environment is an inherent responsibility of local, state, and federal government. OES coordinates the responses of other agencies including the California Highway Patrol (CHP) and the City of Madera Police and Fire departments.

Fire Hazard Severity

California has enacted statewide laws aimed at reducing wildfire hazards in wildland-urban interface areas. These regulations cover topics such as fire prevention, vegetation management, notification and penalties, fire hazard severity zones, defensible space, setbacks, and exemptions. For the complete text of the Fire Hazard Zoning Field Guide, the reader is referred to the Office of the State Fire Marshal's fire safety planning website (<http://osfm.fire.ca.gov/zoning.html>).

California Public Resources Code

The Public Resources Code includes the following laws related to fire safety.

Vegetation Management Program

CalFire has a fuel reduction program called the Vegetation Management Program. Limited funding is available to conduct fuel management activities primarily by burning on parcels or aggregates of parcels of 100 acres or more. The objective of the Vegetation Management Program is to prevent high-intensity wildfire through fuel modification. If brush can be kept at the medium fuel load level, then the intensity of fire can be reduced substantially.

California Fire Plan

The California Board of Forestry and CalFire have developed the California Fire Plan in an effort to reduce the overall costs and losses from wildfire in California. According to the California Fire Plan, the primary purpose of wildland fire protection in California is to protect human health and safety together with the wide range of assets found on California wildlands. These assets include timber, range, recreation, water and watersheds, plants, air quality, cultural and historic resources, unique scenic areas, buildings, and wildlife, plants, and ecosystem health.

The California Fire Plan defines a standard for measuring the level of fire protection service provided in an area, considers assets at risk, incorporates the cooperative interdependent relationships of wildland fire protection providers, provides for public stakeholder involvement, and creates a fiscal framework for policy analysis. A key product of the California Fire Plan is the development of wildfire safety zones to reduce the risks to residents and firefighters from future large wildfires. The California Fire Plan defines an assessment process for measuring the level of service provided by the fire protection system for wildland fire. This measure can be used to assess the department's ability to provide an equal level of protection to sites with similar land types, as required by Public Resources Code Section 4130. This measure is the percentage of fires that are successfully controlled before unacceptable costs are incurred. Knowledge of level of service will help define the risk to wildfire damage faced by public and private assets in wildlands.

LOCAL

City of Madera Fire Code

The City regulates development and building design through Section 9-1.06 of its Municipal Code.

4.12 PUBLIC SERVICES AND UTILITIES

4.12.1.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following standards are based on State CEQA Guidelines Appendix G. A significant impact to fire protection and emergency services would occur if implementation of the proposed project:

- 1) Would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services.

METHODOLOGY

Evaluation of potential fire service impacts was based on consultation with staff from the Madera City Fire Department, as well as review of the Fire Department's website and other relevant literature.

IMPACTS AND MITIGATION MEASURES

Fire Protection and Emergency Medical Services

Impact 4.12.1.1 Implementation of the proposed General Plan Update would increase the demand for fire protection and emergency medical service. With the implementation of General Plan Update policy provisions, this is considered a **less than significant** impact.

Implementation of the proposed General Plan would include approximately 24,788 residential units and approximately 804 acres being developed for commercial, office, and industrial land uses by the year 2030 in the Planning Area. As population and other development in the Planning Area increases, demands for fire protection and emergency medical services will also increase.

According to the Fire Department, a need currently exists for an additional fire station in the northern portion of the city. When the city boundaries extend beyond the current Sphere of Influence, additional facilities will be necessary. If significant buildout occurs prior to the addition of the necessary facilities, the potential exists for simultaneous multiple calls for service, which could result in a need to prioritize calls, resulting in delays and increased response times.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would address potential impacts associated with fire protection and emergency medical services. The following list contains those policies and action items that include specific, enforceable requirements and corresponding performance standards that address this impact.

Policy CI-44: Public facilities should be phased in a logical manner which avoids "leapfrog" development and encourages the orderly development of roadways, water and sewer, and other public facilities. The City shall

not provide public financing or assistance for projects that do not comply with City master plans.

- Policy CI-47: All major development projects shall identify the size and cost of all infrastructure and public facilities and identify how the installation and long-term maintenance of infrastructure will be financed consistent with the policies in this General Plan.*
- Policy CI-49: Except when prohibited by state law, the City shall require that sufficient capacity in all public services and facilities will be available on time to maintain desired service levels and avoid capacity shortages, traffic congestion, or other negative effects on safety and quality of life.*
- Policy CI-50: All new residential development shall be required to annex into City of Madera Community Facilities District 2005-01, or any subsequent CFD created in its place. The purpose of the CFD is to collect special assessments from new residential development to offset the cost of providing eligible municipal services to that development.*
- Policy HS-33: The City shall ensure the safety and protection of Madera and its community members by providing adequate first response capabilities to emergencies and by maintaining sufficient resources to expand protection as the community grows.*
- Policy LU-13: The City shall support the annexation of property to its boundaries for the purpose of new development only when it determines that the following conditions exist:*
- 1) Sufficient public infrastructure, facilities, and services are available or will be provided in conjunction with new development; and*
 - 2) Demands on public infrastructure, facilities and services created by the new development will not result in reductions in capacity that is necessary to serve the existing city limits (including demand created by infill development), reductions in existing service levels within the city limits, or the creation of detrimental fiscal impacts on the City.*
- Policy LU-14: All proposals to annex property into the City limits for the purpose of new development shall prepare a Public Facilities Financing Plan (PFFP) that articulates infrastructure and public facilities requirements, their costs, financing mechanisms, and the feasibility of the financial burden. The PFFP shall analyze backbone infrastructure and public service needs and funding capacity at the Village level, as defined in Figure LU-3 of the Land Use Element of this General Plan. (The Planning Process required for Village Reserve Areas in Policy LU-34 shall be sufficient to meet this requirement.) The cost of preparing the PFFP shall be shared proportionately among property owners in each Village, with the shares of any non-participating owner collected at the time of development and reimbursed to owner(s) who prepared the PFFP through a reimbursement agreement.*

4.12 PUBLIC SERVICES AND UTILITIES

Policy LU-15: The City shall deny projects and oppose the annexation of properties which are demonstrated to be out of compliance with Policies LU-13 and LU-14 above.

Policy LU-16: Funding mechanisms for major capital facilities which must be "oversized" to support future development shall be established to account for the full cost of the facility(ies) and provide for ultimate financing by the future development that will share in the benefit. A typical way of accomplishing this is for the initial project proponent to complete the required improvements and enter into a reimbursement agreement to be reimbursed for that portion beyond his fair share. Alternatively, a phased Community Facility District (CFD) or similar mechanism which can include all oversized facilities required for the Village can be established to finance these facilities over time.

Continued implementation of City Fire Code provisions and implementation of the General Plan policies would ensure that adequate fire protection and emergency medical services are provided. Policies CI-47 and CI-49 specifically require that public facilities be identified and financed and that public services and facilities be available on time to maintain desired service levels. Policy HS-33 requires that adequate first response capabilities be maintained as the city develops. The environmental effects of the development of additional fire protection facilities in the Planning Area have been programmatically considered in this Draft EIR as part of overall development identified in the General Plan Update Land Use Map (see Sections 4.1 through 4.13). As such, this impact is considered **less than significant**.

Mitigation Measures

None required.

4.12.1.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for fire protection and emergency medical services includes the current service area boundaries of the Madera City Fire Department, as well as the full buildout of the Planning Area, which is expected to occur after 2030. The reader is referred to Section 4.0 regarding the cumulative setting and buildout under the proposed General Plan Update.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Fire Protection and Emergency Medical Services

Impact 4.12.1.2 Implementation of the proposed General Plan Update and associated buildout would contribute to the cumulative demand for fire protection and emergency medical services. This is considered a **less than cumulatively considerable** impact.

Implementation of the proposed City of Madera General Plan would require additional fire-related services and equipment to adequately serve the anticipated population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030).

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals and policies that would assist in addressing fire protection and emergency service impacts. Those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact are listed under Impact 4.12.1.1.

As described under Impact 4.12.1.1, continued implementation of City Fire Code provisions and implementation of General Plan policies would ensure that adequate fire protection and emergency medical services are provided. Policies CI-47 and CI-49 specifically require that public facilities be identified and financed and that public services and facilities be available on time to maintain desired service levels. Policy HS-33 requires that adequate first response capabilities be maintained as the city develops. Policy LU-13 requires that sufficient public services be available, including fire service, in conjunction with new development. Policies LU-14, LU-15, and LU-16 require that financing plans be in place to ensure public services, including fire, will be available in conjunction with new development and annexation. The environmental effects of the development of additional fire protection facilities in the Planning Area have been programmatically considered in this Draft EIR as part of overall development identified in the General Plan Update Land Use Map (see Sections 4.1 through 4.13). Therefore, the proposed General Plan Update would not contribute to cumulative fire protection and emergency service impacts, and this impact is considered **less than cumulatively considerable**.

Mitigation Measures

None required.

4.12.2 LAW ENFORCEMENT

4.12.2.1 EXISTING SETTING

The Madera City Police Department provides law enforcement services to the City of Madera. The department has one police station located at 330 South C Street. As of April 2009, the department had a total of 59 sworn officers, 15 patrol vehicles, and 4 patrol motorcycles.

The average response time for all calls is 15.9 minutes, while the average response time for high priority emergency calls is approximately 4 minutes. These response times can vary based on the time of day.

STAFFING

The police department is divided into two divisions: Administrative Services and Operations. Fifty-eight officers and 21 civilians are employed full time. Civilian volunteers and police reserves supplement the department effort.

Police Administrative Services Division

The Administrative Services Division is responsible for managing the budget, the facilities, license and regulatory compliance, records, communications, property and evidence, investigations, the gang task force, crime prevention, the volunteer program, and personnel and training. The division operates the 24-hour dispatch center where both emergency 911 and nonemergency

4.12 PUBLIC SERVICES AND UTILITIES

calls for service are received. The department historically receives some 40,000 calls for service each year.

Police Operations Division

The Operations Division is responsible for the department's initial response to calls for service. The division has three work units: patrol, traffic, and police reserves. About 33 police officers are assigned to the patrol unit. Included in the patrol unit are three police canine officers, each of whom is assigned a police dog. These officers have take-home vehicles in order to facilitate their response to call-outs.

The Operations Division has four police motorcycle officers who are dedicated to traffic enforcement and collision investigation. The division has two school liaison officers who are assigned to the high school and one at the Thomas Jefferson and Martin Luther King middle schools on a full-time basis. They are responsible for law enforcement activities at their respective schools. One officer is assigned to the City of Madera Housing Authority on a full-time basis.

Finally, the division is assisted by a contingent of reserve police officers. These officers volunteer their time to bolster the efforts of the patrol unit. The department provides all uniforms and equipment for the reserve officers.

According to Commander Randy Williams with the Madera City Police Department, the allocated positions within the department provide a staffing ratio of 1.0 officers per 1,000 residents.

4.12.2.2 REGULATORY FRAMEWORK

STATE

Emergency Response/Evacuation Plans

The State of California passed legislation authorizing the Office of Emergency Services to prepare a Standard Emergency Management System program, which sets forth measures by which a jurisdiction should handle emergency disasters. Noncompliance with SEMS could result in the State withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster.

4.12.2.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following standards are based on State CEQA Guidelines Appendix G. A significant impact to police protection would occur if implementation of the proposed project:

- 1) Would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services.

METHODOLOGY

Evaluation of potential law enforcement impacts was based on consultation with staff from the Madera City Police Department, as well as review of the Police Department's website and other relevant literature.

IMPACTS AND MITIGATION MEASURES

Law Enforcement Service and Standards

Impact 4.12.2.1 Implementation of the proposed General Plan Update would increase the demand for law enforcement services. With the implementation of General Plan Update policy provisions, this is considered a **less than significant** impact.

Implementation of the proposed General Plan would include approximately 24,788 residential units and approximately 804 acres being developed for commercial, office, and industrial land uses by the year 2030 in the Planning Area. As population and other development in the Planning Area increases, demands for law enforcement services will also increase.

Based on the current staffing ratio goal of 1.0 officers per every 1,000 persons, development proposed under the General Plan Update would result in the need for approximately 170 total officers in the Planning Area by 2030. It should be noted, however, that the City has not defined a fixed staffing ratio for its Police Department, and service levels may be established based on various performance criteria. In any case, the addition of law enforcement personnel, together with additional facilities and equipment to accommodate the additional staff, will be necessary by 2030.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would address potential impacts associated with public services and law enforcement. The following list contains those policies and action items that include specific, enforceable requirements and corresponding performance standards that address this impact.

Policy CI-44: Public facilities should be phased in a logical manner which avoids "leapfrog" development and encourages the orderly development of roadways, water and sewer, and other public facilities. The City shall not provide public financing or assistance for projects that do not comply with City master plans.

Policy CI-47: All major development projects shall identify the size and cost of all infrastructure and public facilities and identify how the installation and long-term maintenance of infrastructure will be financed consistent with the policies in this General Plan.

Policy CI-49: Except when prohibited by state law, the City shall require that sufficient capacity in all public services and facilities will be available on time to maintain desired service levels and avoid capacity shortages, traffic congestion, or other negative effects on safety and quality of life.

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Policy CI-50: All new residential development shall be required to annex into City of Madera Community Facilities District 2005-01, or any subsequent CFD created in its place. The purpose of the CFD is to collect special assessments from new residential development to offset the cost of providing eligible municipal services to that development.

Policy HS-35: The City shall ensure the safety and protection of Madera and its community members by providing appropriate first response to emergencies and ensure that sufficient resources are available to expand protection as the community grows.

Action Item HS-35.1: Collaborate with existing agencies to review existing interoperable communication and prepare a communications plan as needed.

Policy HS-36: The City will maintain and enhance community safety through coordinated regional emergency, law-enforcement and protective services systems.

Policy HS-39: The City encourages the use of Crime Prevention Through Environmental Design (CPTED) principles in the design of private development projects and public facilities. These basic principles include:

Natural Surveillance

A design concept directed primarily at keeping intruders easily observable. Promoted by features that maximize visibility of people, parking areas and building entrances: doors and windows that look out on to streets and parking areas; pedestrian-friendly sidewalks and streets; front porches; adequate nighttime lighting.

Territorial Reinforcement

Physical design can create or extend a sphere of influence. Users then develop a sense of territorial control while potential offenders, perceiving this control, are discouraged. This experience is promoted by features that define property lines and distinguish private spaces from public spaces by using landscape plantings, pavement designs, gateway treatments, and "CPTED" fences.

Natural Access Control

A design concept directed primarily at decreasing crime opportunity by denying access to crime targets and creating in offenders a perception of risk. This is gained by designing streets, sidewalks, building entrances and neighborhood gateways to clearly indicate public routes and discouraging general access to private areas through structural and design elements.

Target Hardening

Accomplished by features that prohibit entry or access: window locks, dead bolts for doors, interior door hinges

Implementation of Policies CI-47 and CI-49 specifically requires that public facilities be identified and financed and that public services and facilities be available on time to maintain desired service levels. Policy HS-35 requires that adequate first response capabilities be maintained as the city develops. The environmental effects of the development of additional law enforcement facilities in the Planning Area have been programmatically considered in this Draft EIR as part of overall development identified in the General Plan Update Land Use Map (see Sections 4.1 through 4.13). As such, this impact is considered **less than significant**.

Mitigation Measures

None required.

4.12.2.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for law enforcement services includes the full buildout of the Planning Area, which is expected to occur after 2030. The reader is referred to Section 4.0 regarding the cumulative setting and buildout under the proposed General Plan Update.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Law Enforcement Services

Impact 4.12.2.2 Implementation of the proposed General Plan Update and associated buildout would contribute to the cumulative demand for law enforcement services. This is considered a **less than cumulatively considerable** impact.

Implementation of the proposed City of Madera General Plan would require additional law enforcement services and equipment to adequately serve the anticipated population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030).

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals and policies that would assist in addressing law enforcement service impacts. Those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact are listed under Impact 4.12.2.1.

As described under Impact 4.12.2.1, implementation of Policies CI-47 and CI-49 specifically requires that public facilities be identified and financed and that public services and facilities be available on time to maintain desired service levels. Policy HS-35 requires that adequate first response capabilities be maintained as the city develops. The environmental effects of the development of additional law enforcement facilities in the Planning Area have been programmatically considered in this Draft EIR as part of overall development identified in the General Plan Update Land Use Map (see Sections 4.1 through 4.13). Therefore, the proposed

4.12 PUBLIC SERVICES AND UTILITIES

General Plan Update would not contribute to cumulative law enforcement service impacts, and this impact is considered **less than cumulatively considerable**.

Mitigation Measures

None required.

4.12.3 WATER SUPPLY

This section addresses environmental effects of the proposed project on water supply infrastructure and treatment capacity. For discussion of water quality and the adequacy of water supplies available to serve the proposed project, see Section 4.9, Hydrology and Water Quality.

4.12.3.1 EXISTING SETTING

WATER SERVICE PROVIDERS IN THE PLANNING AREA

There are five water purveyors within the Planning Area (see **Figure 4.9-1**):

- City of Madera
- Madera Irrigation District (MID)
- Madera Valley Water Company (MVWC)
- Madera County Maintenance District 19-Parkwood (CMD-19)
- County Service Area 3-Parksdale (CSA-3)

See Section 4.9, Hydrology and Water Quality, of this EIR for a detailed discussion of water supply for these water purveyors. The following descriptions of each water purveyor were obtained from the County's Integrated Regional Water Management Plan (2008).

City of Madera

The City of Madera provides water service to its population of almost 57,000 (as of 2007) and relies solely on groundwater. The City's existing water system facilities include 16 groundwater wells, 150 miles of water distribution system pipelines, and a one million gallon elevated water storage tank. The wells are scattered throughout the city and have depths ranging from approximately 300 to 700 feet. The total pumping capacity of the current water system is about 27,000 gallons per minute (gpm). Specific capacities for the wells range from 17 gpm/ft to about 100 gpm/ft. As discussed in Section 4.9, Hydrology and Water Quality, the City of Madera 2005 Urban Water Management Plan estimated that water use in the City of Madera was 13,350 acre-feet per year (AFY) in 2005, and usage was projected to be 15,935 AFY in 2010 (City of Madera, 2005). According to the City's Water System Master Plan prepared in 1997, the typical per capita water consumption rate in Madera is 280 gallons per capita per day (gpcd). This per capita demand fluctuates depending on climate but is based on multiple-year data (City of Madera, 1997a).

Because the City relies solely on groundwater for its water supply, the planned water supply projects and programs are related to the expansion of its system of wells and distribution system throughout the city to serve continued growth in addition to routine maintenance projects. The City's Water System Master Plan (WSMP) projected the need for four new wells between 2005 and 2010, another four wells between 2010 and 2015, and five new wells between 2015 and 2020. These future wells are expected to be sited in areas of anticipated growth. The Master Plan

also projects the need for new distribution mains to serve these new developments. Outside of these distribution mains, improvements proposed under the WSMP include specific pipeline reinforcements, water distribution connections, and pipeline looping.

Madera Irrigation District

The Madera Irrigation District (MID) is the largest irrigation district in Madera County covering approximately 128,300 acres including the portions of the Planning Area outside of the existing city limits (see **Figure 4.9-1**). MID delivers water to its customers through approximately 115 miles of pipelines, 225 miles of lined canals, 90 miles of unlined canals, and 102 miles of natural streambeds. The pipelines range from 12 inches to 84 inches in diameter with about half of them cast in place. The flows are delivered by gravity in the majority of the water distribution system, with only a few small pump stations (Madera County, 2008).

Madera Valley Water Company

The Madera Valley Water Company (MVWC) is a mutually owned water company providing water to approximately 1,890 residential and 40 commercial customers in the northern portion of the Planning Area.

County Special Districts

Madera County has 34 County Service Areas and Maintenance Districts that together operate 30 small water systems, two of which are located within the Planning Area:

- Madera County Maintenance District 19-Parkwood (CMD-19) which serves about 635 units with a system capacity of 1,840 gallons per minute
- County Service Area 3-Parksdale (CSA-3), which serves about 507 units with a system capacity of 1,900 gpm

4.12.3.2 REGULATORY FRAMEWORK

The reader is referred to the “Regulatory Framework” discussion in Section 4.9, Hydrology and Water Quality, regarding applicable water supply regulations and policies.

4.12.3.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following significance thresholds are based on Appendix G from the State CEQA Guidelines and apply to the proposed project's water supply system. A project is considered to have a significant water supply impact on the environment when it would:

- 1) Result in the need for new water supplies or entitlements, or result in the need for new or expanded local or regional water treatment or distribution facilities that would result in a physical impact to the environment.

See Section 4.9, Hydrology and Water Quality, for a discussion of the proposed project's impacts on water supplies and groundwater levels as well as the environmental effects of obtaining additional water supplies.

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METHODOLOGY

This section is based on review of applicable proposed General Plan Update policies and the review of previously prepared environmental documents for other projects in the area, including, but not limited to, the City of Madera Urban Water Management Plan and the Madera County Integrated Regional Water Management Plan.

IMPACTS AND MITIGATION MEASURES

Water Supply Infrastructure

Impact 4.12.3.1 Implementation of the General Plan would require additional treatment capacity, storage capacity, and other conveyance facilities to meet the projected water supply demands. However, implementation of proposed General Plan Update policies would require that water supply infrastructure be provided at the same time as development. This is considered a **less than significant** impact.

The City's Water System Master Plan projected the need for four new wells between 2005 and 2010, another four wells between 2010 and 2015, and five new wells between 2015 and 2020. These future wells are expected to be sited in areas of anticipated growth. The Master Plan also projects the need for new distribution mains to serve these new developments. Outside of these distribution mains, improvements proposed under the WSMP include specific pipeline reinforcements, water distribution connections, and pipeline looping. The City of Madera's WSMP projects the need for new wells, distribution mains, and various pipeline reinforcements and water distribution connections to meet water service demands for their 2020 growth projections. (2020 is the horizon year for the City's existing WSMP, and the WSMP does not estimate projections for 2030.)

Additional water supply production and distribution infrastructure improvements to serve development in the Planning Area would include similar groundwater facilities, such as raw water pipelines, water storage tanks, pump facilities, and treatment and distribution facilities. In 2006, the City's water demand was 13,165 AFY. The proposed General Plan Update is anticipated to result in a City water demand increase from a projected 15,935 AFY in year 2010 to approximately 47,450 AFY by year 2030.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would address potential impacts associated with public services and water supply. The following list contains those policies and action items that include specific, enforceable requirements and corresponding performance standards that address this impact.

Policy CI-44: Public facilities should be phased in a logical manner which avoids "leapfrog" development and encourages the orderly development of roadways, water and sewer, and other public facilities. The City shall not provide public financing or assistance for projects that do not comply with City master plans.

Policy CI-47: All major development projects shall identify the size and cost of all infrastructure and public facilities and identify how the installation and

long-term maintenance of infrastructure will be financed consistent with the policies in this General Plan.

Policy CI-49: Except when prohibited by state law, the City shall require that sufficient capacity in all public services and facilities will be available on time to maintain desired service levels and avoid capacity shortages, traffic congestion, or other negative effects on safety and quality of life.

Policy CI-51: Water supply and delivery systems shall be available in time to meet the demand created by new development, or shall be assured through the use of bonds or other sureties to the City's satisfaction.

Action Item CI-51.1: The following shall be required for all development projects, excluding subdivisions:

- An assured water supply and delivery system shall be available at the time of project approval. If a choice of alternative methods of supply and/or delivery is selected, each shall be capable individually of providing water to the project.*
- All required water infrastructure for the project shall be in place at the time of project approval, or shall be assured through the use of bonds or other sureties to the City's satisfaction. Water infrastructure may be phased to coincide with the phased development of large-scale projects.*

Action Item CI-51.2: The following shall be required for all subdivisions to the extent permitted by state law:

- Proposed water supply and delivery systems shall be identified at the time of tentative map approval to the satisfaction of the City. Alternative methods of supply and/or delivery may be proposed, provided that each is capable individually of providing water to the project.*
- Prior to the approval of a final map by the City, sufficient capacity shall be available to accommodate the subdivision plus existing development, and other approved projects in the same service area, and other projects which have received commitments for water service.*
- Offsite and onsite water infrastructure sufficient to provide adequate water to the subdivision shall be in place prior to the approval of a final map or their financing shall be assured to the satisfaction of the City, consistent with the requirements of the Subdivision Map Act.*
- Offsite and onsite water distribution systems required to serve the subdivision shall be in place and contain water at sufficient quantity and pressure prior to the issuance of any building permits.*

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Model homes may be exempted from this policy as determined appropriate by the City, and subject to approval by the City.

Policy CI-54: The City shall require that water flow and pressure be provided at sufficient levels to meet domestic, commercial, industrial, and firefighting needs.

Implementation of Policies CI-47 and CI-49 specifically requires that public facilities be identified and financed and that public services and facilities be available on time to maintain desired service levels, while Policy CI-51 and Action Items CI-51.1 and CI-51.2 would require that water supply and infrastructure be available at the same time as development occurs. The environmental effects of the development of new water supply distribution infrastructure in the Planning Area have been programmatically considered in this Draft EIR as part of overall development identified in the General Plan Update Land Use Map (see Sections 4.1 through 4.13). The reader is referred to Section 4.9, Hydrology and Water Quality, regarding the anticipated environmental effects of major supply water and associated infrastructure projects. As such, this impact is considered **less than significant**.

Mitigation Measures

None required.

4.12.3.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for water supply services includes the full buildout of the Planning Area, which is expected to occur after 2030. The reader is referred to Section 4.0 regarding the cumulative setting and buildout under the proposed General Plan Update as well as Section 4.9, Hydrology and Water Quality, regarding cumulative water supply conditions associated with groundwater usage.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Water Supply Infrastructure

Impact 4.12.3.2 Implementation of the proposed General Plan Update and associated buildout would contribute to the cumulative demand for water supply infrastructure. However, implementation of proposed General Plan Update policies would require that water supply infrastructure be provided at the same time as development. This is considered a **less than cumulatively considerable** impact.

As identified under Impact 4.12.3.1, additional water supply production and distribution infrastructure improvements to serve development in the Planning Area would likely involve groundwater facilities, such as raw water pipelines, water storage tanks, pump facilities, and treatment and distribution facilities. Implementation of the proposed City of Madera General Plan would further increase the need for upgraded and expanded water supply infrastructure to adequately serve the anticipated population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030).

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals and policies that would assist in addressing water supply infrastructure needs. Those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact are listed under Impact 4.12.3.1.

As described under Impact 4.12.3.1, implementation of Policies CI-47 and CI-49 specifically requires that public facilities be identified and financed and that public services and facilities be available on time to maintain desired service levels, while Policy CI-51 and Action Items CI-51.1 and CI-51.2 would require that water supply and infrastructure be available at the same time as development occurs. The environmental effects of the development of new water supply distribution infrastructure in the Planning Area have been programmatically considered in this Draft EIR as part of overall development identified in the General Plan Update Land Use Map (see Sections 4.1 through 4.13). The reader is referred to Section 4.9, Hydrology and Water Quality, regarding anticipated environmental effects of major supply water and associated infrastructure projects. Therefore, the proposed General Plan Update would not contribute to cumulative water supply infrastructure impacts, and this impact is considered **less than cumulatively considerable**.

Mitigation Measures

None required.

4.12.4 WASTEWATER SERVICE

4.12.4.1 EXISTING SETTING

CITY OF MADERA WASTEWATER SYSTEM

Wastewater Collection System

Wastewater is collected throughout the City of Madera via a network of sanitary sewer collection pipelines ranging from 8 to 42 inches in diameter. With the aid of five sewer lift stations, the influent is gravity fed to the wastewater treatment plant (WWTP) approximately 7 miles from the western boundary of the city limits. There are approximately 12,000 residential connections, each of which typically has a 4-inch sewer service pipeline connecting to the main pipeline. Commercial and industrial customers number less than 1,000 and are connected with service pipelines appropriate to handle their particular effluent load.

The average daily wastewater volume for 2008 was estimated to be approximately 5.82 million gallons per day (mgd) (City of Madera, 2008). The City of Madera has no facilities for extensive storage of the wastewater before treatment. Because the City of Madera's wastewater treatment plant has been designated as a regional collection point for septic disposal, septic haulers from outside the City service area bring in an additional volume of wastewater. The most recent data show that outside septic waste collection contributes an average of 5,419 gallons (less than 1 percent of total) per day to the treatment totals. The outside septic waste collection volume is assumed to remain constant over time because some of the areas currently served by septic tanks will eventually be served by public sewer systems, offsetting the projected growth in areas served by septic tanks. **Table 4.12.4-1** provides projections for wastewater collected and treated in the service area. The projection in **Table 4.12.4-1** assumes an average annual population growth rate of 3.6 percent.

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TABLE 4.12.4-1
WASTEWATER COLLECTED AND TREATED (AFY) IN THE CITY OF MADERA SERVICE AREA

2005	2010	2015	2020	2025
6,400	7,600	9,100	11,000	13,000

Source: City of Madera, 2008; County of Madera 2008

Wastewater Treatment System

The Madera WWTP, when constructed in 1972, consisted of influent grinding, grit removal, primary clarification, secondary treatment using trickling filters, and secondary clarifiers. The WWTP also provides anaerobic digestion of biosolids generated in the treatment process.

The City recently expanded the capacity of the WWTP from 7 to 10.1 mgd and upgraded the current treatment process to reduce nitrogen levels in the effluent.

The new treatment process replaced the trickling filters with oxidation ditches, a suspended growth process capable of removing nitrogen. After clarification, the anaerobically digested biosolids are dewatered by a sludge centrifuge. The dewatered cake is then hauled offsite for final disposal.

Wastewater Management

The treated wastewater (effluent) from the City of Madera's WWTP is disposed of by land application rather than discharge to a waterway. The facilities consist of fourteen 20-acre percolation/evaporation ponds and a 40-acre irrigated farming area. The farming area currently uses effluent for irrigation purposes whenever it is being actively farmed.

The WWTP Expansion Predesign Report by Boyle (July 2004) proposed a system of recovery wells that will pump groundwater from under the percolation ponds to an MID canal for agricultural irrigation. This pumping of percolated effluent is intended to reduce mounding under the WWTP and to control elevated concentrations of nitrate or other contaminants in the underlying groundwater. Phase 1 of the recovery well system is currently being designed.

COUNTY-OPERATED WASTEWATER SYSTEMS

Madera County Service Areas and Maintenance Districts operate 16 small sewer systems. Seven of these are located in the Valley Floor subarea and the remaining nine are in the Foothills and Mountains subarea. The following descriptions of the wastewater systems are based on information from the County's website and County staff.

The smaller wastewater systems generally have sanitary sewer systems with asbestos cement, clay, or plastic pipe collection systems; one raw sewage pumping station; an extended aeration treatment process; chlorine disinfection; and treated water pumping. Wastewater is handled by percolation ponds and sprayfields. Many of these wastewater systems are in poor condition and need repair.

The larger, County-operated wastewater systems (with more than 500 connections) are located in the communities of Oakhurst, Bass Lake, and Parksdale. Of these, only Parksdale is located in the Planning Area.

Parksdale's wastewater system consists of a plastic pipe collection system, a raw sewage pumping station, and one metering station. After flowing through the metering station, the wastewater becomes the responsibility of the City of Madera. City fees for sewage disposal are passed on to each resident connected to the sewer system.

4.12.4.2 REGULATORY FRAMEWORK

FEDERAL

Clean Water Act

The Clean Water Act (CWA) regulates the water quality of all discharges into waters of the United States including wetlands, perennial and intermittent stream channels. Section 401, Title 33, Section 1341 of the CWA sets forth water quality certification requirements for "any applicant applying for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters." Section 404, Title 33, Section 1344 of the CWA in part authorizes the U.S. Army Corps of Engineers to:

- Set requirements and standards pertaining to such discharges: subparagraph (e);
- Issue permits "for the discharge of dredged or fill material into the navigable waters at specified disposal sites": subparagraph (a);
- Specify the disposal sites for such permits: subparagraph (b);
- Deny or restrict the use of specified disposal sites if "the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies and fishery areas": subparagraph (c);
- Specify type of and conditions for non-prohibited discharges: subparagraph (f);
- Provide for individual state or interstate compact administration of general permit programs: subparagraphs (g), (h), and (j);
- Withdraw approval of such state or interstate permit programs: subparagraph (i);
- Ensure public availability of permits and permit applications: subparagraph (o);
- Exempt certain federal or state projects from regulation under this Section: subparagraph (r); and
- Determine conditions and penalties for violation of permit conditions or limitations: subparagraph (s).
- Section 401 certification is required prior to final issuance of Section 404 permits from the U.S. Army Corps of Engineers.

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LOCAL

City of Madera Sewer System Master Plan

The City of Madera prepared a Sewer System Master Plan (SSMP) in 1997 to guide the development of wastewater facilities in the city as well as in surrounding lands. This document develops unit flow factors, identifies deficiencies in the existing wastewater system, and identifies improvements to correct these deficiencies and expand the system to provide service to new area of development. The proposed sewer system improvement projects define the recommended SSMP capital improvement program (CIP).

4.12.4.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following standards are based on State CEQA Guidelines Appendix G. A significant impact to wastewater service would occur if implementation of the proposed project would result in the following:

- 1) Project exceeds wastewater treatment requirement of the applicable Regional Water Quality Control Board;
- 2) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- 3) A determination by the wastewater treatment provider, which serves or may serve the project, that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

METHODOLOGY

Evaluation of potential impacts on wastewater facilities and services was based on consultation with City of Madera staff and review of the City of Madera Urban Water Management Plan and the Madera County Integrated Regional Water Management Plan. The impact analysis considers 2030 conditions.

IMPACTS AND MITIGATION MEASURES

Wastewater Conveyance and Treatment

Impact 4.12.4.1 Implementation of the City of Madera General Plan Update would substantially increase wastewater flows and require additional infrastructure and may require additional treatment capacity to accommodate anticipated demands. However, implementation of proposed General Plan Update policies would require that wastewater conveyance and treatment capacity be provided at the same time as development. This impact is considered **less than significant**.

Wastewater Conveyance

Implementation of the General Plan would allow for increased development which would require improvements and modifications to existing wastewater facilities and require new wastewater conveyance infrastructure including collectors, trunks, and interceptor sewer lines and appurtenances. Wastewater flow estimates are calculated using recommended unit flow factors for master planning from the 1997 Sewer System Master Plan, presented below in **Table 4.12.4-2**.

TABLE 4.12.4-2
RECOMMENDED UNIT FLOW FACTORS FOR MASTER PLANNING

Land Use Category	Unit Flow Factor (gpd/acre)
Very Low Density Residential	400
Low Density Residential	1,300
Medium Density Residential	2,700
High Density Residential	3,500
Commercial/Office/Industrial/Schools	1,000

Source: City of Madera Sewer System Master Plan, 1997b

Based on the factors in **Table 4.12.4-2** and the acreages given in **Table 3.0-1** of this document, wastewater generation rates by year 2030 are estimated to be 21.21 MGD.¹

The SSMP identifies improvements and modifications needed to ensure sufficient capacity in both conveyance and treatment facilities and includes construction and operation costs associated with the proposed facilities under the existing City of Madera General Plan. The SSMP will need to be updated to address growth under the updated Madera General Plan. The SSMP identifies several future trunk sewer lines proposed in the Planning Area to accommodate the estimated effluent flows including the MSCCC Specific Plan Area, north of Adell Street, and the Avenue 13 interceptor. Recommended capital improvement projects include seven improvements to the existing sewer system to alleviate existing capacity deficiencies and improve system operational reliability and maintenance, and nine expansion projects to supplement the capacity of the existing trunk sewer system and extend the system to areas of future development. The environmental effects of the development of new wastewater conveyance infrastructure in the Planning Area have been programmatically considered in this Draft EIR as part of overall development identified in the General Plan Update Land Use Map (see Sections 4.1 through 4.13).

¹ Year 2030 wastewater generation rates are calculated as follows: total commercial, industrial, office, and schools square footage in acres (7,206 ac) times 1,000 gpd/ac = 7,206,000 gpd plus VLD Residential (3,806 ac) times 400 gpd/ac = 1,522,400 gpd plus LD Residential (6,750 ac) times 1,300 gpd/ac = 8,775,000 gpd plus MD Residential (9,280 ac) times 2,700 gpd/ac = 25,056,000 gpd plus HD Residential (343 ac) times 3,500 gpd/ac = 1,200,500 gpd = 21,209,500 gpd = 21.21 mgd.

Recommended unit flow factors did not include Village Reserve or Village Mixed Use designations, so they were included as Medium Density Residential in this calculation.

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Treatment Capacity

The WWTP recently underwent an expansion and has a permitted capacity of 10.1 mgd. Expansion of the Planning Area is planned to be phased to provide for sufficient long-term capacity. Wastewater generation rates by year 2030 are estimated to be 21.21 mgd under the proposed General Plan Update, which would be within the capacity of proposed expansion improvements under the existing Sewer System Master Plan. The City is currently working on updates to its Sewer System Master Plan and will use updated population numbers to accommodate for growth under the updated General Plan.

The City's wastewater facilities are modular and are made to be expanded rather than abandoned (Randall, 2008). The City has adequate land to expand current facilities and has the potential to build a second WWTP (Randall, 2008). It should be noted, however, that unless alternative treatment processes are implemented which provide an alternative to discharging effluent to ponds, the City will need to acquire additional acreage for the purpose of constructing percolation/evaporation ponds. While environmental review for future expansions of the WWTP has not been completed, the following potential environmental effects from further wastewater treatment could occur:

- Potential groundwater quality impacts from expanded land application of wastewater effluent
- Adverse impacts on biological and cultural resources from construction of new facilities
- Adverse noise and air quality impacts during the construction of new facilities

Subsequent WWTP improvement and expansion projects will be subject to their own environmental review.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would address potential impacts associated with public services and water supply. The following list contains those policies and action items that include specific, enforceable requirements and corresponding performance standards that address this impact.

Policy CI-44: Public facilities should be phased in a logical manner which avoids "leapfrog" development and encourages the orderly development of roadways, water and sewer, and other public facilities. The City shall not provide public financing or assistance for projects that do not comply with City master plans.

Policy CI-47: All major development projects shall identify the size and cost of all infrastructure and public facilities and identify how the installation and long-term maintenance of infrastructure will be financed consistent with the policies in this General Plan.

Policy CI-49: Except when prohibited by state law, the City shall require that sufficient capacity in all public services and facilities will be available on time to maintain desired service levels and avoid capacity shortages, traffic congestion, or other negative effects on safety and quality of life.

Policy CI-55: Sewage conveyance and treatment capacity shall be available in time to meet the demand created by new development, or shall be assured through the use of bonds or other sureties to the City's satisfaction.

Action Item CI-55.1: The following shall be required for all development projects, excluding subdivisions:

- Sewer/wastewater treatment capacity shall be available at the time of project approval.*
- All required sewer/wastewater infrastructure for the project shall be in place at the time of project approval, or shall be assured through the use of bonds or other sureties to the City's satisfaction.*

Action Item CI-55.2: Require the following for all subdivisions to the extent permitted by state law:

- Sewage/wastewater treatment capacity shall be available at the time of tentative map approval.*
- Sewer service to the subdivision shall be demonstrated prior to the approval of the Final Map by the City. Sufficient capacity shall be available to accommodate the subdivision plus existing development, and other approved projects using the same conveyance lines, and projects which have received sewage treatment capacity commitment.*
- Onsite and offsite sewage conveyance systems required to serve the subdivision shall be in place prior to the approval of the Final Map, or their financing shall be assured to the satisfaction of the City, consistent with the requirements of the Subdivision Map Act.*
- Sewage conveyance systems inside the subdivision shall be in place and connected to the sewage disposal system prior to the issuance of any building permits. Model homes may be exempted from this policy as determined appropriate by the City, and subject to approval by the City.*

Policy CI-56: Development along corridors identified as locations of future sewerage conveyance facilities shall incorporate appropriate easements as a condition of approval.

Implementation of Policies CI-47 and CI-49 specifically requires that public facilities be identified and financed and that public services and facilities be available on time to maintain desired service levels, while Policy CI-55 and Action Items CI-55.1 and CI-55.2 would require that wastewater treatment and infrastructure capacity be available at the same time as development occurs. As such, this impact is considered **less than significant**.

Mitigation Measures

None required.

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4.12.4.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for wastewater services includes the full buildout of the Planning Area, which is expected to occur after 2030. The reader is referred to Section 4.0 regarding the cumulative setting and buildout under the proposed General Plan Update.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Wastewater Service

Impact 4.12.4.2 Implementation of the proposed General Plan Update and associated buildout would contribute to the cumulative demand for wastewater service. However, implementation of proposed General Plan Update policies would require that wastewater treatment and infrastructure capacity be provided at the same time as development. This is considered a **less than cumulatively considerable** impact.

As identified under Impact 4.12.4.1, additional wastewater treatment and infrastructure capacity improvements would be needed to serve future development. Buildout of the Planning Area under the proposed General Plan Update would further increase the need for upgraded and expanded wastewater infrastructure to adequately serve the anticipated population of 263,278 residents and associated nonresidential development anticipated beyond 2030.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals and policies that would assist in addressing wastewater service needs. Those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact are listed under Impact 4.12.4.1.

As described under Impact 4.12.4.1, policies CI-47 and CI-49 specifically require that public facilities be identified and financed and that public services and facilities be available on time to maintain desired service levels, while Policy CI-55 and Action Items CI-55.1 and CI-55.2 would require that wastewater treatment and infrastructure capacity be available at the same time as development occurs. Therefore, the proposed General Plan Update would not contribute to cumulative wastewater infrastructure impacts, and this impact is considered **less than cumulatively considerable**.

Mitigation Measures

None required.

4.12.5 SOLID WASTE

4.12.5.1 EXISTING SETTING

The City of Madera Department of Solid Waste and Recycling (SWR) provides solid waste removal services for the City of Madera. SWR operates a curbside solid waste, a green waste collection program, and a mandatory blue-can recycling program for Madera.

In unincorporated Madera County, residential collection services are provided by two exclusive franchise collectors under agreements with the County. Residential pickup in the county is generally voluntary, with individual property owners arranging service with franchise collectors.

Madera Disposal Inc. provides collection services in the valley portions of the county, while EMADCO Disposal serves the Eastern Madera County area.

SOLID WASTE COLLECTION AND DISPOSAL

Solid waste disposal for the city is managed by the City of Madera Solid Waste and Recycling Department. The City provides all waste collection and transport services within the city limits processing approximately 37,012 tons in 2000. The City has no recycling facilities. However, there are several recycling companies in Madera that accept beverage containers and other recyclables.

LANDFILL FACILITIES

There is currently one active, permitted landfill that services the City of Madera. The Fairmead Solid Waste Disposal Site is a Class III landfill located at Avenue 22 and Road 19 in the City of Chowchilla. It is owned by the County of Madera and operated by Madera Disposal Systems, Inc. It is located on 121 acres with a total permitted disposal area of 77 acres surrounded by agricultural, open space, residential, and rural land uses. This landfill accepts agricultural, construction/demolition, green materials, industrial, tires, asbestos, and mixed municipal wastes with a maximum of 1,100 tons accepted per day. The estimated permitted capacity of the landfill is 9.4 million cubic yards of which approximately 5,552,894 cubic yards or 59.1 percent remain. As of 2008, the estimated closure date of the landfill is 2027, which assumes a 2 percent annual growth rate.

WASTE REDUCTION PROGRAMS

The City of Madera last updated their Source Reduction and Recycling Element (SRRE) in 1997. This element describes the City's efforts to reduce the amount of solid waste entering landfills. This is accomplished through source reduction, recycling, composting, and programs to handle special wastes. The implementation of these programs has resulted in a 50 percent diversion rate as of 2007.

4.12.5.2 REGULATORY FRAMEWORK

FEDERAL

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) was enacted in 1976 to address the huge volumes of municipal and industrial solid waste generated nationwide. After several amendments, the act as it stands today governs the management of solid and hazardous waste and underground storage tanks (USTs). RCRA, enacted in 1976, is an amendment to the Solid Waste Disposal Act of 1965. RCRA has been amended several times, with the most substantial changes made by the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA is a combination of the first solid waste statutes and all subsequent amendments. RCRA authorizes EPA to regulate waste management activities. RCRA authorizes states to develop and enforce their own waste management programs, in lieu of the federal program, if a state's waste

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management program is substantially equivalent to, consistent with, and no less stringent than the federal program.

STATE

California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989 (AB 939) requires every city and county in the state to prepare a Source Reduction and Recycling Element to its Solid Waste Management Plan that identifies how each jurisdiction will meet the mandatory state waste diversion goals of 25 percent by 1995 and 50 percent by 2000 and beyond. The purpose of AB 939 is to "reduce, recycle, and re-use solid waste generated in the state to the maximum extent feasible." The term "integrated waste management" refers to the use of a variety of waste management practices to safely and effectively handle the municipal solid waste stream with the least adverse impact on human health and the environment. The act has established a waste management hierarchy, as follows: source reduction; recycling; composting; transformation; and disposal.

California Integrated Waste Management Board Model Ordinance

Subsequent to the Integrated Waste Management Act, additional legislation was passed to assist local jurisdictions in accomplishing the goals of AB 939. The California Solid Waste Re-use and Recycling Access Act of 1991 (Sections 42900–42911 of the Public Resources Code) directs the California Integrated Waste Management Board (CIWMB) to draft a "model ordinance" relating to adequate areas for collecting and loading recyclable materials in development projects. Upon speaking with Annette Kwock, Solid Waste/Recycling Coordinator, the City passed a Construction and Demolition Ordinance which came into effect in December, 2008.

AB 1327 California Solid Waste Reuse and Recycling Access Act

The Solid Waste Reuse and Recycling Access Act of 1991 required each jurisdiction to adopt an ordinance by September 1, 1994, requiring each development project to provide an adequate storage area for collection and removal of recyclable materials.

4.12.5.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following standards are based on State CEQA Guidelines Appendix G. A significant impact to solid waste service would occur if implementation of the proposed project would result in the following:

- 1) Production of quantities of solid waste that would exceed the capacity of the landfill(s) that will serve the project's solid waste disposal needs.
- 2) Non-compliance with federal, state, and local statutes and regulations related to solid waste.

METHODOLOGY

Evaluation of potential impacts on solid waste facilities and services was based on consultation with staff from the City of Madera Public Works and Planning departments and review of pertinent literature.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 4.12.5.1 Implementation of the proposed General Plan Update would increase solid waste generation and the demand for related services. However, this increased generation would not exceed landfill capacity or conflict with solid waste reduction measures. This is considered a **less than significant** impact.

The land uses associated with the proposed City of Madera General Plan Update would include residential, commercial, and industrial designations and would result in increase solid waste generation.

Assuming implementation of mandatory diversion programs, the proposed General Plan Update could generate approximately 239,348 tons of waste annually by year 2030. The Fairmead Landfill is projected to have sufficient disposal capacity to handle the current and estimated waste stream until the year 2027. Upon closure of the Fairmead Landfill, or sooner should the City desire, solid waste would be sent to other available landfills that would be in operation beyond 2027 (e.g., City of Clovis Landfill has permitted capacity through year 2047 and accepts waste from areas outside the City of Clovis). In addition, subsequent development under the proposed General Plan Update would be subject to City source reduction provisions.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains goals, policies, and action items that would address potential impacts associated with public services. The following list contains those policies and action items that include specific, enforceable requirements and corresponding performance standards that would reduce this less than significant impact associated with solid waste service.

Policy CI-49: Except when prohibited by state law, the City shall require that sufficient capacity in all public services and facilities will be available on time to maintain desired service levels and avoid capacity shortages, traffic congestion, or other negative effects on safety and quality of life.

Policy CI-59 The City will promote solid waste source reduction, reuse, recycling, composting and environmentally-safe transformation of waste. The City will seek to comply with the requirements of AB 939 with regard to meeting state-mandated targets for reductions in the amount of solid waste generated in Madera.

Action Item CI-59.1: The City shall provide information to businesses and residents on available options to implement waste reduction targets. Other actions may include:

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- *Actively promoting a comprehensive, consistent, and effective recycled materials procurement effort among other governmental agencies and local businesses.*
- *Encouraging all companies that do business in Madera to recycle and reuse construction scraps, demolition materials, concrete, industrial waste, and green waste.*

As identified above, adequate landfill capacity is available to meet the needs of the City beyond 2030 and subsequent development would be subject to City source reduction programs. Implementation of the above General Plan Update policies and associated action item would further assist in solid waste reduction measures. This impact would be **less than significant**.

Mitigation Measures

None required.

4.12.5.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for solid waste includes Madera County and the surrounding region (see Section 4.0). The development associated with the proposed General Plan Update would result in a population increase and contribute to a cumulative impact on solid waste and related facilities. Potential development in the Planning Area would result in an incremental cumulative demand for solid waste collection and disposal.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Solid Waste Impacts

Impact 4.12.5.2 Implementation of the proposed General Plan, along with potential development of the Planning Area, would result in cumulative increases in solid waste services. This is considered a **less than cumulatively considerable** impact.

As identified under Impact 4.12.5.1, subsequent development under the proposed General Plan Update would increase solid waste service demands. At full buildout of the Planning Area (beyond year 2030), the proposed General Plan Update could generate solid waste of up to 387,019 tons per year associated with the population increase, which would place further demands on disposal needs. While the Fairmead Landfill is anticipated to be closed after the year 2027, other landfills would be available to accept City solid waste, such as the City of Clovis Landfill in Clovis, California (permitted capacity through year 2047). Subsequent development would also be subject to City source reduction programs.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains goals, policies, and action items that would address potential impacts associated with public services. Those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact are listed under Impact 4.12.5.1.

As described under Impact 4.12.5.1, adequate landfill capacity is available to be available under cumulative conditions to meet the needs of the City beyond 2030 and subsequent development would be subject to City source reduction programs. Implementation of the above General Plan Update policies and associated action item would further assist in solid waste reduction measures. Therefore, the proposed General Plan Update would not contribute to cumulative solid waste impacts, and this impact is considered **less than cumulatively considerable**.

Mitigation Measures

None required.

4.12.6 PUBLIC SCHOOLS

4.12.6.1 EXISTING SETTING

Public schools in the Planning Area are administered by the Madera Unified School District (MUSD).

MUSD consists of 17 elementary schools, 3 middle schools, 2 high schools, 1 alternative school, and 2 continuation schools. The district has a total of 25 schools with a combined enrollment of 18,643 students and 881.5 full-time equivalent teachers, resulting in a pupil-to-teacher ratio of 21:1. The district has 2,093 classes with an average class size of 24.0 students. This is slightly less than the county average class size of 24.1 and also less than the state average class size of 25.2.

MUSD contains two charter schools with a total enrollment of 487 students and 23.5 full-time equivalent teachers, resulting in a pupil-to-teacher ratio of 20:7 for the charter schools.

The most current (2008) student generation factors used by MUSD are presented in **Table 4.12.6-1** below.

**TABLE 4.12.6-1
MADERA UNIFIED SCHOOL DISTRICT STUDENT GENERATION FACTORS**

Grade	Single-Family	Multifamily
K-6	0.431	0.325
7-8	0.1012	0.081
9-12	0.198	0.145
Total	0.751	0.551

Source: Madera Unified School District, 2008

In 2008, MUSD collected the following development impact fees:

- \$5.65 per square foot of residential development
- \$0.47 per square foot of commercial/industrial development

There are two-year colleges and four-year universities in the vicinity of the Planning Area. Nearby two-year colleges include Fresno City College, the Madera extension of Kings River College, and the Madera Center of the State Center Community College District. Nearby four-

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year universities include California State University at Fresno, University of California at Merced, and Fresno Pacific University.

4.12.6.2 REGULATORY FRAMEWORK

STATE

Leroy F. Greene School Facilities Act of 1998 (SB 50)

The Leroy F. Greene School Facilities Act of 1998, also known as Senate Bill No. 50 or SB 50 (Stats. 1998, Ch. 407), governs a school district's authority to levy school impact fees. This comprehensive legislation, together with the \$9.2 billion education bond act approved by the voters in November 1998 as Proposition 1A, reforms methods of school construction financing in California. SB 50 instituted a new school facility program by which school districts can apply for state construction and modernization funds. It imposed limitations on the power of cities and counties to require mitigation of school facilities impacts as a condition of approving new development and provided the authority for school districts to levy fees at three different levels.

Level I fees are the current statutory fees allowed under Education Code 17620. This code section provides the basic authority for school districts to levy a fee against residential and commercial construction for the purpose of funding school construction or reconstruction of facilities. These fees vary by district for residential construction and commercial construction and are increased biannually.

Level II developer fees are outlined in Government Code Section 65995.5, allowing school districts to impose a higher fee on residential construction if certain conditions are met. These conditions include having a substantial percentage of students on multi-track year-round scheduling, having an assumed debt equal to 15–30 percent of the district's bonding capacity (percentage is based on revenue sources for repayment), having at least 20 percent of the district's teaching stations housed in relocatable classrooms, and having placed a local bond on the ballot in the past four years which received at least 50 percent plus one of the votes cast. A Facility Needs Assessment must demonstrate the need for new school facilities for unhoused pupils is attributable to projected enrollment growth from the construction of new residential units over the next five years.

Level III developer fees are outlined in Government Code Section 65995.7. If state funding becomes unavailable, this code section authorizes a school district that has been approved to collect Level II fees to collect a higher fee on residential construction. This fee is equal to twice the amount of Level II fees. However, if a district eventually receives state funding, this excess fee may be reimbursed to the developers or subtracted from the amount of state funding.

The Kindergarten-University Public Education Facilities Bond Act of 2002 (Prop. 47)

This act was approved by voters in November 2002 and provides for a bond issue of \$13.05 billion to fund necessary education facilities to relieve overcrowding and to repair older schools. Funds will be targeted at areas of greatest need and must be spent according to strict accountability measures. Funds will also be used to upgrade and build new classrooms in the California Community Colleges, the California State University, and the University of California in order to provide adequate higher education facilities to accommodate growing student enrollment.

California Department of Education

The California Department of Education (CDE) School Facilities Planning Division (SFPD) has prepared a School Site Selection and Approval Guide that provides criteria for locating appropriate school sites in the State of California. School site and size recommendations were changed by CDE in 2000 to reflect various changes in educational conditions, such as decrease in class sizes and use of advanced technology. The expanded use of school buildings and grounds for community and agency joint use and concern for the safety of the students and staff members also influenced the modification of the CDE recommendations.

Specific recommendations for school size are provided in the publication, School Site Analysis and Development. This document suggests a ratio of 1:2 between buildings and land. CDE is aware that in a number of cases, primarily in urban settings, smaller sites cannot accommodate this ratio. In such cases, the SFPD may approve an amount of acreage less than the recommended gross site size and building-to-ground ratio.

Certain health and safety requirements for school site selection are governed by state regulations and the policies of the SFPD relating to:

- Proximity to airports, high-voltage power transmission lines, railroads, and major roadways;
- Presence of toxic and hazardous substances;
- Hazardous facilities and hazardous air emissions within one-quarter mile;
- Proximity to high-pressure natural gas lines, propane storage facilities, gasoline lines, pressurized sewer lines, or high-pressure water pipelines;
- Noise;
- Results of geological studies or soil analyses; and
- Traffic and school bus safety issues.

4.12.6.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following standards are based on State CEQA Guidelines Appendix G. A significant impact to public schools would occur if implementation of the proposed project:

- 1) Would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services.

METHODOLOGY

Evaluation of potential public school impacts associated with the implementation of the proposed Madera County General Plan Update was based on consultation with school district staff and review of appropriate documents.

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IMPACTS AND MITIGATION MEASURES

Public School Facilities

Impact 4.12.6.1 Implementation of the proposed General Plan Update would increase demand for public school facilities and services. However, existing fee programs would mitigate new growth demands for public school services. This is considered a **less than significant** impact.

The MUSD Facilities Planning and Construction Management Department's Ten-Year Facilities Plan Budget and Expenditure Report, completed in May 2007, identified a list of needs to meet the growth within the district through 2017. The amendment indicated that the district would need to add two new elementary schools, one new middle school, and one new high school, and improve, modernize, and renovate some existing schools and support facilities to accommodate the estimated 22,777 students the district projected they would have by 2016. Subsequent development proposed under the General Plan Update would result in a projected population of 170,431 residents and approximately 47,739 dwelling units by the year 2030 in the Planning Area. Using the MUSD student generation rates presented in **Table 4.12.6-1**, the proposed General Plan Update would result in approximately 19,048 elementary students, 4,519 middle school students, and 8,659 high school students, for a total of approximately 32,226 students. Several funding sources will be used by MUSD to facilitate the construction and maintenance of the additional facilities needed to serve the projected growth. Sources include, but are not limited to, increased developer impact fees, Fund 35 Savings, and local general obligation bond funds. In addition, California Government Code Sections 65995(h) and 65996(b) specifically set forth that payment of fees provide full and complete school facilities mitigation.

The environmental effects of the development of new public school facilities in the Planning Area have been programmatically considered in this Draft EIR as part of overall development identified in the General Plan Update Land Use Map (see Sections 4.1 through 4.13).

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains goals, policies, and action items that would address potential impacts associated with public services. The following list contains those policies and action items that include specific, enforceable requirements and corresponding performance standards that would reduce this less than significant impact associated with public schools.

Policy SUS-1: The City shall assist the Madera Unified School District in obtaining mitigation for the impacts of new development on school facilities.

Policy SUS-2: The City shall work with the Madera Unified School District to coordinate the planning of future land use and school facilities and will encourage the District to identify school site locations and routes that are safe for children to walk or bike to school (also known as "Safe Routes to School").

Action Item SUS-2.1: Work with the Madera Unified School District to help the District identify and plan for the construction of all road, sidewalk, and other infrastructure improvements needed for new schools, and that these improvements are in place at the time the school opens.

As identified above, California Government Code Sections 65995(h) and 65996(b) specifically set forth that payment of developer impact fees provide full and complete school facilities mitigation. Implementation of the above General Plan Update policies and associated action item would further assist in the provision of adequate public school facilities. This impact would be **less than significant**.

Mitigation Measures

None required.

4.12.6.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The development associated with the proposed General Plan Update would result in population increases contributing to a cumulative impact on schools and related facilities within MUSD. Buildout of the Planning Area (beyond year 2030) would result in an incremental cumulative demand for schools and result in additional environmental impacts associated with the development of new sites. The construction of new schools and related facilities would provide additional capacity to accommodate current and future enrollment. However, providing new school sites could result in cumulative environmental impacts on traffic congestion, noise, potential loss of habitat, water, solid waste, etc. The environmental impacts associated with the development of future school sites would be evaluated individually by MUSD for immediate and cumulative impacts as required by the State Board of Education and CEQA.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Public School Impacts

Impact 4.12.6.2 Implementation of the proposed General Plan, as well as potential development of the Planning Area, would result in cumulative public school impacts. These cumulative public school impacts are considered **less than cumulatively considerable**.

MUSD would need to add new elementary, middle, high, and alternative schools to provide sufficient capacity to accommodate buildout associated with the proposed General Plan Update beyond the year 2030. Based on current MUSD generation rates, the district is expected to accommodate approximately 49,109 students under the proposed General Plan Update at buildout.

The adoption of all or some combination of Mello-Roos taxes and state funding would mitigate potential cumulative impacts on schools. However, California Government Code Sections 65995(h) and 65996(b) provide that the payment of school impact fees is considered to provide full and complete school facilities mitigation. The environmental effects of the development of new public school facilities in the Planning Area have been programmatically considered in this Draft EIR as part of overall development identified in the General Plan Update Land Use Map (see Sections 4.1 through 4.13).

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains goals, policies, and action items that would address potential impacts associated with public services. Those policies and action items that

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contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact are listed under Impact 4.12.6.1.

As described under Impact 4.12.6.1, California Government Code Sections 65995(h) and 65996(b) specifically set forth that payment of fees provide full and complete school facilities mitigation. Implementation of the above General Plan Update policies and associated action item would further assist in the provision of adequate public school facilities. Therefore, the proposed General Plan Update would not contribute to cumulative public school impacts, and this impact is considered **less than cumulatively considerable**.

Mitigation Measures

None required.

4.12.7 ELECTRICITY, NATURAL GAS, AND OTHER INFRASTRUCTURE

4.12.7.1 EXISTING SETTING

Natural gas and electrical power in the Planning Area are supplied by Pacific Gas and Electric Company (PG&E). As of 2008, PG&E is proposing to construct a new transmission line south of Madera's current city limits to provide additional service capacity. Two alignments are being studied—one parallel to Road 11½ and another parallel to Road 12½. The City has indicated a preference for the Road 11½ alignment, since the other route would take the transmission line through lands planned for urban uses.

PG&E has numerous electric overhead and underground facilities in the Planning Area. In addition, PG&E has three substations and two 230kV and three 70kV transmission lines in the Planning Area. PG&E also has five other substations that serve the Planning Area.

Some homes in the Planning Area rely on propane delivered by truck to individual tanks. Although still a small part of the energy supply, solar power is gaining acceptance as a source of power in the Madera area. One group exploring this alternative energy source is farmers, who use solar electricity for water pumps and other uses.

Natural gas, telephone, cable, and broadband infrastructure is provided in the City's roadway right-of-way (typically collocated with other utilities in trenches) as well as in overhead lines.

4.12.7.2 REGULATORY FRAMEWORK

STATE

California Building Energy Efficiency Standards

Title 24, Part 6 of the California Code of Regulations, known as the Building Energy Efficiency Standards, was established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. After adoption of the California Energy Security and Reliability Act of 2000 (AB 970), the California Energy Commission produced changes to the Building Energy Efficiency Standards. In November 2003 the California Energy Commission adopted these updated standards. The California Building Standards Commission adopted the 2005 changes in July 2003 and the updated standards took effect on October 1, 2005. Included in the update were requirements identified under Senate

Bill 5X, part of which requires the California Energy Commission to adopt energy efficiency standards for outdoor lighting.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned telecommunication, electric, natural gas, water, railroad, rail transit, and passenger transportation companies. It is the responsibility of the CPUC to assure California utility customers receive safe, reliable utility service at reasonable rates; protect utility customers from fraud; and promote a healthy California economy. The Public Utilities Code, adopted by the legislature, defines the jurisdiction of the CPUC.

4.12.7.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following standards are based on State CEQA Guidelines Appendix G. A significant impact to utilities would occur if implementation of the proposed project:

- 1) Would result in substantial adverse physical impacts associated with the provision of new or physically altered facilities, the construction of which could cause significant environmental impacts for any public electrical or natural gas service providers or would result in inefficient, wasteful and unnecessary consumption of energy (based on State CEQA Guidelines Appendix F).

METHODOLOGY

Evaluation of potential impacts on electrical, natural gas, and telephone services resulting from the proposed project is based on consultation with the service providers, review of California Energy Commission policies, and state standards.

IMPACTS AND MITIGATION MEASURES

Electrical, Natural Gas, and Other Infrastructure

Impact 4.12.7.1 Implementation of the General Plan would increase demand for electrical, natural gas, telephone, and related infrastructure. This is considered a **less than significant** impact.

PG&E does not foresee any capacity shortages or problems in meeting the buildout demands associated with the proposed General Plan Update (Smith, 2008).

According to PG&E, as growth occurs in areas that currently have little to no electric facilities, PG&E will either need to upgrade existing lines or build new overhead or underground primary facilities as well as install service transformers and services. Adding capacity to existing substations will also be required in the form of new transformer banks or replacement of the existing banks with larger units. While PG&E does not have plans at the present time to build new transmission lines, it is likely that the increase in load would necessitate upgrading the existing lines in the surrounding vicinity and will not be limited to facilities in the Planning Area. All electrical distribution lines, substations, transmission lines, delivery facilities, and easements required to serve the Planning Area are subject to CEQA review.

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Potential environmental effects of obtaining more power through the development of power plants include, but are not limited to, air quality, biological resources, cultural resources (depending on location), hazardous materials, land use, noise and vibration, traffic, visual resources, waste management, water and soil resources, and health hazards. Potential environmental effects for the construction of transmission lines include, but are not limited to, air quality (during construction), biological resources (depending on location), cultural resources (depending on location), hazardous materials, land use, noise and vibration (during construction), traffic, visual resources, and health hazards. The majority of the infrastructure for these services would be collocated and constructed concurrently with other utilities where feasible and be located within roadway and other public rights-of-way to lessen or eliminate potential environmental impacts.

Development under the proposed General Plan Update would be required to comply with recently adopted changes to Title 24 of the California Code of Regulations regarding energy efficiency that became effective in September 2005. These new energy efficiency standards were developed in response to the state's energy crisis as well as AB 970 and SB 5X in regard to improving residential and nonresidential building energy efficiency, minimizing impacts to peak energy usage periods, and reducing impacts on overall state energy needs.

There are several purveyors providing telephone service as well as cable television and other cable-related services to the Planning Area. Implementation of the General Plan would result in growth in the Planning Area and require the expansion of these services. Most of the underground and aerial telephone transmission lines are generally collocated with other utilities on poles or in underground trenches and are constructed in public and roadway rights-of-way to reduce visual and aesthetic impacts and potential safety hazards. The environmental review of providing telephone and cable services is typically handled on a case-by-case basis in conjunction with individual development projects.

The environmental effects of the development of new utility infrastructure in the Planning Area have been programmatically considered in this Draft EIR as part of overall development identified in the General Plan Update Land Use Map (see Sections 4.1 through 4.13).

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would address potential impacts associated with public services and energy use. The following list contains those policies and action items that include specific, enforceable requirements and corresponding performance standards that address this impact.

Policy CI-49: Except when prohibited by state law, the City shall require that sufficient capacity in all public services and facilities will be available on time to maintain desired service levels and avoid capacity shortages, traffic congestion, or other negative effects on safety and quality of life.

Action Item CON-37.3: City buildings and facilities will be operated in the most energy efficient manner without endangering public health and safety and without reducing public safety or service levels.

Implementation of Policy CI-49 would ensure that adequate public utility services are timed with development, while Action Item CON-37.3 would ensure that City energy use is efficient. The majority of this infrastructure would be collocated and constructed concurrently with other

utilities within roadway rights-of-way to lessen or eliminate potential environmental effects. Coordination between service providers and subsequent developers would preclude conflicts between utility providers. Therefore, this impact is considered **less than significant**.

Mitigation Measures

None required.

4.12.7.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for electrical and natural gas services encompasses the service areas of each particular service provider. This includes full buildout of the Planning Area under the proposed General Plan Update that would occur sometime after 2030 as well as regional development identified in Section 4.0. The reader is referred to Section 4.6, Air Quality, regarding energy use and climate change.

CUMULATIVE IMPACTS

Cumulative Electrical, Natural Gas, and Other Infrastructure

Impact 4.12.7.2 Implementation of the proposed General Plan Update, as well as potential development in the region, would result in cumulative utility service impacts. The project's contribution would be **less than cumulatively considerable**.

As identified under Impact 4.12.7.1, PG&E does not foresee any capacity shortages or problems in meeting the buildout demands associated with the proposed General Plan Update (Smith, 2008). While PG&E does not have plans at the present time to build new transmission lines, it is likely that the increase in load would necessitate upgrading the existing lines in the surrounding vicinity and will not be limited to facilities in the Planning Area. All electrical distribution lines, substations, transmission, delivery facilities, and easements required to serve the Planning Area are subject to CEQA review.

Potential environmental effects of obtaining more power through the development of power plants include, but are not limited to, air quality, biological resources, cultural resources (depending on location), hazardous materials, land use, noise and vibration, traffic, visual resources, waste management, water and soil resources, and health hazards. Potential environmental effects for the construction of transmission lines include, but are not limited to, air quality (during construction), biological resources (depending on location), cultural resources (depending on location), hazardous materials, land use, noise and vibration (during construction), traffic, visual resources, and health hazards. The majority of the infrastructure for these services would be collocated and constructed concurrently with other utilities where feasible and be located within roadway and other public rights-of-way to lessen or eliminate potential environmental impacts.

Development under the proposed General Plan Update would be required to comply with recently adopted changes to Title 24 of the California Code of Regulations regarding energy efficiency. These new energy efficiency standards were developed in response to the state's energy crisis as well as AB 970 and SB 5X in regard to improving residential and nonresidential building energy efficiency, minimizing impacts to peak energy usage periods, and reducing impacts on overall state energy needs.

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While implementation of the proposed General Plan Update would result in growth in the Planning Area and require the expansion of these services, most of the underground and aerial telephone transmission lines are generally collocated with other utilities on poles or in underground trenches and are constructed in public and roadway rights-of-way to reduce visual and aesthetic impacts and potential safety hazards.

The environmental effects of the development of new utility infrastructure in the Planning Area have been programmatically considered in this Draft EIR as part of overall development identified in the General Plan Update Land Use Map (see Sections 4.1 through 4.13).

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would address potential impacts associated with public services and energy use. Impact 4.12.7.1 list contains those policies and action items that include specific, enforceable requirements and corresponding performance standards that address this impact.

Implementation of Policy CI-49 would ensure that adequate public utility services are timed with development, while Action Item CON-37.3 would ensure that City energy use is efficient. The majority of this infrastructure would be collocated and constructed concurrently with other utilities within roadway rights-of-way to lessen or eliminate potential environmental effects. Coordination between service providers and subsequent developers would preclude conflicts between utility providers. Therefore, this impact is considered **less than cumulatively considerable**.

Mitigation Measures

None required.

4.12.8 PARKS AND RECREATION

4.12.8.1 EXISTING SETTING

The City of Madera owns and maintains 14 parkland facilities, totaling 320 acres, not including building grounds, landscape buffer areas, median islands, and park strips. Excluding the municipal golf course, there are 140 acres of City parklands. These 14 city parks include pocket, neighborhood, and community parks, trails, linear parks, and special use facilities. **Table 4.12.8-1** below lists the parks within the city.

**TABLE 4.12.8-1
EXISTING CRPD FACILITIES AND SERVICES**

Facility Name	Location	Type	Acreage	Description of Facilities
Centennial Park	4 th and Flume	Neighborhood Park	3.53	Swimming pool, kids pool, diving board, open turf, benches, parking
Clinton Park	Along Sycamore and Clinton Streets	Linear Park	2.07	Path, benches, waste receptacles, bird and bat houses
Community Garden	Between 4 th and N. Lake Street	Pocket Park	.31	Community garden

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Facility Name	Location	Type	Acreage	Description of Facilities
Knox Park	Knox Street	Neighborhood Park	2	Grassy and shaded areas
Lions Town and Country Park	Howard Road, between Schnoor and Granada	Community Park	50.36	Group and individual picnic sites, outdoor stage, baseball fields, softball fields, volleyball courts, trails, children's play areas, wooded area, restrooms
McNally Park	Corner of Roosevelt and A Street	Neighborhood Park	1.93	Picnic shelter, basketball courts, children's play area, restrooms, open turf area, picnic tables, barbeque pits
Madera Municipal Golf Course	Avenue 17	Special Use Facility	179.95	18-hole golf course, clubhouse, restaurant, pro shop
Madera Sunrise Rotary Sports Complex	Clinton Ave.	Community Park/Sports Complex	48.94	Picnic shelter, youth and adult soccer fields, adult softball fields, play area, grassy areas
Maple Court Park	Maple Street and Maple Court	Pocket Park	.41	Grassy open area
Pan-American Park	Corner of Sherwood Way and N. Lake St	Neighborhood Park	4.66	Children's play area, volleyball court, basketball court, picnic shelter, restrooms
Riverview Park	Along Riverview Drive	Pocket Park	.65	Grassy open area
Riverside Park	Riverside Drive	Linear Park	3.31	Grassy open area
Rotary Park	North Gateway Drive	Neighborhood Park	9.67	Open turf area, skate park, horseshoe tournament arena, children's play area, picnic sites, restrooms, dog park (2009)
Vern McCullough Fresno River Trail	Rotary Park through Riverside Park along Sharon Avenue	Trail	12.45	Trail, picnic tables, waste receptacles

The City also owns and maintains the Frank A. Bergon Senior Center located on D Street, the Pan-American Community Center located on Sherwood Way, the Westside Activity Center located on West Yosemite, and the Rotary Youth Hut located on South Q Street. The City's Youth Center is under construction at Centennial Park. All of these parks and facilities are located within the city and are available for public use. As of 2008, the city's population was approximately 56,710, resulting in a ratio of approximately 5.64 acres of available parkland per 1,000 city residents, including the municipal golf course. Excluding the municipal golf course, the total is 2.5 acres per 1,000 city residents.

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4.12.8.2 REGULATORY FRAMEWORK

STATE

The Quimby Act (California Government Code Section 66477) states that “the legislative body of a city or county may, by ordinance, require the dedication of land or impose a requirement of the payment of fees in lieu thereof, or a combination of both, for park or recreational purposes as a condition to the approval of a tentative or parcel map.” It should be noted that the Quimby Act only applies to the acquisition of new parkland and does not apply to the physical development of new park facilities or associated operations and maintenance costs. The Quimby Act effectively preserves open space needed to develop parkland and recreational facilities; however, the actual development of parks and other recreational facilities is subject to discretionary approval and is evaluated on a case-by-case basis with new residential development.

4.12.8.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following standards are based on State CEQA Guidelines Appendix G. A significant impact to recreational facilities would occur if implementation of the proposed General Plan would result in the following:

- 1) Increase the demand for recreational opportunities and facilities that result in the need to construct or expand recreational facilities, which might have an adverse physical effect on the environment.

DEIR sections 4.1 through 4.13 programmatically evaluate the environmental effects of the proposed General Plan Update Recreation and Open Space Element policy provisions associated with recreation and trail facilities.

METHODOLOGY

This section was prepared and evaluated based on consultation with City of Madera Department of Parks and Community Services staff and review of relevant documents.

IMPACTS AND MITIGATION MEASURES

Increased Demand for Park and Recreational Facilities

Impact 4.12.8.1 Implementation of the proposed General Plan Update would increase the demand for existing facilities and require additional parks and recreational facilities to accommodate the anticipated growth associated with the General Plan Update. This would be a **less than significant** impact given that the proposed General Plan Update and the Parks and Recreation Master Plan would provide improvement of park and recreation opportunities.

Potential development proposed in association with the General Plan Update would require additional parkland, facilities, and personnel to accommodate the demand. The staffing and administrative needs for the City's Parks and Community Services Department will increase as a result of the population and additional park and recreational facilities associated with

implementing the City of Madera General Plan. The estimated population in the Planning Area is anticipated to be 170,431 persons under 2030 conditions. Based on the standard of 3.0 acres of parkland per 1,000 population, the City would need to have approximately 191 acres of parkland to meet the anticipated demand, if the municipal golf course is included. If the municipal golf course is excluded, the City would need to have approximately 511 acres of parkland to meet the anticipated demand. (The City currently has 320 acres of parkland including the municipal golf course and 140 acres excluding the municipal golf course.) New parks and facilities would be developed in response to population growth and as funding allows. Park site and facilities may require land use permits in some cases, depending on the anticipated uses and character of adjacent developments.

Typical environmental effects regarding the construction and operation of parks and recreational facilities may involve issues with noise (during construction and associated with playfields and playgrounds), air quality (during the construction of the facility), biological resources (depending on location), historic/cultural resources (depending on location), public services and utilities (demand for police and fire protection, electric, water, and wastewater service), and traffic on a local neighborhood level. The environmental effects of construction of such facilities in the Planning Area have been considered in the technical analyses of this Draft EIR as part of overall development of the Planning Area.

There are various funding measures currently in place for land dedications and basic park development for parks proposed in the Planning Area, including development impact fees, user fees, registration fees for recreation programs, and other related fees. In order to meet the projected growth within the service boundaries, the City would continue to use other sources of revenue including but not limited to Mello-Roos Community Facilities Districts (CFD), Redevelopment Agency Funding (for eligible projects), grants, and/or the expanded use of the District-wide Landscaping and Lighting District associated with recreation facilities.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would address potential impacts associated with public services and recreation facilities. The following list contains those policies and action items that include specific, enforceable requirements and corresponding performance standards that address this impact.

Policy PR-1: The City shall develop and maintain a complete system of public parks distributed throughout the City that provides opportunities for passive and active recreation at a minimum of 3 (three) acres per 1,000 (one thousand) residents.

Policy PR-4: The City shall acquire, develop, and maintain parks and recreation facilities in accordance with the City's Park and Recreation Master Plan, and with the City's Park Classifications and the Park and Recreation Facility Service Level Standards. All lands offered for dedication must be of size, orientation, location, and suitability to provide park and recreation facilities consistent with this General Plan and the Park and Recreation Master Plan.

Policy PR-5: Parks and other facilities will be accepted into the City's system at the City's sole discretion. Land which is proposed to be dedicated to the City will not be accepted if it does not meet the requirements of this Element and/or the Park and Recreation Master Plan.

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- Policy PR-7:* The development of parks in newly developing areas of the City where development triggers the need for a new park(s) shall be phased and/or timed so that the standards of this Element and the Parks and Recreation Master Plan are met or exceeded at all times. In no case shall parks in a new development be phased or timed in such a way that insufficient park or other facilities are provided either permanently or temporarily. The City recognizes that this may require the development of parks or other facilities larger than will be needed at the time in order to ensure that standards will be maintained as future residential development occurs.
- Policy PR-10:* The City shall require new residential development projects, including mixed-use projects with residential components, to dedicate land and/or pay in-lieu fees to contribute to the acquisition and development of parks or recreation facilities. The determination of which method (land dedication and/or payment of in-lieu fees) is appropriate shall be made at the City's sole discretion.
- Action Item PR-10.1:* Evaluate and implement, if adopted, a Park Impact and Parkland Dedication Ordinance consistent with the Quimby Act.
- Policy PR-14:* The City will collaborate with public and private agencies to jointly plan, develop, and manage a regional park in the Planning Area
- Policy PR-15:* The City shall ensure that the design and location of parks and trails reflect that active living and walkability are important to Madera's quality of life.
- Policy PR-16:* The City shall improve access and connectivity to parks through provision of sidewalks, bike paths, bike lanes, and bridges where appropriate.
- Policy PR-18:* The City shall expand its system of multi-use paths and trails available for transportation and recreation uses to achieve a service level of 0.5 linear miles of trails per 1,000 residents.
- Policy PR-20:* The City shall ensure that new parks provide adequate and secure onsite and offsite parking as identified in the Parks and Recreation Master Plan.

Implementation of the above General Plan Update policies and associated action items, and compliance with City development impact fees would reduce park and recreation impacts to **less than significant**. Specifically, Policy PR-1 sets a parkland provision standard that would improve the existing ratio of parkland to residents (3.0 acres per 1,000 residents), while Policies PR-4 and PR-7 provide standards regarding park and recreation facility types and the timing of park facilities.

Mitigation Measures

None required.

4.12.8.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for parks and recreation consists of the City of Madera Parks and Recreation Department service area boundaries and the Planning Area. Full buildout of the Planning Area (beyond year 2030) would further increase the demand for park and recreation facilities in the Planning Area. Development of approved projects within the Planning Area would impact park and recreation facilities in Madera County's jurisdictional area as well.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Park and Recreation Demands

Impact 4.12.8.2 Implementation of the proposed General Plan Update, along with potential development in the region, would result in cumulative park and recreation impacts. This impact would be **less than cumulatively considerable** given that the proposed General Plan Update and the Parks and Recreation Master Plan would provide improvement of park and recreation opportunities.

Buildout of the Planning Area under the proposed General Plan Update would contribute to the cumulative demand for regional and local recreational facilities and services. The estimated population in the Planning Area at buildout is anticipated to be 263,278 persons. Based on the standard of 3.0 acres of parkland per 1,000 population, the City would need to have approximately 790 acres of parkland to meet the anticipated demand.

Proposed General Plan Policies, Objectives, and Actions that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would address potential impacts associated with parks and recreation facilities. Impact 4.12.8.1 lists those policies and action items that contain specific, enforceable requirements and corresponding performance standards that address this impact.

Implementation of the above General Plan Update policies and associated action items, and compliance with City development impact fees would reduce park and recreation impacts to **less than cumulatively considerable**. Specifically, Policy PR-1 sets a parkland provision standard that would improve the existing ratio of parkland to residents (3.0 acres per 1,000 residents), while Policies PR-4 and PR-7 provide standards regarding park and recreation facility types and the timing of park facilities.

Mitigation Measures

None required.

4.12 PUBLIC SERVICES AND UTILITIES

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4.13 VISUAL RESOURCES/LIGHT AND GLARE

This section of the EIR describes the existing visual resources of the City of Madera Planning Area, summarizes the landscape and visual characteristics of the surrounding area, and discusses the impacts associated with implementation of the General Plan Update. The landscape analysis focuses on the anticipated alteration of landscape characteristics and potential visual resource impacts in the Planning Area. Information for this section comes from field observations and City documents.

4.13.1 EXISTING SETTING

REGIONAL SETTING

The Planning Area is located entirely within Madera County, in the San Joaquin Valley in Central California. Madera County is bounded on the north by Merced and Mariposa counties, on the east by Mono County, and on the south and west by Fresno County (see **Figure 3.0-1**). Madera County covers approximately 2,147 square miles (1,374,080 acres) of land, with elevations ranging from 180 feet to over 13,000 feet above mean sea level. Madera County can be divided generally into three regions – the San Joaquin Valley in the west, the foothills between the Madera Canal and the 3,500-foot elevation contour, and the mountains from the 3,500-foot contour to the crest of the Sierra Nevada. Land uses in the surrounding counties vary, with flat agricultural lands in Merced and Fresno counties, foothills in Mariposa and Fresno counties, and mountains in Mariposa and Mono counties (Madera County Transportation Commission, 2007).

SIGNIFICANT VISUAL RESOURCES

In general, the dominant visual features within the Planning Area are the open sections of the valley floor, urbanized land uses, agricultural land uses, rivers and creeks, and various species of trees. Because the entire Planning Area is relatively flat, views of these resources are available from roadways throughout the Planning Area. Streams and the Fresno River are among the most significant natural visual features in the Planning Area. Distant views of the Sierra Nevada and Coast Ranges are available under clear conditions.

Rivers and Creeks

Some of the most significant natural features are the rivers and creeks located in the Planning Area, primarily the Fresno River, Cottonwood Creek, Schmidt Creek, and Dry Creek.¹ Some portions of these stream and river corridors contain riparian vegetation that provides natural scenic views.

The Fresno River is the predominant natural feature in the Planning Area. The river has riparian habitat that provides textures and colors not commonly found in the urban environment. The river is dry for much of the year.

There are considerable public view points of the Fresno River. Views are primarily confined to those from the seven bridges in Madera that cross the river, including the bridge that carries State Route 99 over the river. Extended views of the river are available from Riverside Drive and Riverview Drive. There also is a trail system along one side or the other along the majority of the river through Madera.

¹ Please see Section 4.8, Hydrology and Water Quality, for a detailed description of the Planning Area's waterways.

4.13 VISUAL RESOURCES/LIGHT AND GLARE

Smaller streams, such as Cottonwood Creek and Dry Creek, have more limited riparian vegetation along their banks.

Agricultural Land

Agricultural lands offer a break from the urban landscape by providing a viewshed of open land with minimal structures or human-made features. Agricultural lands surround the City of Madera. The Planning Area contains a variety of agricultural uses. Currently, agricultural uses in the Planning Area include row crops, field crops, orchards, vineyards, and dairies, as well as grazing land for cattle.

Trees

In much of the Planning Area, natural vegetation has been replaced by agriculture and urban development, including urban landscaping. Small areas of riparian vegetation are found along Cottonwood Creek, located in the southern portion of the Planning Area.

Riparian vegetation within the Planning Area is characterized by patches of willow scrub, riparian forest, and scattered trees and shrubs, present along both banks of Cottonwood Creek. Willows and cottonwoods are the dominant tree species in the riparian community. Otherwise, most of the trees in the Planning Area are found along City of Madera streets and at residences and parks. The reader is referred to Section 4.10, Biological Resources, for a further discussion of natural habitats in the Planning Area.

Scenic Corridors

California's Scenic Highway Program was created by the State Legislature in 1963. Its purpose was to preserve and protect scenic corridors from changes that would diminish the aesthetic value of lands adjacent to highways.

A highway may be designated as "scenic" if certain criteria are met, including how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view.

A **scenic corridor** is the land generally adjacent to and visible from the highway and is identified using a motorist's line of vision. A reasonable boundary is selected when the view extends to the distant horizon.

There are no designated scenic highways in the Planning Area. However, both State Route 99 and State Route 145 pass through agricultural and rural lands. They also provide views of the distant Sierra Nevada to the east and the Coast Ranges to the west, especially on days of good air quality. Many Planning Area roads pass through agricultural areas and provide views of the mountain ranges.

Landscape Corridors

Landscape corridors are linear open space corridors that link natural features with human populations. In addition, landscape corridors provide visual diversity and interest by contrasting urban and natural elements of the visual environment. Examples of landscape corridors include riparian/stream buffers, grassed waterways, field borders, hedgerows and windbreaks. New residential neighborhoods in a city can incorporate landscape corridors directly adjacent to the public right-of-way.

Historic Visual Resources

Historic visual resources are important features of a community's history, providing a link between the visual landscape of the past and the urbanized landscape that characterizes the present. Examples of historic visual resources include buildings, structures, landmarks, monuments, and other visually prominent features. There are three properties listed in the Office of Historic Preservation (OHP) Directory of Properties for Madera. One property, the Madera County Courthouse, is listed on the National Register of Historic Places. Two other properties are in Madera – the Luther Burbank School and the Dixie Motel.

LIGHT AND GLARE

A nighttime sky in which stars are readily visible is often considered a valuable scenic/visual resource. In urban areas, views of the nighttime sky are being diminished by "light pollution." Light pollution, as defined by the International Dark-Sky Association, is any adverse effect of artificial light, including sky glow, glare, light trespass, light clutter, decreased visibility at night, and energy waste. Two elements of light pollution may affect city residents: sky glow and light trespass. Sky glow is a result of light fixtures that emit a portion of their light directly upward into the sky where light scatters, creating an orange-yellow glow above a city or town. This light can interfere with views of the nighttime sky and can diminish the number of stars that are visible. Light trespass occurs when poorly shielded or poorly aimed fixtures cast light into unwanted areas, such as neighboring property and homes.

Light pollution is a problem most typically associated with urban areas. Lighting is necessary for nighttime viewing and for security purposes. However, excessive lighting or inappropriately designed lighting fixtures can disturb nearby sensitive land uses through indirect illumination. Land uses which are considered "sensitive" to this unwanted light include residences, hospitals, and care homes.

Daytime sources of glare include reflections off of light-colored surfaces, windows, and metal details on cars traveling on nearby roadways. The amount of glare depends on the intensity and direction of sunlight, which is more acute at sunrise and sunset because the angle of the sun is lower during these times.

Light sources in residential areas of Madera include exterior residential security lights and streetlights commonly found along most residential streets. Other light sources include commercial centers with security lighting, parking lot lighting, and lighting from inside buildings. Industrial areas also have security lighting and lighting from parking lots. Public buildings, such as schools, have security lighting and lighting for outdoor facilities, such as the football stadium at Madera High School. Some recreational facilities also may have nighttime lighting, such as baseball/softball fields.

4.13.2 REGULATORY FRAMEWORK

STATE

State Scenic Highway Program

In 1963, the California legislature created the Scenic Highway Program to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to state highways. The state regulations and guidance governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. A highway may be

4.13 VISUAL RESOURCES/LIGHT AND GLARE

designated scenic depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. There are no designated state scenic highways or eligible state scenic highways in the vicinity of the Planning Area.

Nighttime Sky – Title 24 Outdoor Lighting Standards

The California Legislature passed a bill in 2001 requiring the California Energy Commission (CEC) to adopt energy efficiency standards for outdoor lighting for both the public and private sector. In November 2003, CEC adopted changes to the Title 24, parts 1 and 6, Building Energy Efficiency Standards. These standards became effective on October 1, 2005, and included changes to the requirements for outdoor lighting for residential and nonresidential development. The new standards will likely improve the quality of outdoor lighting and help to reduce the impacts of light pollution, light trespass, and glare. The standards regulate lighting characteristics such as maximum power and brightness, shielding, and sensor controls to turn lighting on and off. Different lighting standards are set by classifying areas by lighting zone. The classification is based on population figures of the 2000 Census. Areas can be designated as LZ1 (dark), LZ2 (rural), or LZ3 (urban). Lighting requirements for dark and rural areas are stricter in order to protect the areas from new sources of light pollution and light trespass.

4.13.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

An aesthetic or visual resource impact is considered significant if implementation of the project would result in any of the following:

- 1) Have a substantial adverse effect on a scenic vista;
- 2) Substantially affect scenic resources or scenic views, including trees, rock outcroppings, or historic buildings within a state scenic highway, designated scenic roadway, scenic river corridor, roadway eligible for listing as a scenic roadway/highway or other public vantage point or scenic vista locally known for its scenic qualities;
- 3) Substantially degrade the existing visual character or quality of the city and its surroundings; or
- 4) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

METHODOLOGY

The visual resource analysis is based on field review of the Planning Area and review of the proposed General Plan Update. This analysis is based on anticipated changes within the Planning Area from implementation of the proposed General Plan Update.

PROJECT IMPACTS AND MITIGATION MEASURES

Alteration of Scenic Resources

Impact 4.13.1 Implementation of the proposed General Plan would result in the alteration of scenic resources. This is considered a **significant** impact.

Implementation of the proposed City of Madera General Plan would result in alterations to existing landscape characteristics of the city (agricultural land and rural residential areas). The General Plan Land Use Map calls for the conversion of approximately 13,285 acres of farmland in the Planning Area. **Figure 4.2-2** illustrates that there are important farmland areas that are proposed to be converted to urban land uses, including Village Reserve, residential land use designations, and commercial land uses. This conversion would substantially change the visual character of the Planning Area.

There are no designated scenic highways in the Planning Area. However, both State Route 99 and State Route 145 pass through agricultural and rural lands. They also provide views of the distant Sierra Nevada to the east and the Coast Ranges to the west, especially on days of good air quality. Many roads outside the Madera city limits also pass through agricultural areas and provide views of the mountain ranges. Conversion of agricultural land to urban uses would cause a change in these views.

This conversion of agricultural land to urban uses is considered a **significant** impact.

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan Update contains several goals, policies, and action items that would assist in reducing the impact related to the alteration of scenic resources. The following list of policy provisions contains specific, enforceable requirements and/or restrictions and corresponding performance standards that assist in reducing (though not eliminating) this impact:

- Policy CD-1: The City of Madera will require that all new development is well-planned and of the highest possible quality. The City will seek to build an image of Madera as a contemporary small city with vibrant, livable neighborhoods and walkable pedestrian- and bicycle-oriented development.*
- Action CD-2.1: Adopt a set of comprehensive Design Guidelines to establish basic design standards and criteria for public and private development projects.*
- Policy CD-5: New development shall be approved only if it meets the design principles set forth in this Community Character Element and to any local, project-specific, or citywide design guidelines.*
- Policy CD-7: All new development projects requiring site plan approval, shall establish landscape and façade maintenance programs for the first three years, ensuring that streetscapes and landscapes areas are installed and maintained as approved.*
- Policy CD-8: In order to improve and protect the quality of neighborhoods and commercial districts, the City will enforce established building codes and community standards.*
- Policy CD-10: Madera will seek to transition the density and intensity of uses from an urban to rural character while maintaining a clear City edge and establishing a sense of entry and arrival to the City. To implement this policy, the City will:*
- Encourage the County of Madera to preserve undeveloped lands outside of the Sphere of Influence.*

4.13 VISUAL RESOURCES/LIGHT AND GLARE

- Apply and implement land use designations and open space preservation techniques to create a clearly identifiable edge to the city.

Policy CD-45: New development in the Downtown shall be designed to be similar in character to the existing pattern of development, including:

- Placement of buildings adjacent to the sidewalk;
- Building heights (although multi-story mixed use is encouraged);
- Use of storefront display windows; and
- Other features as determined appropriate by the City based on the location of the new building and the desirable features of adjacent and nearby structures.

Policy LU-10: The Growth Boundary is considered by the City to define the physical limits of development in Madera. The City shall direct all future growth in Madera and in the unincorporated area outside the city limits to occur inside the Growth Boundary shown on the Land Use Map in this General Plan. Within the City's Planning Area, the City encourages the County to assist the City in maintaining an agricultural green belt around the Growth Boundary by only allowing agricultural uses where land is designated for such use on the City's General Plan Land Use Map.

The following apply to the Growth Boundary:

- The Growth Boundary may only be revised as part of a comprehensive update of the General Plan involving, at a minimum, the Land Use and Circulation elements.
- Any revision to the Growth Boundary shall be accompanied by a statement of findings which demonstrate the following:
 - 1) That the revision is consistent with the intent of the Growth Boundary and all other applicable policies in this General Plan
 - 2) That the revision is necessary to accommodate planned growth in Madera

Action LU-12.1: Develop and implement programs and strategies that support the Growth Boundary and keep urban growth inside the Growth Boundary.

Mitigation Measures

The proposed General Plan Update policy provisions assist in minimizing visual impacts related to the conversion of agricultural lands to urban uses by adopting and enforcing development design standards, landscape and façade maintenance programs, building codes, and community standards, as well as by implementing open space preservation techniques, building design standards, and growth boundary programs. The General Plan Update would nevertheless result in a substantial change in visual resources in the Planning Area. There are no feasible mitigation measures available to offset this change in visual resources, as the urban uses

proposed under the General Plan are fundamentally different from current farmland uses. Thus, this impact is considered **significant and unavoidable**.

Daytime Glare and Nighttime Lighting

Impact 4.13.2 Implementation of the proposed General Plan could result in the introduction of a substantial amount of daytime glare sources and nighttime lighting in developed portions of the Planning Area and create new sources in undeveloped areas. These increased daytime glare and nighttime lighting levels could have an adverse effect on adjacent areas and land uses. This is considered a **less than significant** impact.

The main sources of daytime glare are generally sunlight reflecting from structures and other reflective surfaces and windows. Implementation of the proposed City of Madera General Plan would introduce new sources of daytime glare into the city and increase the amount of daytime glare in existing developed areas. The proposed land uses consist of various densities of commercial, office, recreation, and other public uses. Building materials (i.e., reflective glass and polished surfaces) are the most substantial sources of glare. Daytime glare impacts would not be substantial in areas of the Planning Area that are already developed, since these areas currently have various sources of daytime glare. Daytime glare would, however, result in greater adverse impacts on any undeveloped portions of the Planning Area.

Planned development and growth proposed in the General Plan would introduce new light sources into undeveloped portions of the Planning Area. Nighttime lighting levels would increase substantially over current levels in undeveloped portions of the Planning Area and incrementally with future projects in developed areas. New light sources would include, but not be limited to, new residential developments, street lighting, parking lot lights, and security related lighting for nonresidential uses. These new light sources could result in adverse effects to adjacent land uses through the "spilling over" of light into these areas and "sky glow" conditions. In addition, implementation of the proposed General Plan would result in intensified nighttime lighting levels associated with increased traffic levels and further residential and commercial development.

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan contains goals, policies, and action items that are intended to prevent light and glare impacts within the Planning Area. The following list contains those policies that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address the impact:

- Action CD-2.1: *Adopt a set of comprehensive Design Guidelines to establish basic design standards and criteria for public and private development projects.*
- Policy CD-5: *New development shall be approved only if it meets the design principles set forth in this Community Character Element and to any local, project-specific, or citywide design guidelines.*
- Policy CD-8: *In order to improve and protect the quality of neighborhoods and commercial districts, the City will enforce established building codes and community standards.*

4.13 VISUAL RESOURCES/LIGHT AND GLARE

Policy CON-38: The City supports the use of green building practices in the planning, design, construction, management, renovation, operations, and demolition of all private buildings and projects, including:

- Land planning and design techniques that preserve the natural environment and minimize disturbance of the land.*
- Site development to reduce erosion, minimize paved surfaces and runoff and protect vegetation, especially trees.*
- Water conservation indoors and outdoors.*
- Energy efficiency in heating/cooling systems, appliances, lighting and the building envelope.*
- Selection of materials based on recyclability, durability and the amount of energy used to create the material.*
- Waste reduction, reuse and recycling during construction and throughout the life of the project.*
- Other new aspects of green design and construction included in LEED or other certification programs.*
- Control nighttime lighting to lower energy use, reduce glare, and prevent illumination of the night sky.*

Implementation of the above policies and action items would minimize impacts associated with light and glare through the adoption and enforcement of development design standards, building codes, and community standards, as well as the control of nighttime lighting. Thus, implementation of these provisions would reduce impacts related to daytime glare and nighttime lighting to **less than significant** levels.

Mitigation Measures

None required.

4.13.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative impact takes into account planned and proposed development anticipated in the Madera Planning Area under buildout conditions (see Section 4.0 for a further description of cumulative growth conditions). Buildout of the proposed General Plan Update is not expected to occur until roughly 2065, based on a projected residential growth rate of around 2.65 percent per year. Currently, there are a number of projects proposed in Madera that would result in increased daytime glare and nighttime lighting over existing levels and that would contribute to cumulative conditions.

As mentioned in Section 4.0, Introduction to the Environmental Analysis and Assumptions Used, potential development of the Planning Area and surrounding region could have an effect on

scenic resources in those areas. This would also contribute to the visual resource impacts of the larger Planning Area as well as of the region.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Impacts to Visual Resources

Impact 4.13.3 Implementation of the proposed General Plan along with potential development of the Planning Area would result in the further conversion of the region's rural landscape to residential, commercial, and other land uses. This would contribute to the alteration of the visual resources in the region. This is considered a **cumulatively considerable** impact.

Implementation of the General Plan Land Use Map would result in the conversion of approximately 13,185 acres of farmland in the Planning Area, which would contribute to the alteration of the visual character of the region anticipated from growth and development in the region (e.g., growth and development in Madera and Fresno counties).

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan contains several goals, policies, and action items that would assist in reducing agricultural land conversion and conflict impacts. The reader is referred to Impacts 4.13.1 and 4.13.2 for those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that assist in reducing (though not fully mitigating) this impact.

Implementation of these policies and action items would reduce the proposed General Plan Update's cumulative impacts on visual resources through the adoption and enforcement of development design standards, landscape and façade maintenance programs, building codes, and community standards, as well as the implementation of open space preservation techniques, building design standards, growth boundary programs, and nighttime lighting controls. However, with implementation of the proposed General Plan, increased development would occur and changes to existing scenic resources would be inevitable. Therefore, this impact is considered **cumulatively considerable** and **significant and unavoidable**.

Mitigation Measures

None available.

4.13 VISUAL RESOURCES/LIGHT AND GLARE

REFERENCES

California Energy Commission. 2005 *Building Energy Efficiency Standards, Nonresidential Compliance Manual*. Prepared by Architectural Energy Consultants. San Francisco, CA.

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Madera County Transportation Commission. 2007. *Madera County 2007 Regional Transportation Plan*.

5.0 CUMULATIVE IMPACTS

This section compiles all of the cumulative impacts associated with the proposed project as identified in each of the environmental issue areas contained in Sections 4.1 through 4.13 of this Draft EIR.

5.1 INTRODUCTION

The California Environmental Quality Act (CEQA) requires that an environmental impact report (EIR) contain an assessment of the cumulative impacts that could be associated with the proposed project. According to State CEQA Guidelines Section 15130(a), "an EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable." "'Cumulatively considerable' means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (CEQA Guidelines Section 15065(a)(3)). As defined by the Guidelines, "cumulative impacts" refers to two or more effects that, when combined, are considerable or which compound or increase other environmental impacts (CEQA Guidelines Section 15355). A cumulative impact occurs from:

...the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.
CEQA Guidelines Section 15355(b)

In addition, Section 15130(b) identifies that the following four elements are necessary for an adequate cumulative analysis:

- 1) *Either:*
 - (A) *A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or,*
 - (B) *A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.*
- 2) *A definition of the geographic scope of the area affected by the cumulative effect and a reasonable explanation for the geographic limitation used;*
- 3) *A summary of the expected environmental effects to be produced by those projects with specific reference to additional information stating where that information is available; and*
- 4) *A reasonable analysis of the cumulative impacts of the relevant projects. An EIR shall examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.*

Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable (CEQA Guidelines Section 15130(a)).

5.0 CUMULATIVE IMPACTS SUMMARY

5.2 CUMULATIVE SETTING

The City of Madera has used both the list and summary of projections approaches ((1)(A) and (1)(B) above) to consider cumulative impacts in this Draft EIR. The general cumulative setting conditions are based on the existing land use plans in the San Joaquin Valley region—specifically, the City of Madera, Madera County, Fresno County, and the cities of Chowchilla, Fresno, Clovis, and Merced—and on consideration of currently known large-scale proposed or approved development projects in the Planning Area and in the nearby region (see **Table 4.0-1** in Section 4.0 of this DEIR). A more detailed description of the general cumulative setting is contained in Section 4.0, Introduction to the Environmental Analysis and Assumptions Used.

Each technical section of the Draft EIR (Sections 4.1 through 4.13) identifies its own pertinent cumulative setting (i.e., in cases where the nature of the impact warrants adjustment of the setting, in which case the reason for any deviation in the cumulative setting is discussed) and includes a description of the geographic extent of the cumulative setting based on the characteristics of the environmental issue under consideration, as set forth in Section 15130(b) of the State CEQA Guidelines.

5.3 CUMULATIVE IMPACTS ANALYSIS

Identified below is a list of the cumulative impacts that could result from the implementation of the proposed General Plan Update and future development within the geographic extent of the cumulative setting for that environmental issue area. As described above, cumulative impacts are two or more effects that, when considered together, are considerable or compound other environmental effects. Each cumulative impact is determined to have one of the following levels of significance: less than significant, significant, or significant and unavoidable. The specific cumulative impacts for each environmental issue area are also identified and analyzed in the corresponding technical sections of the Draft EIR (Sections 4.1 through 4.13).

SECTION 4.1 LAND USE

Cumulative Land Use Impacts

Impact 4.1.3 When considered with existing, proposed, approved, and planned development in the region, implementation of the proposed City of Madera General Plan has the potential to further contribute to cumulative land use changes among local land use plans in the region, resulting in significant impacts to the physical environment. This is considered a **cumulatively considerable** and **significant and unavoidable impact** as a result of the increased environmental effects of growth beyond current adopted land use plans.

SECTION 4.2 AGRICULTURAL RESOURCES

Cumulative Impacts to Agricultural Resources

Impact 4.2.4 Implementation of the proposed General Plan Update along with regional and statewide growth would result in a substantial contribution to the conversion of important farmland and may increase agriculture/urban

interface conflicts. This is a **cumulatively considerable** and **significant and unavoidable** impact.

SECTION 4.3 POPULATION/HOUSING/EMPLOYMENT

Cumulative Population and Housing Increases

Impact 4.3.3 Subsequent land use activities associated with implementation of the proposed General Plan Update, in addition to existing, approved, proposed, and reasonably foreseeable development, could result in a cumulative increase in population and housing growth in the City of Madera as well as in the surrounding cities and counties, along with associated environmental impacts. This is considered a **cumulatively considerable** and a **significant and unavoidable** impact.

SECTION 4.4 HAZARDS AND HUMAN HEALTH

Cumulative Hazards and Health Impacts

Impact 4.4.5 Implementation of the proposed General Plan would not contribute to any regional cumulative hazards. This is considered a **less than cumulatively considerable** impact.

SECTION 4.5 TRANSPORTATION AND CIRCULATION

Cumulative Impacts to Study Roadway Segments and Freeway Segments

Impact 4.5.7 When considered with existing, proposed, approved, and planned development in the region, implementation of the proposed Madera General Plan Update has the potential to contribute to an increase in traffic volumes that would result in deficient level of service conditions under cumulative conditions (including buildout of the Planning Area). This is considered a **cumulatively considerable** and **significant and unavoidable** impact.

SECTION 4.6 AIR QUALITY

Cumulative Air Quality Impacts

Impact 4.6.5 Implementation of the proposed General Plan Update, in combination with cumulative development in the San Joaquin Valley Air Basin, would contribute to cumulative air quality impacts and could conflict with ozone and particulate matter attainment efforts. This is considered a **cumulatively considerable** and **significant and unavoidable** impact.

Substantial Increase in Greenhouse Gas Emissions and Environmental Effects

Impact 4.6.6 Implementation of the proposed General Plan Update could substantially increase emissions of CO₂e in over existing (2008) conditions that could result in environmental effects to the Planning Area. This impact is considered to be **cumulative considerable** and **significant and unavoidable** impact.

5.0 CUMULATIVE IMPACTS SUMMARY

Consistency with Greenhouse Gas Reduction Measures

Impact 4.6.7 Implementation of the proposed General Plan Update would implement a number of policies and action items that would complement and be consistent with the state's best practices measures for reducing GHG emissions. This impact is considered to be **less than cumulatively considerable**.

Expose Future Growth to Significant Effects of Climate Change

Impact 4.6.8 Implementation of the proposed General Plan update could expose planned growth in the City to environmental effects associated with climate change. This is considered to be **cumulatively less than significant** impact.

As identified above under the "Greenhouse and Climate Change Setting", there are potential physical environmental impacts associated with climate change that could impact the Planning Area and surrounding region, including:

- Changes to water supply
- Increased flooding
- Increased electricity generation
- Increased potential for air quality violations
- Impacts on ecosystems (biological resources)
- Changes to agriculture

While future growth may be exposed to adverse effects, the extent of those impacts is speculative in nature at a regional level. Further, there is no technical information on the localized extent of these environmental impacts from climate change. As a result, this issue is considered **less than significant**.

Mitigation Measures

None required.

SECTION 4.7 NOISE

Cumulative Noise

Impact 4.7.7 Implementation of the proposed General Plan Update along with potential development of the Planning Area could result in increased noise conflicts. This is considered a **cumulatively considerable** and a **significant and unavoidable** impact.

SECTION 4.8 GEOLOGY AND SOILS

Cumulative Seismic Hazards, Expansive Soils, and Soil Erosion Impacts

Impact 4.8.5 Implementation of the proposed General Plan Update, in combination with existing, planned, proposed, and reasonably foreseeable development, would not contribute to cumulative seismic hazards, expansive soils, and soil

erosion impacts given the area-specific nature of the impact. This is considered a **less than cumulatively considerable** impact.

SECTION 4.9 HYDROLOGY AND WATER QUALITY

Cumulative Water Quality Impacts

Impact 4.9.7 Implementation of the proposed General Plan, in combination with cumulative development in the watershed, would contribute to a cumulative degradation of water quality from construction activities and increased urban runoff. This is considered a **less than cumulatively considerable** impact.

Cumulative Flood Hazards

Impact 4.9.8 Implementation of the proposed General Plan would increase impervious surfaces and alter drainage conditions and rates in the Planning Area, which could contribute to cumulative flood conditions along the Fresno River and local waterways. This is considered a **less than cumulatively considerable** impact.

Cumulative Water Supply Impacts

Impact 4.9.9 Implementation of the proposed General Plan, in combination with cumulative development in the subbasin, would contribute to an increased demand for water supply, requiring increased groundwater production and potentially worsening the overdraft condition of the basin. This is considered a **cumulatively considerable** impact.

SECTION 4.10 BIOLOGICAL RESOURCES

Cumulative Biological Resource Impacts

Impact 4.10.6 When considered with existing, proposed, approved, and planned development in the region, implementation of the proposed City of Madera General Plan Update has the potential to further contribute to cumulative impacts to special-status species and habitat loss. This is considered a **cumulatively considerable** and **significant and unavoidable** impact.

SECTION 4.11 CULTURAL AND PALEONTOLOGICAL RESOURCES

Prehistoric Resources, Historic Resources, and Human Remains

Impact 4.11.3 Implementation of the proposed General Plan Update along with foreseeable development in the region could contribute to further disturbance of cultural resources (i.e., prehistoric sites, historic sites, and isolated artifacts and features) and human remains. However, policy provisions of the proposed General Plan Update would mitigate its contribution to potential impacts to these resources. This would be a **less than cumulatively considerable** impact.

5.0 CUMULATIVE IMPACTS SUMMARY

Paleontological Resources

- Impact 4.11.4** Implementation of the General Plan Update along with other foreseeable development in the region could result in the disturbance of paleontological resources (i.e., fossils and fossil formations). However, policy provisions of the proposed General Plan Update would mitigate its contribution to potential impacts to these resources. This would be a **less than cumulatively considerable** impact.

SECTION 4.12 PUBLIC SERVICES AND UTILITIES

Cumulative Fire Protection and Emergency Medical Services

- Impact 4.12.1.2** Implementation of the proposed General Plan Update and associated buildout would contribute to the cumulative demand for fire protection and emergency medical services. This is considered a **less than cumulatively considerable** impact.

Cumulative Law Enforcement Services

- Impact 4.12.2.2** Implementation of the proposed General Plan Update and associated buildout would contribute to the cumulative demand for law enforcement services. This is considered a **less than cumulatively considerable** impact.

Cumulative Water Supply Infrastructure

- Impact 4.12.3.2** Implementation of the proposed General Plan Update and associated buildout would contribute to the cumulative demand for water supply infrastructure. However, implementation of proposed General Plan Update policies would require that water supply infrastructure be provided at the same time as development. This is considered a **less than cumulatively considerable** impact.

Cumulative Wastewater Service

- Impact 4.12.4.2** Implementation of the proposed General Plan Update and associated buildout would contribute to the cumulative demand for wastewater service. However, implementation of proposed General Plan Update policies would require that wastewater treatment and infrastructure capacity be provided at the same time as development. This is considered a **less than cumulatively considerable** impact.

Cumulative Solid Waste Impacts

- Impact 4.12.5.2** Implementation of the proposed General Plan, along with potential development of the Planning Area, would result in cumulative increases in solid waste services. This is considered a **less than cumulatively considerable** impact.

Cumulative Public School Impacts

Impact 4.12.6.2 Implementation of the proposed General Plan, as well as potential development of the Planning Area, would result in cumulative public school impacts. These cumulative public school impacts are considered **less than cumulatively considerable**.

Cumulative Electrical, Natural Gas, and Other Infrastructure

Impact 4.12.7.2 Implementation of the proposed General Plan Update, as well as potential development in the region, would result in cumulative utility service impacts. The project's contribution would be **less than cumulatively considerable**.

Cumulative Park and Recreation Demands

Impact 4.12.8.2 Implementation of the proposed General Plan Update, along with potential development in the region, would result in cumulative park and recreation impacts. This impact would be **less than cumulatively considerable** given that the proposed General Plan Update and the Parks and Recreation Master Plan would provide improvement of park and recreation opportunities.

SECTION 4.13 VISUAL RESOURCES/LIGHT AND GLARE

Cumulative Impacts to Visual Resources

Impact 4.13.3 Implementation of the proposed General Plan along with potential development of the Planning Area would result in the further conversion of the region's rural landscape to residential, commercial, and other land uses. This would contribute to the alteration of the visual resources in the region. This is considered a **cumulatively considerable** impact.

6.0 PROJECT ALTERNATIVES

6.1 INTRODUCTION

State California Environmental Quality Act (CEQA) Guidelines Section 15126.6(a) states that an environmental impact report (EIR) shall describe and analyze a range of reasonable alternatives to a project. These alternatives should feasibly attain most of the basic objectives of the project, while avoiding or substantially lessening one or more of the significant environmental impacts of the project. An EIR need not consider every conceivable alternative to a project, nor is it required to consider alternatives that are infeasible. The discussion of alternatives shall focus on those which are capable of avoiding or substantially lessening any significant effects of the project, even if they impede the attainment of the project objectives to some degree or would be more costly (CEQA Guidelines Section 15126.6[b]).

According to the State CEQA Guidelines, an EIR need only examine in detail those alternatives that could feasibly meet most of the basic objectives of the project. When addressing feasibility, State CEQA Guidelines Section 15126.6 states that "among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, jurisdictional boundaries, and whether the applicant can reasonably acquire, control or otherwise have access to alternative sites." The State CEQA Guidelines also specify that the alternatives discussion should not be remote or speculative; however, they need not be presented in the same level of detail as the assessment of the proposed project.

State CEQA Guidelines indicate that several factors need to be considered in determining the range of alternatives to be analyzed in an EIR and the level of analytical detail that should be provided for each alternative. These factors include (1) the nature of the significant impacts of the proposed project; (2) the ability of alternatives to avoid or lessen the significant impacts associated with the project; (3) the ability of the alternatives to meet the objectives of the project; and (4) the feasibility of the alternatives. These factors would be unique for each project.

The significant environmental impacts of the project that the alternatives will seek to eliminate or reduce were determined and based upon the findings contained within each technical section evaluated in Sections 4.1 through 4.13 of this DEIR.

6.2 ALTERNATIVES UNDER CONSIDERATION

Three alternatives were identified for examination and analysis in this DEIR:

- Alternative 1 – Existing General Plan Alternative (No Project Alternative)
- Alternative 2 – Reduced Planning Area Alternative
- Alternative 3 – Natural Resources Conservation Alternative
- Alternative 4 – Land Use Modification Requests Alternative

These alternatives constitute an adequate range of reasonable alternatives as required under State CEQA Guidelines Section 15126.6.

ALTERNATIVES CONSIDERED BUT NOT SELECTED FOR ANALYSIS

A number of alternatives and ideas that could have been considered as components of an alternative were considered during preparation of the Draft EIR but were not selected for in-depth analysis. These alternatives are described below, along with reasons they were

withdrawn from further consideration. It should be noted that no alternatives were suggested during the Notice of Preparation (NOP) comment period for consideration in the Draft EIR.

Off-Site Alternative

Given the nature of the project (adoption of a General Plan Update for the City of Madera), it would not be pertinent to address another area outside of the city boundaries. Further, this alternative would not meet the basic project objectives identified in Section 3.0, Project Description. For these reasons, an off-site alternative is considered infeasible pursuant to State CEQA Guidelines 15126.6(c).

Variations in Density (Increased and Decreased) Alternatives

The overall objective of the proposed General Plan Update is to help implement Vision 2025 by maintaining Madera's character and sense of community while developing a land use concept based on the principles of smart growth, jobs/housing balance, infill development, and agricultural preservation. As part of the process of the development of the proposed General Plan Update, the City identified the following core principles stated in the proposed Land Use Element:

- **Compact and efficient land use patterns** should be established which provide opportunities to accommodate growth at densities which are generally greater than experienced by the city in recent history.
- **Comprehensive planning of new urban areas** should be undertaken at the initial stages of development to ensure individual projects are integrated with existing and future projects and that they consider the form and function of the surrounding area.
- **Residential neighborhoods** should be developed as more than a collection of lots; they should incorporate design features and amenities that create a desirable living environment.
- **Walkability** should be promoted by establishing land use and circulation patterns that provide connectivity between neighborhoods, commercial services, and other public gathering places.
- **The Fresno River** should be utilized as an amenity by incorporating it as a major feature in the development and redevelopment of properties along the river.
- **The mix of land uses** should be balanced to provide appropriate ratios of commercial and industrial opportunities to housing.
- **Agricultural land** outside the area planned for urban development should be protected.

The Land Use Element, Land Use Map, and associated village and district area and policies are based on the "Building Blocks" concept. Building Blocks are based on the design and arrangement of land uses and density that encourage walking, bicycling, and the use of transit as well as improve the sense of community and help the city be more sustainable. The Building Blocks concepts are addressed through policies and action items in the proposed Land Use, Circulation and Infrastructure, and Community Design elements of the proposed General Plan Update.

The consideration of a decreased density alternative would likely involve further land conversion to urban uses that could lead to additional agricultural, biological resource, traffic, and public service and utility impacts, given that such a land use pattern would not utilize land, resources, and infrastructure in an efficient manner as compared to the proposed General Plan Update. An increased density alternative would likely result in an urban form (e.g., denser development and taller buildings) that would be counter to the Building Blocks concept and a land use balance that would conflict with the City's desired vision. This conflict may result in greater visual resource impacts.

Given that neither of these density alternatives would meet the overall objectives of the proposed General Plan Update or provide environmental benefits, they are not further evaluated in this Draft EIR.

6.3 NO PROJECT ALTERNATIVE

DESCRIPTION OF ALTERNATIVE

Under this alternative, the proposed City of Madera General Plan Update would not be adopted and the existing 1992 General Plan policy document and Land Use Map would remain in effect (see **Figure 6.0-1**). Using Table IV-1 from the 1992 General Plan, the city was expected to reach buildout under the current General Plan prior to year 2030 with a maximum of 23,281 dwelling units and a population of 74,500. However, the 1992 General Plan identified that it was more likely that buildout of the city would have a population of 62,500 (approximately 19,375 dwelling units) given infrastructure constraints. For purposes of the impact analysis below, it was assumed that the city will reach a buildout population of 74,500.

ENVIRONMENTAL ANALYSIS

The following analysis is based on the significant environmental impacts identified in Sections 4.1 through 4.13.

Land Use

Land Use Incompatibilities (Impact 4.1.1)

The proposed General Plan Land Use Map was developed with the intent to designate areas for the most appropriate type of land use based on existing land uses, the existing and planned circulation system, and the specific needs of the Madera community, environmental constraints, and other factors. As such, implementation of the proposed Land Use Map would not be expected to result in many significant land use incompatibilities. This impact is identified as **less than significant**.

Alternative 1 would result in a similar less than significant impact, as the 1992 General Plan Community Development Element contains policy provisions regarding land use compatibility.

Project and Cumulative Consistency Impacts with Relevant Land Use Planning Documents (Impacts 4.1.2 and 4.1.3)

The more intensive land use patterns within the Planning Area under the proposed General Plan Update would contribute to the environmental effects of growth anticipated to occur in the region over the next 30 years. The proposed General Plan provides environmental benefits by

accommodating a larger population and employment base within the Planning Area through the intensification of development and provision of transit and opportunities for alternative transportation. The proposed General Plan Update would also designate more land for open space as compared to the existing County General Plan and would establish a permanent agricultural buffer surrounding the city (see **Table 4.1-4**). This would assist in reducing the conversion of additional land area under lower development intensities and preserve natural and agricultural land. However, the proposed General Plan land use pattern and development intensity would still substantially contribute to the conversion of land in the region to more urban uses through the designation of currently vacant lands for residential, mixed-use, commercial, and industrial development. The significant environmental effects of such conversions are discussed and analyzed in greater detail in the various sections of this Draft EIR that relate specifically to those particular issue areas (see Section 4.2 through 4.13). This impact is identified as **significant and unavoidable**.

Alternative 1 would retain the current land use designations and would not include the establishment of the same Planning Area as the proposed General Plan Update. Thus, Alternative 1 would avoid this impact (less than significant).

Agricultural Resources

Project and Cumulative Loss and Conversion of Agricultural Lands (Impacts 4.2.1 and 4.2.4)

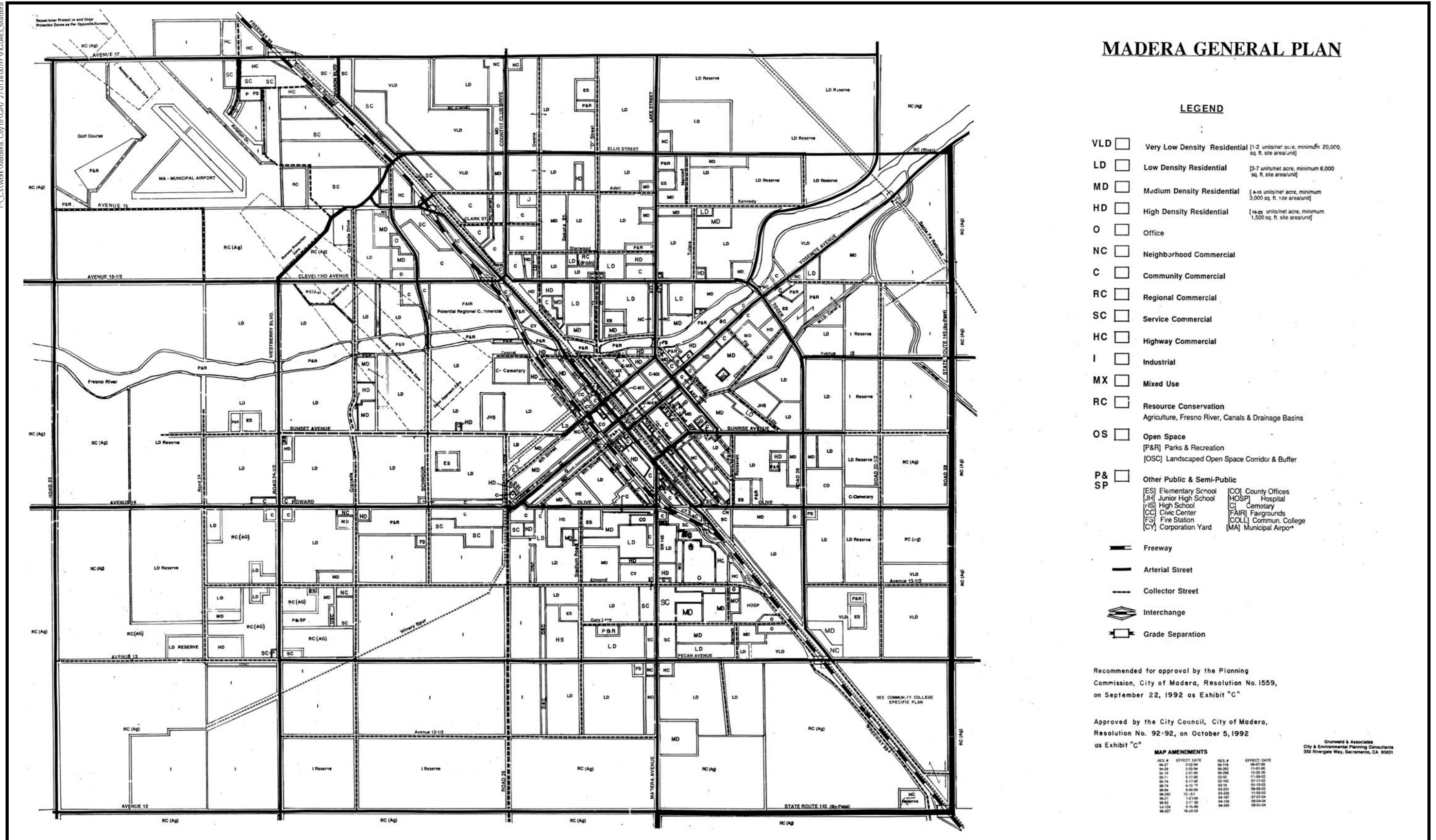
Within the city limits, implementation of the proposed General Plan Update Land Use Map would result in the conversion of approximately 1,682 acres of important farmland, including 878 acres of Prime Farmland, 292 acres of Farmland of Statewide Importance, and 156 acres of Unique Farmland. In addition to this loss, implementation of the proposed General Plan Update Land Use Map would result in the conversion of approximately 11,503 acres falling outside of the city limits, within the Growth Boundary. Of the 11,503 acres, 5,347 acres are Prime Farmland, 1,664 acres are Farmlands of Statewide Importance, and 2,997 acres are Unique Farmlands. This impact is identified as **significant and unavoidable**.

Alternative 1 would also result in the loss of important farmlands and would still be considered significant and unavoidable. However, the extent of this loss would be substantially less than the proposed General Plan Update.

Agricultural/Urban Interface Conflicts (Impact 4.2.2)

Implementation of the proposed City of Madera General Plan Update Land Use Map would place urbanized land uses adjacent to agricultural uses and would replace existing agricultural uses. It is anticipated that as the city builds out, new agriculture/urban interface conflicts may occur, although the establishment of the agricultural buffer associated with the Planning Area would help alleviate some of the agriculture/urban interface conflicts. This impact is identified as **significant and unavoidable**.

Alternative 1 would also result in potential interface conflicts and the associated significant and unavoidable impact. However, the extent of this impact would be reduced as compared to the proposed General Plan Update.



Not to Scale



Figure 6.0-1
Alternative 1 - Existing General Plan Alternative

Agricultural Zoned Lands and Williamson Act Contract Conflicts (Impact 4.2.3)

There are approximately 39 acres within the existing city limits under a Williamson Act contract and in non-renewal status. This area is Prime Farmland and Farmland of Statewide Importance and is designated for industrial development in the proposed General Plan Update. Outside of the city limits and within the Planning Area (within the Growth Boundary), there are approximately 3,908 acres under Williamson Act contracts as well as lands currently designated and zoned for agricultural uses by the County that will be converted to urban uses from implementation of the proposed General Plan Update Land Use Map. This impact is identified as **significant and unavoidable**.

Alternative 1 would also result in the loss of agricultural zoned lands and Williamson Act contract lands and would still be considered significant and unavoidable. However, the extent of this loss would be less than the proposed General Plan Update.

Population/Housing/Employment

Project and Cumulative Population, Housing and Employment Increases (Impacts 4.3.1 and 4.3.3)

Development under the proposed General Plan Update would lead to an increase in population and employment. Development and growth in the city, as a result of the implementation of the proposed General Plan Update, would contribute to cumulative population and housing conditions in the unincorporated areas of Madera County, as well as in surrounding cities and counties. This impact is identified as **significant and unavoidable**.

Alternative 1 would also result in an increase in population and employment that would also result in physical effects to the environment resulting in a significant and unavoidable impact, but would be less than the proposed General Plan Update. However, this alternative would reduce growth potential (approximately 72 percent less than the proposed General Plan Update) that would not accommodate future growth in the region and may result in displacement of this growth into other areas of Madera County and the region.

Displacement of Substantial Persons or Housing (Impact 4.3.2)

Implementation of the proposed General Plan Update would not, in and of itself, displace substantial numbers of housing units or people nor does it propose substantial redesignations of residential areas to land uses that would require relocation of residents. State and federal law requires due compensation for persons required to relocate as a result of redevelopment projects carried out by the City or any projects that use federal or state funding. Any private development that may occur would pay the fair market price for any land/housing acquired as a result of project development. Therefore, although some isolated displacement of persons or housing may result, due compensation offsets any cost-related effects. Therefore, impacts related to a substantial displacement of housing units or people as a result of implementation of the proposed General Plan Update are **less than significant**.

Alternative 1 would also not result in the substantial displacement of persons or housing similar to the proposed General Plan Update.

Hazards and Human Health

Routine Transport of Hazardous Materials (Impact 4.4.1)

The use, storage, and transport of hazardous materials by developers, contractors, business owners, and others are required to be in compliance with local, state, and federal regulations during project construction and operation. Facilities that use hazardous materials are required to obtain permits and comply with appropriate regulatory agency standards and regulations designed to avoid hazardous material releases. All existing and future development in the unincorporated city would be required to comply with federal, state, and local regulations regarding the handling and transportation of hazardous materials. Therefore this impact would be **less than significant** for the proposed General Plan Update.

Alternative 1 would result in a similar less than significant impact as the proposed General Plan Update.

Release and Exposure to Hazardous Materials (Impact 4.4.2)

Implementation of the proposed General Plan policies would require that hazardous materials and wastes are handled consistent with state and federal laws associated with public and worker safety, require that adequate buffers and boundaries are provided to protect the public from industries that utilize hazardous materials, ensure that reasonably foreseeable hazards are adequately addressed, and address and coordinate cleanup efforts of contaminated sites. Thus implementation of these provisions would reduce this impact to **less than significant**.

Alternative 1 would result in a similar less than significant impact as the proposed General Plan Update, though the existing General Plan does not contain any policy provisions regarding addressing hazardous materials.

Airport Operations (Impact 4.4.3)

Adherence to federal regulations and Comprehensive Land Use Plan regulations and implementation of the proposed General Plan policies would ensure that new development is designed to provide for public safety from airport operations. Thus, this impact is **less than significant**.

Alternative 1 would retain land uses and development intensities that are generally consistent with airport operations and would have a similar less than significant impact as the proposed General Plan Update.

Interference with an Adopted Emergency Response or Evacuation Plan (Impact 4.4.4)

Implementation of the General Plan will add additional traffic and residences requiring evacuation in case of an emergency. Implementation of the proposed roadway system under the proposed General Plan Update would provide for a "modified grid" roadway system, particularly for new development, and encourage pedestrian circulation access around the city and at the neighborhood level through the design of roadways and pedestrian facilities. Implementation of the proposed roadway system within the General Plan Update would improve city roadway connectivity, allowing for better emergency vehicle access to residences as well as evacuation routes for area residents (see **Figure 3.0-5**). Thus, this impact is **less than significant**.

Alternative 1 includes existing General Plan policies that call for the maintenance of an adequate street system for fire access as well as the maintenance of emergency service plans (Safety policies 3 and 4). Thus, Alternative 1 would have a similar less than significant impact as the proposed General Plan Update.

Cumulative Hazards and Health Impacts (Impact 4.4.5)

Development associated with the proposed General Plan Update and future development in the proposed annexation areas could result in increased hazard related impacts; however, these impacts would be specific to individual sites in the Planning Area and are not tied to any regional (beyond the Planning Area) hazard or contamination issues (the reader is referred to Section 4.6, Air Quality, regarding regional public health issues associated with air pollutants and toxic air contaminants). Proposed General Plan policy provisions and mitigation measures identified under Impacts 4.4.1 through 4.4.4 would assist in reducing the impacts. Federal, state, and local regulations would determine appropriate land uses within the vicinity of the airport in the Planning Area. Anticipated development projects (e.g., residential, commercial, park, and recreational land uses) that would occur under the proposed General Plan Update would also include, but not be limited to, public and utility extension projects, roadway widenings and extensions, intersection improvements, water system distribution improvements, and trail extensions. These proposed land use activities would not significantly increase human health or safety risks. Thus, this impact is **less than significant**.

Alternative 1 would result in a similar less than significant impact as the proposed General Plan Update regarding cumulative hazard impacts.

Transportation and Circulation

Project and Cumulative Roadway Segment and Freeway Impacts (Impacts 4.5.1, 4.5.2, and 4.5.7)

Implementation of the proposed General Plan Update would provide service levels consistent with the City's LOS "C" standard with few exceptions. The proposed General Plan would result in LOS F within the General Plan planning horizon of 2030 on Madera Avenue (SR 145) – Almond Avenue to SR 99, Avenue 17 – Road 23 to SR 99, and all freeway segments in the Planning Area. With full buildout of the Planning Area and regional growth in traffic, these impacts are anticipated to worsen. This impact is identified as **significant and unavoidable**.

Alternative 1 would result in less development potential than the proposed General Plan Update and would result in a reduced traffic impact. However, it should be noted that the proposed General Plan Update transportation improvements include additional roadway improvements to those identified in the current General Plan.

Roadway Safety and Emergency Access (Impact 4.5.3)

As implementation of the proposed roadway system within the General Plan Update would improve city roadway connectivity, allowing for better emergency vehicle access to residences as well as evacuation routes for area residents, this impact is considered **less than significant**. Policies and action items specifically address the prioritization of improvement of roadways with safety issues (Policy CI-8) and driveway and left-turn design provisions (Policy CI-17 and CI-18). In addition, construction of facilities to City design standards would also result in the provision of facilities without unacceptable safety conflicts.

Alternative 1 includes existing General Plan policies that call for the provision of a safe roadway system (e.g., Transportation, Circulation and Traffic policies 2, 3, and 8). Thus, Alternative 1 would have a similar less than significant impact as the proposed General Plan Update.

Transit System (Impact 4.5.4)

As implementation of the General Plan Update would not conflict with transit services and would promote transit use, this impact is considered **less than significant**. Policies and action items specifically address the provision of transit connections with new development areas (Policy CI-29) and street design provisions (policies CI-32 and CI-42).

Alternative 1 would also not conflict with transit services and result in a similar less than significant impact. However, the existing General Plan does not include as extensive policy provisions for the promotion of transit as the proposed General Plan Update.

Bicycle and Pedestrian System (Impact 4.5.5)

As implementation of the General Plan Update would improve bicycle and pedestrian facilities, this impact is considered **less than significant**. Policies and action items specifically address the provision of bicycle and pedestrian connections with new development areas (Policy CI-29) and street design provisions (policies CI-32 and CI-42).

Alternative 1 would also not conflict with bicycle and pedestrian services and result in a similar less than significant impact. However, the existing General Plan does not include as extensive policy provisions for the promotion of bicycle and pedestrian facilities as the proposed General Plan Update.

At-Grade Railway Conflicts (Impact 4.5.6)

The proposed General Plan Update policies HS-29 and HS-30 would require safety improvements at railroad-at-grade crossings and commits the City to ensuring that the crossings are safe. Thus, this impact is **less than significant**.

Alternative 1 does not provide any policy provisions that specifically address potential safety issues with at-grade railroad crossings and could result in significant impacts. Thus, Alternative 1 has greater impacts than the proposed General Plan Update and would be considered to have a significant impact.

Air Quality

Construction Emissions (Impact 4.6.1)

Construction emissions of PM₁₀ under the proposed General Plan Update can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. **Table 4.6-5** illustrates a profile of construction-related emissions from a hypothetical one-acre development site with moderate grading and construction activities. The San Joaquin Valley Air Pollution Control District's (SJVAPCD's) approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions. SJVAPCD has identified a set of feasible PM₁₀ control measures for construction activities. Implementation of the control measures required by SJVAPCD under

Regulation VIII constitutes sufficient mitigation to reduce PM₁₀ impacts to a level considered **less than significant**.

Alternative 1 would result in similar less than significant impacts associated with construction emissions as the proposed General Plan Update.

Odor and Toxic Emissions (Impact 4.6.2)

SJVAPCD requirements (e.g., Rule 4102), implementation of Assembly Bill (AB) 2588, and proposed General Plan Update policies CON-26 and CON-27 (placement of sensitive receptors in relation to air pollutant sources) would ensure that sensitive receptors are not exposed to inappropriate levels of toxic air contaminants (TACs) or odors. Thus, this impact is **less than significant**.

Alternative 1 would result in similar less than significant impacts associated with odor and toxic emissions with compliance with SJVAPCD requirements and AB 2588. However, this alternative does not include policy provisions that address placement of sensitive receptors as provided in the proposed General Plan Update.

Elevated CO Emissions (Impact 4.6.3)

SJVAPCD has established a preliminary screening protocol that can be used to determine with fair certainty whether the proposed General Plan would potentially cause a future CO exceedance of federal standards. The Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas (April 1996) demonstrated that the San Joaquin Valley Air Basin (SJVAB) was in compliance with the NAAQS for carbon monoxide and requested redesignation to attainment status. This plan was approved by the United States Environmental Protection Agency (EPA) on June 1, 1998. As shown in **Table 4.6-3**, monitoring station data has not identified any exceedance of state or federal CO standards. Thus, this impact is **less than significant**.

Alternative 1 would result in the same less than significant impact.

Project and Cumulative Criteria Pollution Increases and Attainment Conflict (Impacts 4.6.4 and 4.6.5)

Subsequent development under the proposed General Plan Update would exceed growth projections used in regional air quality planning and attainment efforts for particulate matter and ozone under year 2030 conditions (see **Table 4.6-11**). Buildout of the Planning Area would generate additional emissions beyond 2030 and could further conflict with attainment efforts. This impact is identified as **significant and unavoidable**.

Alternative 1 would generate reduced air pollutant emissions (approximately 72 percent reduction in residential emissions as compared to the proposed General Plan Update) than the proposed General Plan Update (given the reduced development potential) and would be within the regional air plan population forecasts (though this impact would still be considered significant and unavoidable). Thus, Alternative 1 would have a reduced air quality impact as compared to the proposed General Plan Update. However, it should be noted that this alternative would not accommodate future growth in the region and may result in displacement of this growth into other areas of Madera County and the region that could contribute air pollutant emissions in the air basin.

Greenhouse Gas Emissions and Climate Change (Impact 4.6.6)

Carbon dioxide equivalent (CO₂e) emissions associated with growth in the Planning Area under the proposed General Plan Update are projected to increase from 2008 to 2030. **Table 4.6-12** illustrates that most of these increases are likely to come from increases in housing associated with the city's population growth. It should be noted that the emission estimates provided in **Table 4.6-12** consist of major emission sources and do not include emission sources in the Planning Area (e.g., agricultural operations, emissions from electrical generation by Pacific Gas & Electric Company, airport operations). These increases would increase the carbon footprint of Madera in 2030. Stationary and mobile source emissions would further increase under buildout conditions (post 2030). In addition, the Planning Area could be impacted by environmental impacts of climate change (water supply shortages, increased flooding, impacts to agricultural operations, biological resource impacts, air quality, and electricity generation). This impact is identified as **significant and unavoidable**.

While this impact would still be considered significant and unavoidable, Alternative 1 would generate reduced (approximately 72 percent reduction in residential emissions as compared to the proposed General Plan Update) greenhouse gas emissions than the proposed General Plan Update. Thus, Alternative 1 would have reduced greenhouse gas and climate change impacts as compared to the proposed General Plan Update. However, it should be noted that this alternative would not accommodate future growth in the region and may result in displacement of this growth into other areas of Madera County and the region that would contribute greenhouse gas emissions.

Consistency with Greenhouse Gas Reduction Measures (Impact 4.6.7)

Implementation of the proposed General Plan Update would implement a number of policies that would complement and be consistent with the current implementation and strategies for AB 32 and Executive Order S-3-05 as well as current efforts by SJVAPCD under its Climate Change Action Plan. These policy provisions are provided under the proposed Circulation Element (see Action Item CI-1.2 and policies and action items CI-28 through CI-39) and the proposed Conservation Element (see policies and action items CON-33 through CON-39). In addition, the General Plan Update proposed urban growth boundary, in conjunction with the establishment of an average residential density that is higher for new development than existing residential development, as well as compact development form that will encourage pedestrian, bicycle and transit use, are also features of the proposed General Plan Update that are intended to minimize greenhouse gas emissions. This impact is identified as **less than cumulatively considerable**.

Alternative 1 does not contain any policy provisions that address greenhouse gas emissions or energy reduction measures, would not be consistent with state and local measures to reduce greenhouse gas emissions, and would result in a significant impact. Thus, Alternative 1 would have a greater impact than the proposed General Plan Update.

Noise

Construction Noise Impacts (Impact 4.7.1)

With continued compliance with the City's Municipal Code limiting construction activities to the hours of 6 a.m. to 8 p.m., and with the proposed policies in the Noise Element of the General Plan Update which impose quantitative limits on noise generation and standards for mitigation, this impact would be considered **less than significant**.

Alternative 1 would result in a similar less than significant impact through compliance with the City's Municipal Code as the proposed General Plan Update. The existing General Plan and the proposed General Plan Update contain similar noise standards.

Project and Cumulative Transportation Noise Impacts (Impacts 4.7.2, 4.7.3, and 4.7.7)

Projected future (year 2030) noise contours for major roadways within the city and predicted increases in traffic noise levels associated with future development are summarized in **Table 4.7-7** and **Table 4.7-8**, respectively (refer to Impact 4.7-2). Projected noise contours for major transportation noise sources are depicted in **Figure 4.7-6**. Buildout of the Planning Area as set forth in the proposed General Plan Update would result in additional traffic along these roadways and result in increased noise. This impact would be **significant and unavoidable**.

Alternative 1 would result in reduced noise impacts given the reduced extent of development and associated traffic as compared to the proposed General Plan Update.

Airport Noise Impacts (Impact 4.7.4)

Implementation of the applicable policies and standards contained in the City's proposed General Plan Update would ensure that future development near Madera Municipal Airport would either meet applicable noise criteria for land use compatibility and/or include noise attenuation features to meet applicable noise standards. Accordingly, proposed future development projects located within air traffic patterns, corridors, and airport influence zones would be reviewed to ensure continued consistency with the Madera County Airport Land Use Compatibility Plan. With incorporation of the proposed General Plan policies, this impact would be considered **less than significant**.

Alternative 1 would result in a similar less than significant impact. The existing General Plan and the proposed General Plan Update contain similar noise standards.

Project and Cumulative Stationary Noise Impacts (Impacts 4.7.5 and 4.7.7)

Implementation of the proposed General Plan Update policies and actions would reduce noise associated with new stationary noise sources and the placement of new noise-sensitive land uses over which the City has jurisdiction (e.g., commercial and industrial sites, residential uses). However, some stationary noise impacts cannot be mitigated to a less than significant level due to limitations on the City to control the exact placement of substantial noise-generating uses (e.g., school facilities) in proximity to noise-sensitive land uses (e.g., residential). Accordingly, stationary source noise levels from activities on uses for which the City has limited control could result in noise levels that exceed the City's maximum allowable noise standards. Thus, this impact is considered **significant and unavoidable**.

Alternative 1 would result in a similar significant and unavoidable impact. The existing General Plan and the proposed General Plan Update contain similar noise standards.

Geology and Soils

Seismic Events (Impact 4.8.1)

Adherence to the Uniform Building Code (UBC) and the California Building Code (CBC) would reduce to a minimum the exposure of people and structures to potential substantial adverse

effects. Thus, this impact is considered **less than significant** for the proposed General Plan Update.

Alternative 1 would result in a similar less than significant impact as the proposed General Plan Update through compliance with building code standards.

Soil Erosion (Impact 4.8.2)

The City is subject to the National Pollutant Discharge Elimination System (NPDES) Permit for stormwater quality that involves the implementation of the Stormwater Quality Improvement Plan (SQIP) that calls for the use of best management practices (BMPs) to mitigate potential soil erosion impacts. In addition, development in the city would be subject to the NPDES General Construction Storm Water Permit. Project applicants are required to prepare and comply with a Storm Water Pollution Prevention Plan that specifies best management practices to avoid soil erosion and associated pollution of waterways and are also required to report any water pollution and remediate the pollution occurrence. The proposed General Plan Update policies would involve further implementation of these water quality protection requirements. As result, this impact is **less than significant**.

Alternative 1 would result in a similar less than significant impact as the proposed General Plan Update through compliance with NPDES requirements. However, Alternative 1 would disturb less land area than the proposed General Plan Update.

Expansive and Unstable Soils (Impact 4.8.3)

Compliance with CBC regulations ensures the adequate design and construction of building foundations to resist soil movement associated with subsequent development under the proposed General Plan Update. In addition, the CBC also contains drainage-related requirements in order to control surface drainage and reduce seasonal fluctuations in soil moisture content. In addition, implementation of Policy HS-8, as well as mitigation measure MM 4.8.3, would reduce the impacts of expansive soils to **less than significant**.

Alternative 1 would result in a similar less than significant impact as the proposed General Plan Update through compliance with building code standards.

Septic System Operation (Impact 4.8.4)

The impacts associated with the soil suitability for septic systems can be reduced or avoided through proper site inspection and project monitoring and maintenance on a project-by-project basis as well as through compliance with Madera County septic system design requirements. Site inspection should include percolation testing to determine soil suitability. When soil suitability is identified, septic systems should be designed accordingly. When appropriate field-testing is conducted and current system location and design standards are used combined with post construction monitoring and maintenance, the potential adverse impacts to septic suitability of soils can be reduced to acceptable levels. Urban development associated with the proposed General Plan Update would connect to the City's wastewater system, while rural development may involve the use of a septic system. Thus, this impact would be **less than significant**.

Alternative 1 would result in a similar less than significant impact as the proposed General Plan Update through compliance with Madera County septic system design requirements as well as through connection to the City's wastewater system.

Cumulative Geologic Impacts (Impact 4.8.5)

Implementation of the proposed General Plan Update, along with potential development in the Planning Area as well as continued development within Madera County, would result in cumulative soil erosion and other geologic impacts. Compliance with the City's NPDES permit would reduce the City's contribution to cumulative soil erosion impacts. Development projects are analyzed on an individual basis and must comply with established requirements of the City and the UBC as they pertain to protection against known geologic hazards and potential geologic and expansive soil related impacts. There are no known active faults in the Planning Area, there is a low incidence of historical geologic activity in the vicinity, and there is no contribution with other regional geologic impacts. Therefore, the proposed General Plan Update's contribution to cumulative geology-related impacts is considered **less than cumulatively considerable**.

Alternative 1 would result in a similar less than significant cumulative geologic impact as the proposed General Plan Update through compliance with existing City standards.

Hydrology and Water Quality

Construction, Operation, and Cumulative Water Quality Impacts (Impacts 4.9.1, 4.9.2, 4.9.3, and 4.9.7)

Continued compliance with applicable State Water Resources Control Board (SWRCB) statewide water quality permits and the City's Storm Water Quality Management Program would minimize the pollutant load of storm drainage within the Planning Area from development and buildout. Implementation of General Plan Update policies (see Impacts 4.9.1, 4.9.2, and 4.9.3) would further protect surface and groundwater quality and mitigate the City's contribution to this impact by protecting natural streams and drainages, reducing potential sources of pollutants, and requiring the use of landscaping and other BMPs to prevent pollutants from entering surface and groundwater resources. As such, the City's contribution to cumulative water quality impacts is considered a **less than significant** impact.

Alternative 1 would result in a similar less than significant impact as the proposed General Plan Update through compliance with SWRCB statewide water quality permits and the City's Storm Water Quality Management Programs. However, Alternative 1 would disturb less land area than the proposed General Plan Update.

Project and Cumulative Flooding Hazards (Impacts 4.9.4 and 4.9.8)

As described under Impact 4.9.4, continued maintenance and expansion of the City's municipal storm drain system, review of drainage plans for future development projects, participation in the National Flood Insurance Program (NFIP), and implementation of the additional measures required by the General Plan policies listed under Impact 4.9.4 would reduce the City's contribution to potential flood hazard impacts within the Planning Area to a less than significant level. Therefore, the proposed General Plan would not contribute to regional flood impacts within the larger San Joaquin River watershed, and this impact is considered **less than significant**.

Alternative 1 would result in a similar less than significant impact as the proposed General Plan Update. However, the existing General Plan does not contain as extensive flooding policies (including those addressing recent state flood planning requirements under Senate Bill (SB) 5) as those provided in the proposed General Plan Update.

Dam Failure (Impact 4.9.5)

Failure of the Hidden Dam could potentially result in the inundation of properties within the city and other portions of the Planning Area under the proposed General Plan Update. However, such an event has an extremely low probability of occurring and is not considered to be a reasonably foreseeable event. The dam is regularly inspected and maintained by the U.S. Army Corp of Engineers, and repairs and improvements are completed as necessary. In addition, dams are regulated by the California Department of Water Resources, Division of Safety of Dams and are routinely inspected during their impoundment life, which includes monitoring for compliance with seismic stability standards. As such, this impact is considered to be **less than significant**.

Alternative 1 would result in a similar less than significant impact as the proposed General Plan Update.

Project and Cumulative Groundwater Supply Impacts (Impacts 4.9.6 and 4.9.9)

Buildout of the Planning Area, which would occur sometime after 2030, would result in an ultimate city population of about 263,278 (206,572 new residents). Based on the city's per capita water demand rate of 280 gpcd, at buildout the city would have a total water demand of approximately 82,575 acre-feet per year. Other areas served by groundwater supplies from the Madera Subbasin are also projected to grow, resulting in greater demands for groundwater supplies. Cumulative agricultural and urban growth within the greater San Joaquin Valley Groundwater Basin would result in a cumulatively considerable impact on the Madera Subbasin as the overall demand for water increases. Additionally, the construction and operation of new water supply projects could have significant impacts on the environment related to hydrology, wildlife habitat, soils, air quality, noise, traffic, and other issues. As determined in Impact 4.9.6, implementation of the proposed General Plan Update would significantly contribute to this cumulative impact regardless of the City's current and planned water conservation policies and programs and the proposed General Plan policies listed under Impact 4.9.6. This impact is considered **significant and unavoidable**.

While this impact would still be considered significant and unavoidable, Alternative 1 would result in a reduced water demand (approximately 23,121 acre-feet annually under Alternative 1 as compared to 82,575 acre-feet annually under the proposed General Plan Update). Thus, Alternative 1 would have less impact than the proposed General Plan Update.

Biological Resources

Impacts to Special-Status Species (Impact 4.10.1)

Development under the proposed General Plan Update could potentially cause direct and indirect impacts to approximately 15,628 acres of ruderal habitat (vacant), agricultural land, annual grasslands, wetlands/open waters, and riverine/riparian habitat that may serve as occupied or potential habitat for listed species. As the final design and extent of future development is not currently known, the acreages listed in **Table 4.10-5** represent the maximum area that could be directly affected. Implementation of the policies and action items in the proposed General Plan Update would ensure that impacts to special-status species are identified and mitigated to ensure viability of the species, and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Alternative 1 would have reduced impacts in comparison to the proposed General Plan Update given that it would result in less land disturbance and a less than significant impact. However, it should be noted that the proposed General Plan Update has more effective policy provisions for addressing and mitigating biological resource impacts as compared to the existing General Plan.

Impacts to Species of Concern and Other Non-Listed Special-Status Species (Impact 4.10.2)

Suitable habitat exists in the Planning Area for unlisted but nonetheless special-status species. These species are designated as a species of concern by the United States Fish and Wildlife Service (USFWS) or the California Department of Fish and Game (CDFG), and/or listed in the CNPS's online inventory as List 2. Direct impacts to these species would occur for the same reasons and in the same manner as direct and indirect impacts to listed species as identified and discussed in Impact 4.10.1. See **Table 4.10.4**, as well as **Table 4.10-6**, for information on the acreages of suitable habitat that would be affected by implementation of the proposed General Plan Update. Implementation of the policies and action items in the proposed General Plan Update would ensure that impacts to special-status species are identified and mitigated to ensure viability of the species, and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Alternative 1 would have reduced impacts in comparison to the proposed General Plan Update given that it would result in less land disturbance and a less than significant impact. However, it should be noted that the proposed General Plan Update has more effective policy provisions for addressing and mitigating biological resource impacts as compared to the existing General Plan.

Impacts to Sensitive Habitats (Impact 4.10.3)

Implementation of the proposed General Plan Update could result in disturbance, degradation, and removal of up to 1,850 acres of annual grassland habitat which has a high potential to support vernal pools, a CDFG sensitive habitat. Vernal pools require the surrounding upland habitat to maintain their habitat value and function. Approximately 74 acres of wetland and open water habitat would also be in direct conflict with the proposed land use designation (i.e. industrial, residential and other built environment) (see **Table 4.10-4**). Implementation of the General Plan Update could also result in disturbance, degradation, and removal of riparian habitat (potentially up to 2,740 acres), and would result in the conversion of farmland (approximately 10,825 acres) that provides habitat to listed species such as the Swainson's hawk and San Joaquin kit fox. Implementation of the proposed General Plan Update policies and action items (in addition to those identified for water quality impacts in Section 4.9, Hydrology and Water Quality) would limit sensitive habitat impacts. However, implementation of the proposed General Plan Update could still result in the loss of substantial sensitive habitat areas as well as farmland utilized by state and federally listed species. Given the extent of this potential conversion (approximately 15,415 acres of habitat), this impact is considered **significant and unavoidable**.

Alternative 1 would have reduced impacts in comparison to the proposed General Plan Update given that it would result in less land disturbance, but would still result in a significant impact. However, it should be noted that the proposed General Plan Update has more effective policy provisions for addressing and mitigating biological resource impacts as compared to the existing General Plan.

Impacts to Migratory Corridors (Impact 4.10.4)

Implementation of the proposed General Plan Update policies and action items would ensure that impacts to special-status species are mitigated to ensure viability of the species (which would include consideration of movement needs), and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

The existing General Plan contains no policy provisions that address wildlife movement and thus could result in greater impacts to movement and migratory corridors as compared to the proposed General Plan Update. This impact would be significant for Alternative 1.

Conflicts with Conservation or Recovery Plans (Impact 4.10.5)

The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Although the city is within the boundaries of the Recovery Plan for Upland Species of the San Joaquin Valley, the General Plan Update does not conflict with the Recovery Plan. The reader is referred to Impact 4.10.3 for a discussion of potential impacts to sensitive habitats within the Planning Area that are covered by the Recovery Plan for Upland Species of the San Joaquin Valley, California and the U.S Fish and Wildlife Service Draft Vernal Pool Recovery Plan. Thus, **no impact** would occur.

Alternative 1 would have the same no impact effect as the proposed General Plan Update.

Cumulative Biological Resource Impacts (Impact 4.10.6)

Implementation of the proposed General Plan Update policies and action items would limit sensitive habitat impacts. However, implementation of the proposed General Plan Update could still result in the loss of substantial sensitive habitat areas as well as farmland utilized by state and federally listed species that would add to cumulative loss of such habitat. Given the extent of this potential conversion (approximately 15,415 acres of habitat), this impact is considered **cumulatively considerable and significant and unavoidable**.

Alternative 1 would have reduced impacts in comparison to the proposed General Plan Update given that it would result in less land disturbance, but would still have a significant and unavoidable impact. However, it should be noted that the proposed General Plan Update has more effective policy provisions for addressing and mitigating biological resource impacts as compared to the existing General Plan.

Cultural and Paleontological Resources

Project and Cumulative Prehistoric and Historic Resource Impacts (Impacts 4.11.1 and 4.11.3)

Cumulative development in the region would result in the loss and/or degradation of cultural resources. These cumulative effects of development on cultural resources would be significant. As less than 5 percent of the Planning Area has been surveyed for cultural resources, there is the potential for future development to uncover previously undiscovered cultural resources because of the area's historic occupation by Native Americans, Spanish, and other groups of settlers. Buildout of the Planning Area could contribute to the cumulative loss of cultural resources in the region. The proposed General Plan Update contains several policies and action items that would mitigate its contribution to this impact. Thus, this impact is **less than significant**.

While the existing General Plan includes Open Space for Natural and Human Resources Policy 6 that addresses historic structures, there are no other policy provisions that address prehistoric or historic resources. Thus, Alternative 1 would result in greater impacts than the proposed General Plan Update and a significant impact.

Project and Cumulative Paleontological Resource Impacts (Impacts 4.11.2 and 4.11.4)

A search of the University of California, Berkeley Museum of Paleontology collections database did not identify any paleontological resources within the boundaries of the City of Madera and its Sphere of Influence. The sensitivity of the area for paleontological resources, however, has not been assessed and no formal paleontological investigations were identified for the area. Consequently, implementation of the proposed General Plan Update could impact undiscovered paleontological resources. However, the proposed General Plan Update policies and action items in the Historic and Cultural Resources Element include provisions that would ensure paleontological resources are protected. Thus, this impact is **less than significant**.

The existing General Plan includes no policy provisions that address paleontological resources. Thus, Alternative 1 would result in greater impacts than the proposed General Plan Update and a significant impact.

Public Services and Utilities

Project and Cumulative Fire Protection and Emergency Medical Service Impacts (Impacts 4.12.1.1 and 4.12.1.2)

Implementation of the proposed City of Madera General Plan Update would require additional fire-related services and equipment to adequately serve a potential population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030). Continued implementation with City Fire Code provisions and implementation of the policies would ensure that adequate fire protection and emergency medical services are provided. Policies CI-47 and CI-49 specifically require the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels. Policy HS-33 requires that adequate first response capabilities be maintained as the city develops. Therefore, the proposed General Plan Update would not contribute to cumulative fire protection and emergency service impacts, and this impact is considered **less than significant**.

Alternative 1 would result in reduced service demands for fire protection and emergency services, given reduced development potential as compared to the proposed General Plan Update. The existing General Plan and the proposed General Plan Update contain similar policy provisions regarding fire protection. Alternative 1 would have a less than significant impact.

Project and Cumulative Law Enforcement Impacts (Impacts 4.12.2.1 and 4.12.2.2)

Implementation of the proposed City of Madera General Plan would require additional law enforcement services and equipment to adequately serve a potential population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030). Implementation of policies CI-47 and CI-49 specifically requires the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels. Policy HS-35 requires that adequate first response capabilities be maintained as the city develops. Therefore, the proposed General Plan Update

would not contribute to cumulative law enforcement service impacts and this impact is considered **less than significant**.

Alternative 1 would result in reduced service demands for law enforcement services, given reduced development potential as compared to the proposed General Plan Update. However, it should be noted that the existing General Plan contains no policy provisions for law enforcement facilities while policy provisions for law enforcement are provided in the proposed General Plan Update. Alternative 1 would have a less than significant impact.

Project and Cumulative Water Supply Infrastructure Impacts (Impacts 4.12.3.1 and 4.12.3.2)

Additional water supply production and distribution infrastructure improvements to serve development beyond year 2020 would likely involve groundwater facilities, such as raw water pipelines, water storage tanks, pump facilities, and treatment and distribution facilities. Implementation of the proposed City of Madera General Plan Update would further increase the need for upgraded and expanded water supply infrastructure to adequately serve a potential population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030). Implementation of policies CI-47 and CI-49 specifically requires the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels, while Policy CI-51 and action items CI-51.1 and CI-51.2 would require that water supply and infrastructure be available at the same as development occurs. Therefore, the proposed General Plan Update would not contribute to cumulative water supply infrastructure impacts, and this impact is considered **less than significant**.

Alternative 1 would result in reduced demand for water supply infrastructure given its reduced development potential as compared to the proposed General Plan Update. However, the existing General Plan contains no policy provisions that require water supply and infrastructure to be available at the same as development occurs, as specified in the proposed General Plan Update. Alternative 1 would have a less than significant impact.

Project and Cumulative Wastewater Service (Impacts 4.12.4.1 and 4.12.4.2)

Additional wastewater treatment and infrastructure capacity improvements would be needed to serve future development. Buildout of the Planning Area under the proposed General Plan Update would further increase the need for upgraded and expanded wastewater infrastructure to adequately serve a potential population of 263,278 residents and associated nonresidential development which may occur beyond 2030. Implementation of policies CI-47 and CI-49 specifically requires the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels, while Policy CI-55 and action items CI-55.1 and CI-55.2 would require that wastewater treatment and infrastructure capacity be available at the same time as development occurs. Therefore, the proposed General Plan Update would not contribute to cumulative wastewater infrastructure impacts and this impact is considered **less than significant**.

Alternative 1 would result in reduced demand for wastewater service and infrastructure given its reduced development potential as compared to the proposed General Plan Update. However, the existing General Plan contains no policy provisions that require that wastewater infrastructure be available at the same as development occurs as are provided in the proposed General Plan Update. Alternative 1 would have a less than significant impact.

Project and Cumulative Solid Waste Service (Impacts 4.12.5.1 and 4.12.5.2)

Subsequent development under the proposed General Plan Update would increase solid waste service demands. At full buildout of the Planning Area (beyond year 2030), the proposed General Plan Update could generate solid waste of up to 387,019 tons per year associated with the population increase, which would place further demands on disposal needs. While the Fairmead Landfill is anticipated to be closed after the year 2027, other landfills would be available to accept city solid waste. Subsequent development would also be subject to City source reduction programs. Adequate landfill capacity is available to be available under cumulative conditions to meet the needs of the City beyond 2030. Implementation of General Plan Update policies and the associated action item would further assist in solid waste reduction measures. Therefore, the proposed General Plan Update would not contribute to cumulative solid waste impacts, and this impact is considered **less than significant**.

Alternative 1 would generate less solid waste (approximately 108,365 tons per year under Alternative 1 versus 387,019 tons per year under the proposed General Plan Update) as compared to the proposed General Plan Update. Alternative 1 would have a less than significant impact.

Project and Cumulative Public School Facilities (Impacts 4.12.6.1 and 4.12.6.2)

The Madera Unified School District (MUSD) would need to add new elementary, middle, high, and alternative schools to provide sufficient capacity to accommodate buildout associated with the proposed General Plan Update at and beyond the year 2030. Based on current MUSD generation rates, the district is expected to accommodate approximately 49,109 students under the proposed General Plan Update at buildout. The adoption of all or some combination of Mello-Roos taxes and state funding would mitigate potential cumulative impacts on schools. However, California Government Code Section Sections 65995 (h) and 65996 (b) provide that the payment of school impact fees is considered to provide full and complete school facilities mitigation. The proposed General Plan Update contains goals, policies, and action items that would address potential impacts associated with public services. Those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact are listed under Impact 4.12.6.1. Implementation of General Plan Update policies and the associated action item would further assist in the provision of adequate public school facilities. Therefore, the proposed General Plan Update would not contribute to cumulative public school impacts and this impact is considered **less than significant**.

Alternative 1 would generate less public school service demand (approximately 13,750 students under Alternative 1 versus 49,109 students under the proposed General Plan Update) as compared to the proposed General Plan Update. Alternative 1 would have a less than significant impact.

Project and Cumulative Provision of Electrical, Natural Gas, and Other Infrastructure (Impacts 4.12.7.1 and 4.12.7.2)

The majority of the infrastructure for these services would be collocated and constructed concurrently with other utilities where feasible and be located within roadway and other public rights-of-way to lessen or eliminate potential environmental impacts. PG&E does not currently foresee any issues in servicing growth in the Planning Area. Development under the General Plan Update would be required to comply with recently adopted changes to Title 24 of the California Code of Regulations regarding energy efficiency. These new energy efficiency standards were developed in response to the state's energy crisis as well as AB 970 and SB 5X in regard to

improving residential and nonresidential building energy efficiency, minimizing impacts to peak energy usage periods, and reducing impacts on overall state energy needs. While implementation of the General Plan Update would result in growth in the Planning Area and require the expansion of these services, most of the underground and aerial telephone transmission lines are generally collocated with other utilities on poles or in underground trenches and are constructed in public and roadway rights-of-way to reduce visual and aesthetic impacts and potential safety hazards. Implementation of Policy CI-49 would ensure that adequate public utility services are timed with development, while Action Item CON-37.3 would ensure that City energy use is efficient. Coordination between service providers and subsequent developers would preclude conflicts between utility providers. Therefore, this impact is considered **less than significant**.

Alternative 1 would result in reduced demand for electricity, natural gas, and other infrastructure services given its reduced development potential as compared to the proposed General Plan Update. However, the existing General Plan contains no policy provisions for energy efficiency as are provided in the proposed General Plan Update. Alternative 1 would have a less than significant impact.

Project and Cumulative Park and Recreation Impacts (Impacts 4.12.8.1 and 4.12.8.2)

Buildout of the Planning Area under the proposed General Plan Update would contribute to the cumulative demand for regional and local recreational facilities and services. The estimated population in the Planning Area at buildout is anticipated to be 263,278 persons. Based on the standard of 3.0 acres of parkland per 1,000 population, the City would need to have approximately 790 acres of parkland to meet the anticipated demand. Implementation of the General Plan Update policies and associated action items, and compliance with City development impact fees would reduce park and recreation impacts to **less than significant**. Specifically, Policy PR-1 sets a parkland provision standard that would improve the existing ratio of parkland to residents (3.0 acres per 1,000 residents), while policies PR-4 and PR-7 provide standards regarding park and recreation facility types and the timing of park facilities.

Alternative 1 would result in reduced demand for parks and recreation (approximately 224 acres of parkland demand under Alternative 1 versus 790 acres of parkland under the proposed General Plan Update) given its reduced development potential as compared to the proposed General Plan Update. Alternative 1 would have a less than significant impact.

Visual Resources/Light and Glare

Alteration of Scenic Resources (Impact 4.13.1)

Proposed General Plan Update policy provisions assist in minimizing visual impacts related to the conversion of agricultural lands to urban uses by adopting and enforcing development design standards, landscape and façade maintenance programs, building codes, and community standards, as well as by implementing open space preservation techniques, building design standards, and growth boundary programs. The General Plan Update would nevertheless result in a substantial change in visual resources in the Planning Area. There are no feasible mitigation measures available to offset this change in visual resources, as the urban uses proposed under the General Plan are fundamentally different from current farmland uses. Thus, this impact is considered **significant and unavoidable**.

Alternative 1 would result in reduced visual resources given its reduced development potential and extent of land conversion as compared to the proposed General Plan Update. However, this impact would be considered significant and unavoidable for Alternative 1.

Daytime Glare and Nighttime Lighting (Impact 4.13.2)

Implementation of the proposed General Plan Update policies and action items would minimize impacts associated with light and glare through the adoption and enforcement of development design standards, building codes, and community standards, as well as the control of nighttime lighting. Thus, implementation of these provisions would reduce impacts related to daytime glare and nighttime lighting to **less than significant**.

Alternative 1 would result in reduced visual resources given its reduced development potential as compared to the proposed General Plan Update. Alternative 1 would have a less than significant impact.

Cumulative Visual Resource Impacts (Impact 4.13.3)

Implementation of proposed policies and action items would reduce the proposed General Plan Update's cumulative impacts on visual resources through the adoption and enforcement of development design standards, landscape and façade maintenance programs, building codes, and community standards, as well as the implementation of open space preservation techniques, building design standards, growth boundary programs, and nighttime lighting controls. However, with implementation of the proposed General Plan, increased development would occur and changes to existing scenic resources would be inevitable. Therefore, this impact is considered **significant and unavoidable**.

Alternative 1 would result in reduced visual resources given its reduced development potential and extent of land conversion as compared to the proposed General Plan Update. However, this impact would be considered significant and unavoidable for Alternative 1.

6.4 ALTERNATIVE 2 – REDUCED PLANNING AREA ALTERNATIVE

DESCRIPTION OF ALTERNATIVE

Under this alternative, the proposed City of Madera General Plan Update Land Use Policy Map would be modified by reducing the designated Planning Area to match the city limits and Sphere of Influence (see **Figure 6.0-2**). Roadway improvements and policy provisions addressing the Planning Area would be revised and/or eliminated to match this Planning Area boundary (e.g., policies LU-10, LU-11, and LU-12 and policy provisions associated with Villages A, B, D, E, G, H, I, and J). All other policy provision of the proposed General Plan Update would remain as they are currently proposed. At buildout, this alternative would consist of a population of 202,393 (59,692 dwelling units) and 49,296 jobs.

ENVIRONMENTAL ANALYSIS

The following analysis is based on the significant environmental impacts identified in Sections 4.1 through 4.13.

Land Use

Land Use Incompatibilities (Impact 4.1.1)

The proposed General Plan Land Use Map was developed with the intent to designate areas for the most appropriate type of land use based on existing land uses, the existing and planned circulation system, and the specific needs of the Madera community, environmental constraints, and other factors. As such, implementation of the proposed Land Use Map would not be expected to result in many significant land use incompatibilities. This impact is identified as **less than significant**.

Alternative 2 would result in a similar less than significant impact.

Project and Cumulative Consistency Impacts with Relevant Land Use Planning Documents (Impacts 4.1.2 and 4.1.3)

The more intensive land use patterns within the Planning Area under the proposed General Plan Update would contribute to the environmental effects of growth anticipated to occur in the region over the next 30 years. The proposed General Plan provides environmental benefits by accommodating a larger population and employment base within the Planning Area through the intensification of development and provision of transit and opportunities for alternative transportation. The proposed General Plan Update would also designate more land for open space as compared to the existing County General Plan and would establish a permanent agricultural buffer surrounding the city (see **Table 4.1-4**). This would assist in reducing the conversion of additional land area under lower development intensities and preserve natural and agricultural land. However, the proposed General Plan land use pattern and development intensity would still substantially contribute to the conversion of land in the region to more urban uses through the designation of currently vacant lands for residential, mixed-use, commercial, and industrial development. The significant environmental effects of such conversions are discussed and analyzed in greater detail in the various sections of this Draft EIR that relate specifically to those particular issue areas (see Section 4.2 through 4.13). This impact is identified as **significant and unavoidable**.

Alternative 2 would not include the establishment of the same Planning Area as the proposed General Plan Update. Thus, Alternative 2 would avoid this impact.

Agricultural Resources

Project and Cumulative Loss and Conversion of Agricultural Lands (Impacts 4.2.1 and 4.2.4)

Within the city limits, implementation of the proposed General Plan Update Land Use Map would result in the conversion of approximately 1,682 acres of important farmland, including 878 acres of Prime Farmland, 292 acres of Farmland of Statewide Importance, and 156 acres of Unique Farmland. In addition to this loss, implementation of the proposed General Plan Update Land Use Map would result in the conversion of approximately 11,503 acres falling outside of the city limits, within the Growth Boundary. Of the 11,503 acres, 5,347 acres are Prime Farmland, 1,664 acres are Farmlands of Statewide Importance, and 2,997 acres are Unique Farmlands. This impact is identified as **significant and unavoidable**.

Alternative 2 would also result in the loss of important farmlands and would still be considered significant and unavoidable. However, the extent of this loss would be substantially less than the proposed General Plan Update.

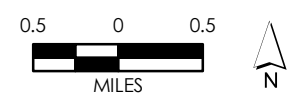
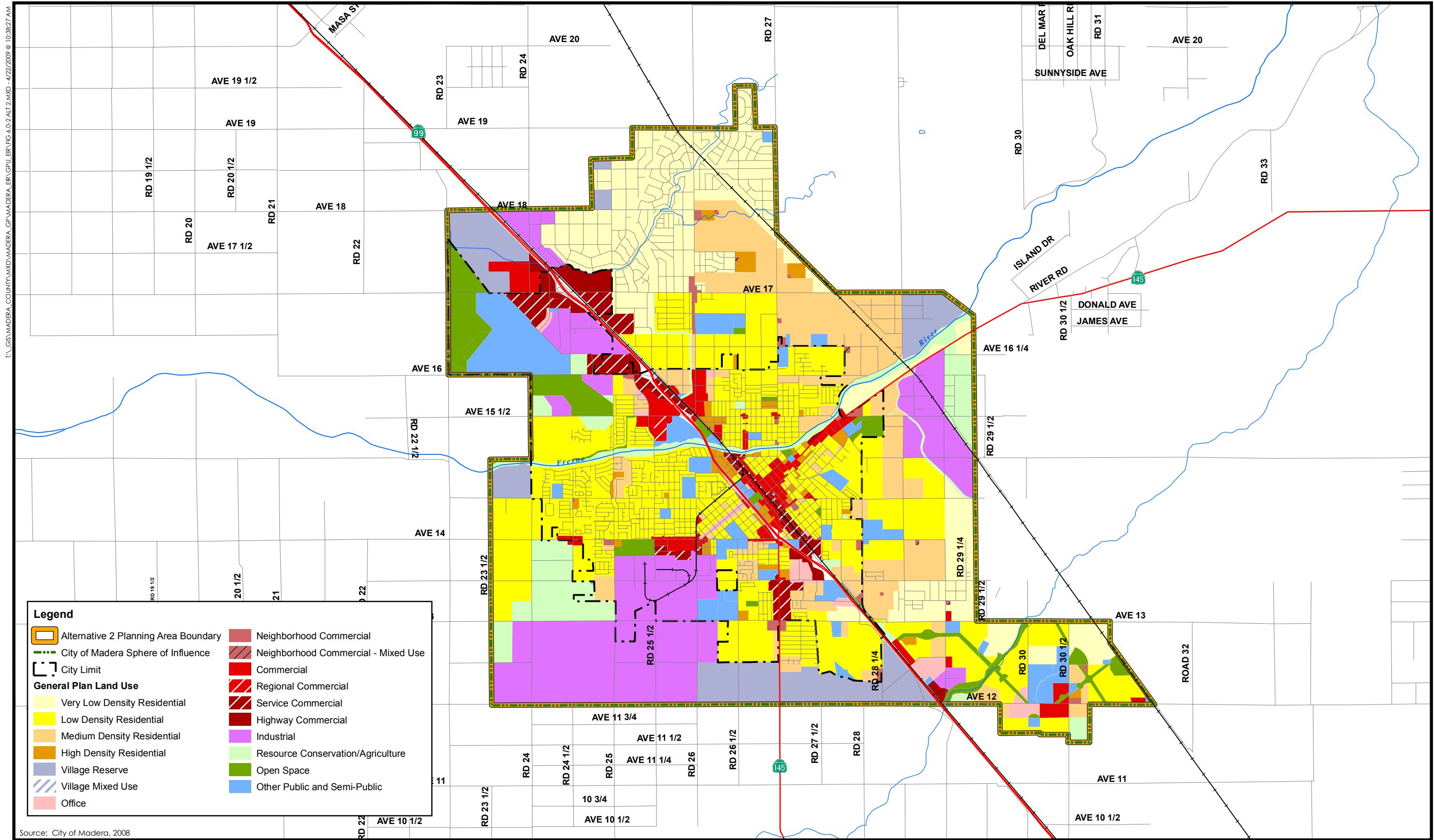


Figure 6.0-2
Alternative 2 - Reduced Planning Area Alternative
PMC®

Agricultural/Urban Interface Conflicts (Impact 4.2.2)

Implementation of the proposed City of Madera General Plan Update Land Use Map would place urbanized land uses adjacent to agricultural uses and would replace existing agricultural uses. It is anticipated that as the city builds out, new agriculture/urban interface conflicts may occur, although the establishment of the agricultural buffer associated with the Planning Area would help alleviate some of the agriculture/urban interface conflicts. This impact is identified as **significant and unavoidable**.

Alternative 2 would also result in potential interface conflicts and would be considered significant and unavoidable. However, the extent of this impact would be reduced as compared to the proposed General Plan Update.

Agricultural Zoned Lands and Williamson Act Contract Conflicts (Impact 4.2.3)

There are approximately 39 acres within the existing city limits under a Williamson Act contract and in non-renewal status. This area is Prime Farmland and Farmland of Statewide Importance and is designated for industrial development in the proposed General Plan Update. Outside of the city limits and within the Planning Area (within the Growth Boundary), there are approximately 3,908 acres under Williamson Act contracts as well as lands currently designated and zoned for agricultural uses by the County that will be converted to urban uses from implementation of the proposed General Plan Update Land Use Map. This impact is identified as **significant and unavoidable**.

Alternative 2 would also result in the loss of agricultural zoned lands and Williamson Act contract lands and would still be considered significant and unavoidable. However, the extent of this loss would be less than the proposed General Plan Update.

Population/Housing/Employment

Project and Cumulative Population, Housing and Employment Increases (Impacts 4.3.1 and 4.3.3)

Development under the proposed General Plan Update would lead to an increase in population and employment. Development and growth in the city, as a result of the implementation of the proposed General Plan Update, would contribute to cumulative population and housing conditions in the unincorporated areas of Madera County, as well as in surrounding cities and counties. This impact is identified as **significant and unavoidable**.

Alternative 2 would also result in an increase in population and employment that would also result in physical effects to the environment resulting in a significant and unavoidable impact, but would be less than the proposed General Plan Update. However, this alternative would result in reduced growth potential (approximately 23 percent less than the proposed General Plan Update) that would not accommodate future growth in the region and may result in displacement of this growth into other areas of Madera County and the region.

Displacement of Substantial Persons or Housing (Impact 4.3.2)

Implementation of the proposed General Plan Update would not, in and of itself, displace substantial numbers of housing units or people nor does it propose substantial redesignations of residential areas to land uses that would require relocation of residents. State and federal law requires due compensation for persons required to relocate as a result of redevelopment projects carried out by the City or any projects that use federal or state funding. Any private

development that may occur would pay the fair market price for any land/housing acquired as a result of project development. Therefore, although some isolated displacement of persons or housing may result, due compensation offsets any cost-related effects. Therefore, impacts related to a substantial displacement of housing units or people as a result of implementation of the proposed General Plan Update are **less than significant**.

Alternative 2 would also not result in the substantial displacement of persons or housing similar to the proposed General Plan Update.

Hazards and Human Health

Routine Transport of Hazardous Materials (Impact 4.4.1)

The use, storage, and transport of hazardous materials by developers, contractors, business owners, and others are required to be in compliance with local, state, and federal regulations during project construction and operation. Facilities that use hazardous materials are required to obtain permits and comply with appropriate regulatory agency standards and regulations designed to avoid hazardous material releases. All existing and future development in the unincorporated city would be required to comply with federal, state, and local regulations regarding the handling and transportation of hazardous materials. Therefore this impact would be **less than significant** for the proposed General Plan Update.

Alternative 2 would result in a similar less than significant impact as the proposed General Plan Update.

Release and Exposure to Hazardous Materials (Impact 4.4.2)

Implementation of the proposed General Plan policies would require that hazardous materials and wastes are handled consistent with state and federal laws associated with public and worker safety, require that adequate buffers and boundaries are provided to protect the public from industries that utilize hazardous materials, ensure that reasonably foreseeable hazards are adequately addressed, and address and coordinate cleanup efforts of contaminated sites. Thus implementation of these provisions would reduce this impact to **less than significant**.

Alternative 2 would result in a similar less than significant impact as the proposed General Plan Update.

Airport Operations (Impact 4.4.3)

Adherence to federal regulations and Comprehensive Land Use Plan regulations and implementation of the proposed General Plan policies would ensure that new development is designed to provide for public safety from airport operations. Thus, this impact is **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Interference with an Adopted Emergency Response or Evacuation Plan (Impact 4.4.4)

Implementation of the General Plan will add additional traffic and residences requiring evacuation in case of an emergency. Implementation of the proposed roadway system under the proposed General Plan Update would provide for a "modified grid" roadway system,

particularly for new development, and encourage pedestrian circulation access around the city and at the neighborhood level through the design of roadways and pedestrian facilities. Implementation of the proposed roadway system within the General Plan Update would improve city roadway connectivity, allowing for better emergency vehicle access to residences as well as evacuation routes for area residents (see **Figure 3.0-5**). Thus, this impact is **less than significant**.

Alternative 2 would have the same less than significant impact as the proposed General Plan Update.

Cumulative Hazards and Health Impacts (Impact 4.4.5)

Development associated with the proposed General Plan Update and future development in the proposed annexation areas could result in increased hazard related impacts; however, these impacts would be specific to individual sites in the Planning Area and are not tied to any regional (beyond the Planning Area) hazard or contamination issues (the reader is referred to Section 4.6, Air Quality, regarding regional public health issues associated with air pollutants and toxic air contaminants). Proposed General Plan policy provisions and mitigation measures identified under Impacts 4.4.1 through 4.4.4 would assist in reducing the impacts. Federal, state, and local regulations would determine appropriate land uses within the vicinity of the airport in the Planning Area. Anticipated development projects (e.g., residential, commercial, park, and recreational land uses) that would occur under the proposed General Plan Update would also include, but not be limited to, public and utility extension projects, roadway widenings and extensions, intersection improvements, water system distribution improvements, and trail extensions. These proposed land use activities would not significantly increase human health or safety risks. Thus, this impact is **less than significant**.

Alternative 2 would have the same less than significant impact as the proposed General Plan Update regarding cumulative hazard impacts.

Transportation and Circulation

Project and Cumulative Roadway Segment and Freeway Impacts (Impacts 4.5.1, 4.5.2, and 4.5.7)

Implementation of the proposed General Plan Update would provide service levels consistent with the City's LOS "C" standard with few exceptions. The proposed General Plan would result in LOS F within the General Plan planning horizon of 2030 on Madera Avenue (SR 145) – Almond Avenue to SR 99, Avenue 17 – Road 23 to SR 99, and all freeway segments in the Planning Area. With full buildout of the Planning Area and regional growth in traffic, these impacts are anticipated to worsen. This impact is identified as **significant and unavoidable**.

Alternative 2 would result in less development potential than the proposed General Plan Update and would result in a reduced traffic impact. However, this impact would still be considered significant and unavoidable for Alternative 2.

Roadway Safety and Emergency Access (Impact 4.5.3)

As implementation of the proposed roadway system within the General Plan Update would improve city roadway connectivity, allowing for better emergency vehicle access to residences as well as evacuation routes for area residents, this impact is considered **less than significant**. Policies and action items specifically address the prioritization of improvement of roadways with safety issues (Policy CI-8) and driveway and left-turn design provisions (Policy CI-17 and CI-18). In

addition, construction of facilities to City design standards would also result in the provision of facilities without unacceptable safety conflicts.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Transit System (Impact 4.5.4)

As implementation of the General Plan Update would not conflict with transit services and would promote transit use, this impact is considered **less than significant**. Policies and action items specifically address the provision of transit connections with new development areas (Policy CI-29) and street design provisions (policies CI-32 and CI-42).

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Bicycle and Pedestrian System (Impact 4.5.5)

As implementation of the General Plan Update would improve bicycle and pedestrian facilities, this impact is considered **less than significant**. Policies and action items specifically address the provision of bicycle and pedestrian connections with new development areas (Policy CI-29) and street design provisions (policies CI-32 and CI-42).

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

At-Grade Railway Conflicts (Impact 4.5.6)

The proposed General Plan Update policies HS-29 and HS-30 would require safety improvements at railroad-at-grade crossings and commits the City to ensuring that the crossings are safe. Thus, this impact is **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Air Quality

Construction Emissions (Impact 4.6.1)

Construction emissions of PM₁₀ under the proposed General Plan Update can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. **Table 4.6-5** illustrates a profile of construction-related emissions from a hypothetical one-acre development site with moderate grading and construction activities. SJVAPCD's approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions. SJVAPCD has identified a set of feasible PM₁₀ control measures for construction activities. Implementation of the control measures required by SJVAPCD under Regulation VIII constitutes sufficient mitigation to reduce PM₁₀ impacts to a level considered **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Odor and Toxic Emissions (Impact 4.6.2)

SJVAPCD requirements (e.g., Rule 4102), implementation of AB 2588, and proposed General Plan Update policies CON-26 and CON-27 (placement of sensitive receptors in relation to air pollutant sources) would ensure that sensitive receptors are not exposed to inappropriate levels of TACs or odors. Thus, this impact is **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Elevated CO Emissions (Impact 4.6.3)

SJVAPCD has established a preliminary screening protocol that can be used to determine with fair certainty whether the proposed General Plan would potentially cause a future CO exceedance of federal standards. The Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas (April 1996) demonstrated that the SJVAB was in compliance with the NAAQS for carbon monoxide and requested redesignation to attainment status. This plan was approved by EPA on June 1, 1998. As shown in **Table 4.6-3**, monitoring station data has not identified any exceedance of state or federal CO standards. Thus, this impact is **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Criteria Pollution Increases and Attainment Conflict (Impacts 4.6.4 and 4.6.5)

Subsequent development under the proposed General Plan Update would exceed growth projections used in regional air quality planning and attainment efforts for particulate matter and ozone under year 2030 conditions (see **Table 4.6-11**). Buildout of the Planning Area would generate additional emissions beyond 2030 and could further conflict with attainment efforts. This impact is identified as **significant and unavoidable**.

Alternative 2 would generate reduced air pollutant emissions (approximately 23 percent reduction in residential emissions as compared to the proposed General Plan Update) than the proposed General Plan Update (given the reduced development potential) and would be within the regional air plan population forecasts (though would still result in a significant and unavoidable impact). Thus, Alternative 2 would have a reduced air quality impact as compared to the proposed General Plan Update. However, it should be noted that this alternative would not accommodate future growth in the region and may result in displacement of this growth into other areas of Madera County and the region that could contribute air pollutant emissions in the air basin.

Greenhouse Gas Emissions and Climate Change (Impact 4.6.6)

CO₂e emissions associated with growth in the Planning Area under the proposed General Plan Update are projected to increase from 2008 to 2030. **Table 4.6-12** illustrates that most of these increases are likely to come from increases in housing associated with the city's population growth. It should be noted that the emission estimates provided in **Table 4.6-12** consist of major emission sources and do not include emission sources in the Planning Area (e.g., agricultural operations, emissions from electrical generation by Pacific Gas & Electric Company, airport operations). These increases would increase the carbon footprint of Madera in 2030. Stationary

and mobile source emissions would further increase under buildout conditions (post 2030). In addition, the Planning Area could be impacted by environmental impacts of climate change (water supply shortages, increased flooding, impacts to agricultural operations, biological resource impacts, air quality, and electricity generation). This impact is identified as **significant and unavoidable**.

While this impact would still be considered significant and unavoidable, Alternative 2 would generate reduced (approximately 23 percent reduction in emissions as compared to the proposed General Plan Update) greenhouse gas emissions than the proposed General Plan Update. Thus, Alternative 2 would have reduced greenhouse gas and climate change impacts as compared to the proposed General Plan Update. However, it should be noted that this alternative would not accommodate future growth in the region and may result in displacement of this growth into other areas of Madera County and the region that would contribute greenhouse gas emissions.

Consistency with Greenhouse Gas Reduction Measures (Impact 4.6.7)

Implementation of the proposed General Plan Update would implement a number of policies that would complement and be consistent with the current implementation and strategies for AB 32 and Executive Order S-3-05 as well as current efforts by SJVAPCD under its Climate Change Action Plan. These policy provisions are provided under the proposed Circulation Element (see Action Item CI-1.2 and policies and action items CI-28 through CI-39) and the proposed Conservation Element (see policies and action items CON-33 through CON-39). In addition, the General Plan Update proposed urban growth boundary, in conjunction with the establishment of an average residential density that is higher for new development than existing residential development, as well as compact development form that will encourage pedestrian, bicycle and transit use, are also features of the proposed General Plan Update that are intended to minimize greenhouse gas emissions. This impact is identified as **less than cumulatively considerable**.

Alternative 2 would result in same impact as the proposed General Plan Update.

Noise

Construction Noise Impacts (Impact 4.7.1)

With continued compliance with the City's Municipal Code limiting construction activities to the hours of 6 a.m. to 8 p.m., and with the proposed policies in the Noise Element of the General Plan Update which impose quantitative limits on noise generation and standards for mitigation, this impact would be considered **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Transportation Noise Impacts (Impacts 4.7.2, 4.7.3, and 4.7.7)

Projected future (year 2030) noise contours for major roadways within the city and predicted increases in traffic noise levels associated with future development are summarized in **Table 4.7-7** and **Table 4.7-8**, respectively (refer to Impact 4.7-2). Projected noise contours for major transportation noise sources are depicted in **Figure 4.7-6**. Buildout of the Planning Area as set forth in the proposed General Plan Update would result in additional traffic along these roadways and result in increased noise. This impact would be **significant and unavoidable**.

Alternative 2 would result in reduced noise impacts given the reduced extent of development and associated traffic as compared to the proposed General Plan Update. However, this impact would also be significant and unavoidable for Alternative 2.

Airport Noise Impacts (Impact 4.7.4)

Implementation of the applicable policies and standards contained in the City's proposed General Plan Update would ensure that future development near Madera Municipal Airport would either meet applicable noise criteria for land use compatibility and/or include noise attenuation features to meet applicable noise standards. Accordingly, proposed future development projects located within air traffic patterns, corridors, and airport influence zones would be reviewed to ensure continued consistency with the Madera County Airport Land Use Compatibility Plan. With incorporation of the proposed General Plan policies, this impact would be considered **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Stationary Noise Impacts (Impacts 4.7.5 and 4.7.7)

Implementation of the proposed General Plan Update policies and actions would reduce noise associated with new stationary noise sources and the placement of new noise-sensitive land uses over which the City has jurisdiction (e.g., commercial and industrial sites, residential uses). However, some stationary noise impacts cannot be mitigated to a less than significant level due to limitations on the City to control the exact placement of substantial noise-generating uses (e.g., school facilities) in proximity to noise-sensitive land uses (e.g., residential). Accordingly, stationary source noise levels from activities on uses for which the City has limited control could result in noise levels that exceed the City's maximum allowable noise standards. Thus, this impact is considered **significant and unavoidable**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Geology and Soils

Seismic Events (Impact 4.8.1)

Adherence to the Uniform Building Code and the California Building Code would reduce to a minimum the exposure of people and structures to potential substantial adverse effects. Thus, this impact is considered **less than significant** for the proposed General Plan Update.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Soil Erosion (Impact 4.8.2)

The City is subject to the NPDES Permit for stormwater quality that involves the implementation of the SQIP that calls for the use of BMPs to mitigate potential soil erosion impacts. In addition, development in the city would be subject to the NPDES General Construction Storm Water Permit. Project applicants are required to prepare and comply with a Storm Water Pollution Prevention Plan that specifies best management practices to avoid soil erosion and associated pollution of waterways and are also required to report any water pollution and remediate the

pollution occurrence. The proposed General Plan Update policies would involve further implementation of these water quality protection requirements. As result, this impact is **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update. However, Alternative 2 would disturb less land area than the proposed General Plan Update.

Expansive and Unstable Soils (Impact 4.8.3)

Compliance with CBC regulations ensures the adequate design and construction of building foundations to resist soil movement associated with subsequent development under the proposed General Plan Update. In addition, the CBC also contains drainage-related requirements in order to control surface drainage and reduce seasonal fluctuations in soil moisture content. In addition, implementation of Policy HS-8, as well as mitigation measure MM 4.8.3, would reduce the impacts of expansive soils to **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Septic System Operation (Impact 4.8.4)

The impacts associated with the soil suitability for septic systems can be reduced or avoided through proper site inspection and project monitoring and maintenance on a project-by-project basis as well as through compliance with Madera County septic system design requirements. Site inspection should include percolation testing to determine soil suitability. When soil suitability is identified, septic systems should be designed accordingly. When appropriate field-testing is conducted and current system location and design standards are used combined with post construction monitoring and maintenance, the potential adverse impacts to septic suitability of soils can be reduced to acceptable levels. Urban development associated with the proposed General Plan Update would connect to the City's wastewater system, while rural development may involve the use of a septic system. Thus, this impact would be **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Cumulative Geologic Impacts (Impact 4.8.5)

Implementation of the proposed General Plan Update, along with potential development in the Planning Area as well as continued development within Madera County, would result in cumulative soil erosion and other geologic impacts. Compliance with the City's NPDES permit would reduce the City's contribution to cumulative soil erosion impacts. Development projects are analyzed on an individual basis and must comply with established requirements of the City and the UBC as they pertain to protection against known geologic hazards and potential geologic and expansive soil related impacts. There are no known active faults in the Planning Area, there is a low incidence of historical geologic activity in the vicinity, and there is no contribution with other regional geologic impacts. Therefore, the proposed General Plan Update's contribution to cumulative geology-related impacts is considered **less than cumulatively considerable**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Hydrology and Water Quality

Construction, Operation and Cumulative Water Quality Impacts (Impacts 4.9.1, 4.9.2, 4.9.3, and 4.9.7)

Continued compliance with applicable SWRCB statewide water quality permits and the City's Storm Water Quality Management Program would minimize the pollutant load of storm drainage within the Planning Area from development and buildout. Implementation of General Plan Update policies (see Impacts 4.9.1, 4.9.2, and 4.9.3) would further protect surface and groundwater quality and mitigate the City's contribution to this impact by protecting natural streams and drainages, reducing potential sources of pollutants, and requiring the use of landscaping and other BMPs to prevent pollutants from entering surface and groundwater resources. As such, the City's contribution to cumulative water quality impacts is considered a **less than significant** impact.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update. However, Alternative 2 would disturb less land area than the proposed General Plan Update.

Project and Cumulative Flooding Hazards (Impacts 4.9.4 and 4.9.8)

As described under Impact 4.9.4, continued maintenance and expansion of the City's municipal storm drain system, review of drainage plans for future development projects, participation in the NFIP, and implementation of the additional measures required by the General Plan policies listed under Impact 4.9.4 would reduce the City's contribution to potential flood hazard impacts within the Planning Area to a less than significant level. Therefore, the proposed General Plan would not contribute to regional flood impacts within the larger San Joaquin River watershed, and this impact is considered **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Dam Failure (Impact 4.9.5)

Failure of the Hidden Dam could potentially result in the inundation of properties within the city and other portions of the Planning Area under the proposed General Plan Update. However, such an event has an extremely low probability of occurring and is not considered to be a reasonably foreseeable event. The dam is regularly inspected and maintained by the U.S. Army Corp of Engineers, and repairs and improvements are completed as necessary. In addition, dams are regulated by the California Department of Water Resources, Division of Safety of Dams and are routinely inspected during their impoundment life, which includes monitoring for compliance with seismic stability standards. As such, this impact is considered to be **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Groundwater Supply Impacts (Impacts 4.9.6 and 4.9.9)

Buildout of the Planning Area, which would occur sometime after 2030, would result in an ultimate city population of about 263,278 (206,572 new residents). Based on the city's per capita water demand rate of 280 gpcd, at buildout the city would have a total water demand of

approximately 82,575 acre-feet per year. Other areas served by groundwater supplies from the Madera Subbasin are also projected to grow, resulting in greater demands for groundwater supplies. Cumulative agricultural and urban growth within the greater San Joaquin Valley Groundwater Basin would result in a cumulatively considerable impact on the Madera Subbasin as the overall demand for water increases. Additionally, the construction and operation of new water supply projects could have significant impacts on the environment related to hydrology, wildlife habitat, soils, air quality, noise, traffic, and other issues. As determined in Impact 4.9.6, implementation of the proposed General Plan Update would significantly contribute to this cumulative impact regardless of the City's current and planned water conservation policies and programs and the proposed General Plan policies listed under Impact 4.9.6. This impact is considered **significant and unavoidable**.

While this impact would still be considered significant and unavoidable, Alternative 2 would result in a reduced water demand (approximately 63,583 acre-feet annually under Alternative 2 as compared to 82,575 acre-feet annually under the proposed General Plan Update). Thus, Alternative 2 would have less impact than the proposed General Plan Update.

Biological Resources

Impacts to Special-Status Species (Impact 4.10.1)

Development under the proposed General Plan Update could potentially cause direct and indirect impacts to approximately 15,628 acres of ruderal habitat (vacant), agricultural land, annual grasslands, wetlands/open waters, and riverine/riparian habitat that may serve as occupied or potential habitat for listed species. As the final design and extent of future development is not currently known, the acreages listed in **Table 4.10-5** represent the maximum area that could be directly affected. Implementation of the policies and action items in the proposed General Plan Update would ensure that impacts to special-status species are identified and mitigated to ensure viability of the species, and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Alternative 2 would have reduced impacts in comparison to the proposed General Plan Update given that it would result in less land disturbance. Alternative 2 would have a less than significant impact.

Impacts to Species of Concern and Other Non-Listed Special-Status Species (Impact 4.10.2)

Suitable habitat exists in the Planning Area for unlisted but nonetheless special-status species. These species are designated as a species of concern by the USFWS or the CDFG, and/or listed in the CNPS's online inventory as List 2. Direct impacts to these species would occur for the same reasons and in the same manner as direct and indirect impacts to listed species as identified and discussed in Impact 4.10.1. See **Table 4.10.4**, as well as **Table 4.10-6**, for information on the acreages of suitable habitat that would be affected by implementation of the proposed General Plan Update. Implementation of the policies and action items in the proposed General Plan Update would ensure that impacts to special-status species are identified and mitigated to ensure viability of the species, and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Alternative 2 would have reduced impacts in comparison to the proposed General Plan Update given that it would result in less land disturbance. Alternative 2 would have a less than significant impact.

Impacts to Sensitive Habitats (Impact 4.10.3)

Implementation of the proposed General Plan Update could result in disturbance, degradation, and removal of up to 1,850 acres of annual grassland habitat which has a high potential to support vernal pools, a CDFG sensitive habitat. Vernal pools require the surrounding upland habitat to maintain their habitat value and function. Approximately 74 acres of wetland and open water habitat would also be in direct conflict with the proposed land use designation (i.e. industrial, residential and other built environment) (see **Table 4.10-4**). Implementation of the General Plan Update could also result in disturbance, degradation, and removal of riparian habitat (potentially up to 2,740 acres), and would result in the conversion of farmland (approximately 10,825 acres) that provides habitat to listed species such as the Swainson's hawk and San Joaquin kit fox. Implementation of the proposed General Plan Update policies and action items (in addition to those identified for water quality impacts in Section 4.9, Hydrology and Water Quality) would limit sensitive habitat impacts. However, implementation of the proposed General Plan Update could still result in the loss of substantial sensitive habitat areas as well as farmland utilized by state and federally listed species. Given the extent of this potential conversion (approximately 15,415 acres of habitat), this impact is considered **significant and unavoidable**.

Alternative 2 would have reduced impacts in comparison to the proposed General Plan Update given that it would result in less land disturbance. However, Alternative 2 would still result in a significant and unavoidable impact.

Impacts to Migratory Corridors (Impact 4.10.4)

Implementation of the proposed General Plan Update policies and action items would ensure that impacts to special-status species are mitigated to ensure viability of the species (which would include consideration of movement needs), and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Conflicts with Conservation or Recovery Plans (Impact 4.10.5)

The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Although the city is within the boundaries of the Recovery Plan for Upland Species of the San Joaquin Valley, the General Plan Update does not conflict with the Recovery Plan. The reader is referred to Impact 4.10.3 for a discussion of potential impacts to sensitive habitats within the Planning Area that are covered by the Recovery Plan for Upland Species of the San Joaquin Valley, California and the U.S Fish and Wildlife Service Draft Vernal Pool Recovery Plan. Thus, **no impact** would occur.

Alternative 2 would result in the same no impact determination as the proposed General Plan Update.

Cumulative Biological Resource Impacts (Impact 4.10.6)

Implementation of the proposed General Plan Update policies and action items would limit sensitive habitat impacts. However, implementation of the proposed General Plan Update could still result in the loss of substantial sensitive habitat areas as well as farmland utilized by state and federally listed species that would add to cumulative loss of such habitat. Given the extent of this potential conversion (approximately 15,415 acres of habitat), this impact is considered **cumulatively considerable** and **significant and unavoidable**.

Alternative 2 would have reduced impacts in comparison to the proposed General Plan Update given that it would result in less land disturbance. However, Alternative 2 would still result in a significant and unavoidable impact.

Cultural and Paleontological Resources

Project and Cumulative Prehistoric and Historic Resource Impacts (Impacts 4.11.1 and 4.11.3)

Cumulative development in the region would result in the loss and/or degradation of cultural resources. These cumulative effects of development on cultural resources would be significant. As less than 5 percent of the Planning Area has been surveyed for cultural resources, there is the potential for future development to uncover previously undiscovered cultural resources because of the area's historic occupation by Native Americans, Spanish, and other groups of settlers. Buildout of the Planning Area could contribute to the cumulative loss of cultural resources in the region. The proposed General Plan Update contains several policies and action items that would mitigate its contribution to this impact. Thus, this impact is **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Paleontological Resource Impacts (Impacts 4.11.2 and 4.11.4)

A search of the University of California, Berkeley Museum of Paleontology collections database did not identify any paleontological resources within the boundaries of the City of Madera and its Sphere of Influence. The sensitivity of the area for paleontological resources, however, has not been assessed and no formal paleontological investigations were identified for the area. Consequently, implementation of the proposed General Plan Update could impact undiscovered paleontological resources. However, the proposed General Plan Update policies and action items in the Historic and Cultural Resources Element include provisions that would ensure paleontological resources are protected. Thus, this impact is **less than significant**.

Alternative 2 would result in the same less than significant impact as the proposed General Plan Update.

Public Services and Utilities

Project and Cumulative Fire Protection and Emergency Medical Service Impacts (Impacts 4.12.1.1 and 4.12.1.2)

Implementation of the proposed City of Madera General Plan Update would require additional fire-related services and equipment to adequately serve a potential population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030). Continued implementation with City Fire Code provisions and

implementation of the policies would ensure that adequate fire protection and emergency medical services are provided. Policies CI-47 and CI-49 specifically require the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels. Policy HS-33 requires that adequate first response capabilities be maintained as the city develops. Therefore, the proposed General Plan Update would not contribute to cumulative fire protection and emergency service impacts, and this impact is considered **less than significant**.

Alternative 2 would result in reduced service demands for fire protection and emergency services, given reduced development potential as compared to the proposed General Plan Update. Alternative 2 would have a less than significant impact.

Project and Cumulative Law Enforcement Impacts (Impacts 4.12.2.1 and 4.12.2.2)

Implementation of the proposed City of Madera General Plan would require additional law enforcement services and equipment to adequately serve a potential population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030). Implementation of policies CI-47 and CI-49 specifically requires the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels. Policy HS-35 requires that adequate first response capabilities be maintained as the city develops. Therefore, the proposed General Plan Update would not contribute to cumulative law enforcement service impacts and this impact is considered **less than significant**.

Alternative 2 would result in reduced service demands for law enforcement services, given reduced development potential as compared to the proposed General Plan Update. Alternative 2 would have a less than significant impact.

Project and Cumulative Water Supply Infrastructure Impacts (Impacts 4.12.3.1 and 4.12.3.2)

Additional water supply production and distribution infrastructure improvements to serve development beyond year 2020 would likely involve groundwater facilities, such as raw water pipelines, water storage tanks, pump facilities, and treatment and distribution facilities. Implementation of the proposed City of Madera General Plan Update would further increase the need for upgraded and expanded water supply infrastructure to adequately serve a potential population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030). Implementation of policies CI-47 and CI-49 specifically requires the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels, while Policy CI-51 and action items CI-51.1 and CI-51.2 would require that water supply and infrastructure be available at the same as development occurs. Therefore, the proposed General Plan Update would not contribute to cumulative water supply infrastructure impacts, and this impact is considered **less than significant**.

Alternative 2 would result in reduced demand for water supply infrastructure given its reduced development potential as compared to the proposed General Plan Update. Alternative 2 would have a less than significant impact.

Project and Cumulative Wastewater Service (Impacts 4.12.4.1 and 4.12.4.2)

Additional wastewater treatment and infrastructure capacity improvements would be needed to serve future development. Buildout of the Planning Area under the proposed General Plan

Update would further increase the need for upgraded and expanded wastewater infrastructure to adequately serve a potential population of 263,278 residents and associated nonresidential development which may occur beyond 2030. Implementation of policies CI-47 and CI-49 specifically requires the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels, while Policy CI-55 and action items CI-55.1 and CI-55.2 would require that wastewater treatment and infrastructure capacity be available at the same time as development occurs. Therefore, the proposed General Plan Update would not contribute to cumulative wastewater infrastructure impacts and this impact is considered **less than significant**.

Alternative 2 would result in reduced demand for wastewater service and infrastructure given its reduced development potential as compared to the proposed General Plan Update. Alternative 2 would have a less than significant impact.

Project and Cumulative Solid Waste Service (Impacts 4.12.5.1 and 4.12.5.2)

Subsequent development under the proposed General Plan Update would increase solid waste service demands. At full buildout of the Planning Area (beyond year 2030), the proposed General Plan Update could generate solid waste of up to 387,019 tons per year associated with the population increase, which would place further demands on disposal needs. While the Fairmead Landfill is anticipated to be closed after the year 2027, other landfills would be available to accept city solid waste. Subsequent development would also be subject to City source reduction programs. Adequate landfill capacity is available to be available under cumulative conditions to meet the needs of the City beyond 2030. Implementation of General Plan Update policies and the associated action item would further assist in solid waste reduction measures. Therefore, the proposed General Plan Update would not contribute to cumulative solid waste impacts, and this impact is considered **less than significant**.

Alternative 2 would generate less solid waste (approximately 298,005 tons per year under Alternative 2 versus 387,019 tons per year under the proposed General Plan Update) as compared to the proposed General Plan Update. Alternative 2 would have a less than significant impact.

Project and Cumulative Public School Facilities (Impacts 4.12.6.1 and 4.12.6.2)

MUSD would need to add new elementary, middle, high, and alternative schools to provide sufficient capacity to accommodate buildout associated with the proposed General Plan Update at and beyond the year 2030. Based on current MUSD generation rates, the district is expected to accommodate approximately 49,109 students under the proposed General Plan Update at buildout. The adoption of all or some combination of Mello-Roos taxes and state funding would mitigate potential cumulative impacts on schools. However, California Government Code Section Sections 65995 (h) and 65996 (b) provide that the payment of school impact fees is considered to provide full and complete school facilities mitigation. The proposed General Plan Update contains goals, policies, and action items that would address potential impacts associated with public services. Those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact are listed under Impact 4.12.6.1. Implementation of General Plan Update policies and the associated action item would further assist in the provision of adequate public school facilities. Therefore, the proposed General Plan Update would not contribute to cumulative public school impacts and this impact is considered **less than significant**.

Alternative 2 would generate less public school service demand (approximately 37,814 students under Alternative 2 versus 49,109 students under the proposed General Plan Update) as

compared to the proposed General Plan Update. Alternative 2 would have a less than significant impact.

Project and Cumulative Provision of Electrical, Natural Gas, and Other Infrastructure (Impacts 4.12.7.1 and 4.12.7.2)

The majority of the infrastructure for these services would be collocated and constructed concurrently with other utilities where feasible and be located within roadway and other public rights-of-way to lessen or eliminate potential environmental impacts. PG&E does not currently foresee any issues in servicing growth in the Planning Area. Development under the General Plan Update would be required to comply with recently adopted changes to Title 24 of the California Code of Regulations regarding energy efficiency. These new energy efficiency standards were developed in response to the state's energy crisis as well as AB 970 and SB 5X in regard to improving residential and nonresidential building energy efficiency, minimizing impacts to peak energy usage periods, and reducing impacts on overall state energy needs. While implementation of the General Plan Update would result in growth in the Planning Area and require the expansion of these services, most of the underground and aerial telephone transmission lines are generally collocated with other utilities on poles or in underground trenches and are constructed in public and roadway rights-of-way to reduce visual and aesthetic impacts and potential safety hazards. Implementation of Policy CI-49 would ensure that adequate public utility services are timed with development, while Action Item CON-37.3 would ensure that City energy use is efficient. Coordination between service providers and subsequent developers would preclude conflicts between utility providers. Therefore, this impact is considered **less than significant**.

Alternative 2 would result in reduced demand for electricity, natural gas, and other infrastructure services given its reduced development potential as compared to the proposed General Plan Update. Alternative 2 would have a less than significant impact.

Project and Cumulative Park and Recreation Impacts (Impacts 4.12.8.1 and 4.12.8.2)

Buildout of the Planning Area under the proposed General Plan Update would contribute to the cumulative demand for regional and local recreational facilities and services. The estimated population in the Planning Area at buildout is anticipated to be 263,278 persons. Based on the standard of 3.0 acres of parkland per 1,000 population, the City would need to have approximately 790 acres of parkland to meet the anticipated demand. Implementation of the General Plan Update policies and associated action items, and compliance with City development impact fees would reduce park and recreation impacts to **less than significant**. Specifically, Policy PR-1 sets a parkland provision standard that would improve the existing ratio of parkland to residents (3.0 acres per 1,000 residents), while policies PR-4 and PR-7 provide standards regarding park and recreation facility types and the timing of park facilities.

Alternative 2 would result in reduced demand for parks and recreation (approximately 607 acres of parkland demand under Alternative 2 versus 790 acres of parkland under the proposed General Plan Update) given its reduced development potential as compared to the proposed General Plan Update. Alternative 2 would have a less than significant impact.

Visual Resources/Light and Glare

Alteration of Scenic Resources (Impact 4.13.1)

Proposed General Plan Update policy provisions assist in minimizing visual impacts related to the conversion of agricultural lands to urban uses by adopting and enforcing development design standards, landscape and façade maintenance programs, building codes, and community standards, as well as by implementing open space preservation techniques, building design standards, and growth boundary programs. The General Plan Update would nevertheless result in a substantial change in visual resources in the Planning Area. There are no feasible mitigation measures available to offset this change in visual resources, as the urban uses proposed under the General Plan are fundamentally different from current farmland uses. Thus, this impact is considered **significant and unavoidable**.

Alternative 2 would result in reduced visual resources impact given its reduced development potential and extent of land conversion as compared to the proposed General Plan Update. However, Alternative 2 would still result in a significant and unavoidable impact.

Daytime Glare and Nighttime Lighting (Impact 4.13.2)

Implementation of the proposed General Plan Update policies and action items would minimize impacts associated with light and glare through the adoption and enforcement of development design standards, building codes, and community standards, as well as the control of nighttime lighting. Thus, implementation of these provisions would reduce impacts related to daytime glare and nighttime lighting to **less than significant**.

Alternative 2 would result in reduced glare and lighting impact given its reduced development potential as compared to the proposed General Plan Update. Alternative 2 would have a less than significant impact.

Cumulative Visual Resource Impacts (Impact 4.13.3)

Implementation of proposed policies and action items would reduce the proposed General Plan Update's cumulative impacts on visual resources through the adoption and enforcement of development design standards, landscape and façade maintenance programs, building codes, and community standards, as well as the implementation of open space preservation techniques, building design standards, growth boundary programs, and nighttime lighting controls. However, with implementation of the proposed General Plan, increased development would occur and changes to existing scenic resources would be inevitable. Therefore, this impact is considered **significant and unavoidable**.

Alternative 2 would result in reduced visual resources impact given its reduced development potential and extent of land conversion as compared to the proposed General Plan Update. However, Alternative 2 would still result in a significant and unavoidable impact.

6.5 ALTERNATIVE 3 – NATURAL RESOURCES CONSERVATION ALTERNATIVE

DESCRIPTION OF ALTERNATIVE

Under this alternative, the proposed City of Madera General Plan Update Land Use Map would be modified by changing the proposed land use designations in areas that were identified containing annual grasslands to Resource Conservation/Agriculture based on mapping

provided in **Figure 4.10-1** (see **Figure 6.0-3** for modified Land Use Policy Map). Annual grassland habitat within the Planning Area has potential to contain vernal pools and other seasonal wetlands. Vernal pools support special-status plant and wildlife species and are considered sensitive/critical habitat by the California Department of Fish and Game and U.S. Fish and Wildlife Service. **Table 6.0-1** summarizes the land use designations for this alternative:

**TABLE 6.0-1
ALTERNATIVE 3 BUILDOUT LAND USES**

Land Use Designations	Total (acres)
Commercial (C, NC, NCMU, RC, SC, HC)	1,679
Industrial (I)	3,780
Office (O)	255
Very Low Density Residential (VLD)	4,565
Low Density Residential (LD)	6,650
Medium Density Residential (MDR)	2,442
High Density Residential (HD)	298
Open Space (OS)	2,140
Resource Conservation/Ag (RC/A)	38,497
Other Public & Semi-Public Uses (OP&SP)	1,809
Village Reserve (VR)	5,263
Village Mixed Use (VMU)	37
TOTAL	67,415

All other policy provision of the proposed General Plan Update would remain as they are currently proposed. Alternative 3 would consist of a population of approximately 252,747 (70,797 dwelling units) and 53,049 jobs at buildout.

ENVIRONMENTAL ANALYSIS

The following analysis is based on the significant environmental impacts identified in Sections 4.1 through 4.13.

Land Use

Land Use Incompatibilities (Impact 4.1.1)

The proposed General Plan Land Use Map was developed with the intent to designate areas for the most appropriate type of land use based on existing land uses, the existing and planned circulation system, and the specific needs of the Madera community, environmental constraints, and other factors. As such, implementation of the proposed Land Use Map would not be expected to result in many significant land use incompatibilities. This impact is identified as **less than significant**.

Alternative 3 would result in a similar less than significant impact.

Project and Cumulative Consistency Impacts with Relevant Land Use Planning Documents (Impacts 4.1.2 and 4.1.3)

The more intensive land use patterns within the Planning Area under the proposed General Plan Update would contribute to the environmental effects of growth anticipated to occur in the region over the next 30 years. The proposed General Plan provides environmental benefits by accommodating a larger population and employment base within the Planning Area through the intensification of development and provision of transit and opportunities for alternative transportation. The proposed General Plan Update would also designate more land for open space as compared to the existing County General Plan and would establish a permanent agricultural buffer surrounding the city (see **Table 4.1-4**). This would assist in reducing the conversion of additional land area under lower development intensities and preserve natural and agricultural land. However, the proposed General Plan land use pattern and development intensity would still substantially contribute to the conversion of land in the region to more urban uses through the designation of currently vacant lands for residential, mixed-use, commercial, and industrial development. The significant environmental effects of such conversions are discussed and analyzed in greater detail in the various sections of this Draft EIR that relate specifically to those particular issue areas (see Section 4.2 through 4.13). This impact is identified as **significant and unavoidable**.

Alternative 3 would result in the same significant and unavoidable impact as the proposed General Plan Update.

Agricultural Resources

Project and Cumulative Loss and Conversion of Agricultural Lands (Impacts 4.2.1 and 4.2.4)

Within the city limits, implementation of the proposed General Plan Update Land Use Map would result in the conversion of approximately 1,682 acres of important farmland, including 878 acres of Prime Farmland, 292 acres of Farmland of Statewide Importance, and 156 acres of Unique Farmland. In addition to this loss, implementation of the proposed General Plan Update Land Use Map would result in the conversion of approximately 11,503 acres falling outside of the city limits, within the Growth Boundary. Of the 11,503 acres, 5,347 acres are Prime Farmland, 1,664 acres are Farmlands of Statewide Importance, and 2,997 acres are Unique Farmlands. This impact is identified as **significant and unavoidable**.

Alternative 3 would also result in a similar loss of loss of important farmlands as the proposed General Plan Update and a significant and unavoidable impact.

Agricultural/Urban Interface Conflicts (Impact 4.2.2)

Implementation of the proposed City of Madera General Plan Update Land Use Map would place urbanized land uses adjacent to agricultural uses and would replace existing agricultural uses. It is anticipated that as the city builds out, new agriculture/urban interface conflicts may occur, although the establishment of the agricultural buffer associated with the Planning Area would help alleviate some of the agriculture/urban interface conflicts. This impact is identified as **significant and unavoidable**.

Alternative 3 would also result in the same interface conflict impact as the proposed General Plan Update and a significant and unavoidable impact.



Agricultural Zoned Lands and Williamson Act Contract Conflicts (Impact 4.2.3)

There are approximately 39 acres within the existing city limits under a Williamson Act contract and in non-renewal status. This area is Prime Farmland and Farmland of Statewide Importance and is designated for industrial development in the proposed General Plan Update. Outside of the city limits and within the Planning Area (within the Growth Boundary), there are approximately 3,908 acres under Williamson Act contracts as well as lands currently designated and zoned for agricultural uses by the County that will be converted to urban uses from implementation of the proposed General Plan Update Land Use Map. This impact is identified as **significant and unavoidable**.

Alternative 3 would also result in a similar loss of loss of agricultural zoned lands and Williamson Act contract lands and would still be considered significant and unavoidable.

Population/Housing/Employment

Project and Cumulative Population, Housing and Employment Increases (Impacts 4.3.1 and 4.3.3)

Development under the proposed General Plan Update would lead to an increase in population and employment. Development and growth in the city, as a result of the implementation of the proposed General Plan Update, would contribute to cumulative population and housing conditions in the unincorporated areas of Madera County, as well as in surrounding cities and counties. This impact is identified as **significant and unavoidable**.

Alternative 3 would also result in an increase in population and employment that would also result in physical effects to the environment (resulting in a significant and unavoidable impact), but would be less than the proposed General Plan Update (approximately 4 percent less than the proposed General Plan Update).

Displacement of Substantial Persons or Housing (Impact 4.3.2)

Implementation of the proposed General Plan Update would not, in and of itself, displace substantial numbers of housing units or people nor does it propose substantial redesignations of residential areas to land uses that would require relocation of residents. State and federal law requires due compensation for persons required to relocate as a result of redevelopment projects carried out by the City or any projects that use federal or state funding. Any private development that may occur would pay the fair market price for any land/housing acquired as a result of project development. Therefore, although some isolated displacement of persons or housing may result, due compensation offsets any cost-related effects. Therefore, impacts related to a substantial displacement of housing units or people as a result of implementation of the proposed General Plan Update are **less than significant**.

Alternative 3 would also not result in the substantial displacement of persons or housing similar to the proposed General Plan Update.

Hazards and Human Health

Routine Transport of Hazardous Materials (Impact 4.4.1)

The use, storage, and transport of hazardous materials by developers, contractors, business owners, and others are required to be in compliance with local, state, and federal regulations during project construction and operation. Facilities that use hazardous materials are required

to obtain permits and comply with appropriate regulatory agency standards and regulations designed to avoid hazardous material releases. All existing and future development in the unincorporated city would be required to comply with federal, state, and local regulations regarding the handling and transportation of hazardous materials. Therefore this impact would be **less than significant** for the proposed General Plan Update.

Alternative 3 would result in a similar less than significant impact as the proposed General Plan Update.

Release and Exposure to Hazardous Materials (Impact 4.4.2)

Implementation of the proposed General Plan policies would require that hazardous materials and wastes are handled consistent with state and federal laws associated with public and worker safety, require that adequate buffers and boundaries are provided to protect the public from industries that utilize hazardous materials, ensure that reasonably foreseeable hazards are adequately addressed, and address and coordinate cleanup efforts of contaminated sites. Thus implementation of these provisions would reduce this impact to **less than significant**.

Alternative 3 would result in a similar less than significant impact as the proposed General Plan Update.

Airport Operations (Impact 4.4.3)

Adherence to federal regulations and Comprehensive Land Use Plan regulations and implementation of the proposed General Plan policies would ensure that new development is designed to provide for public safety from airport operations. Thus, this impact is **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Interference with an Adopted Emergency Response or Evacuation Plan (Impact 4.4.4)

Implementation of the General Plan will add additional traffic and residences requiring evacuation in case of an emergency. Implementation of the proposed roadway system under the proposed General Plan Update would provide for a "modified grid" roadway system, particularly for new development, and encourage pedestrian circulation access around the city and at the neighborhood level through the design of roadways and pedestrian facilities. Implementation of the proposed roadway system within the General Plan Update would improve city roadway connectivity, allowing for better emergency vehicle access to residences as well as evacuation routes for area residents (see **Figure 3.0-5**). Thus, this impact is **less than significant**.

Alternative 3 would have the same less than significant impact as the proposed General Plan Update.

Cumulative Hazards and Health Impacts (Impact 4.4.5)

Development associated with the proposed General Plan Update and future development in the proposed annexation areas could result in increased hazard related impacts; however, these impacts would be specific to individual sites in the Planning Area and are not tied to any regional (beyond the Planning Area) hazard or contamination issues (the reader is referred to

Section 4.6, Air Quality, regarding regional public health issues associated with air pollutants and toxic air contaminants). Proposed General Plan policy provisions and mitigation measures identified under Impacts 4.4.1 through 4.4.4 would assist in reducing the impacts. Federal, state, and local regulations would determine appropriate land uses within the vicinity of the airport in the Planning Area. Anticipated development projects (e.g., residential, commercial, park, and recreational land uses) that would occur under the proposed General Plan Update would also include, but not be limited to, public and utility extension projects, roadway widenings and extensions, intersection improvements, water system distribution improvements, and trail extensions. These proposed land use activities would not significantly increase human health or safety risks. Thus, this impact is **less than significant**.

Alternative 3 would have the same less than significant impact as the proposed General Plan Update regarding cumulative hazard impacts.

Transportation and Circulation

Project and Cumulative Roadway Segment and Freeway Impacts (Impacts 4.5.1, 4.5.2, and 4.5.7)

Implementation of the proposed General Plan Update would provide service levels consistent with the City's LOS "C" standard with few exceptions. The proposed General Plan would result in LOS F within the General Plan planning horizon of 2030 on Madera Avenue (SR 145) – Almond Avenue to SR 99, Avenue 17 – Road 23 to SR 99, and all freeway segments in the Planning Area. With full buildout of the Planning Area and regional growth in traffic, these impacts are anticipated to worsen. This impact is identified as **significant and unavoidable**.

Alternative 3 would result in slightly less development potential than the proposed General Plan Update and could result in a reduced traffic impact. However, Alternative 3 would still result in a significant and unavoidable impact.

Roadway Safety and Emergency Access (Impact 4.5.3)

As implementation of the proposed roadway system within the General Plan Update would improve city roadway connectivity, allowing for better emergency vehicle access to residences as well as evacuation routes for area residents, this impact is considered **less than significant**. Policies and action items specifically address the prioritization of improvement of roadways with safety issues (Policy CI-8) and driveway and left-turn design provisions (Policy CI-17 and CI-18). In addition, construction of facilities to City design standards would also result in the provision of facilities without unacceptable safety conflicts.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Transit System (Impact 4.5.4)

As implementation of the General Plan Update would not conflict with transit services and would promote transit use, this impact is considered **less than significant**. Policies and action items specifically address the provision of transit connections with new development areas (Policy CI-29) and street design provisions (policies CI-32 and CI-42).

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Bicycle and Pedestrian System (Impact 4.5.5)

As implementation of the General Plan Update would improve bicycle and pedestrian facilities, this impact is considered **less than significant**. Policies and action items specifically address the provision of bicycle and pedestrian connections with new development areas (Policy CI-29) and street design provisions (policies CI-32 and CI-42).

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

At-Grade Railway Conflicts (Impact 4.5.6)

The proposed General Plan Update policies HS-29 and HS-30 would require safety improvements at railroad-at-grade crossings and commits the City to ensuring that the crossings are safe. Thus, this impact is **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Air Quality

Construction Emissions (Impact 4.6.1)

Construction emissions of PM₁₀ under the proposed General Plan Update can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. **Table 4.6-5** illustrates a profile of construction-related emissions from a hypothetical one-acre development site with moderate grading and construction activities. SJVAPCD's approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions. SJVAPCD has identified a set of feasible PM₁₀ control measures for construction activities. Implementation of the control measures required by SJVAPCD under Regulation VIII constitutes sufficient mitigation to reduce PM₁₀ impacts to a level considered **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Odor and Toxic Emissions (Impact 4.6.2)

SJVAPCD requirements (e.g., Rule 4102), implementation of AB 2588, and proposed General Plan Update policies CON-26 and CON-27 (placement of sensitive receptors in relation to air pollutant sources) would ensure that sensitive receptors are not exposed to inappropriate levels of TACs or odors. Thus, this impact is **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Elevated CO Emissions (Impact 4.6.3)

SJVAPCD has established a preliminary screening protocol that can be used to determine with fair certainty whether the proposed General Plan would potentially cause a future CO exceedance of federal standards. The Final Carbon Monoxide Redesignation Request and

Maintenance Plan for Ten Federal Planning Areas (April 1996) demonstrated that the SJVAB was in compliance with the NAAQS for carbon monoxide and requested redesignation to attainment status. This plan was approved by EPA on June 1, 1998. As shown in **Table 4.6-3**, monitoring station data has not identified any exceedance of state or federal CO standards. Thus, this impact is **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Criteria Pollution Increases and Attainment Conflict (Impacts 4.6.4 and 4.6.5)

Subsequent development under the proposed General Plan Update would exceed growth projections used in regional air quality planning and attainment efforts for particulate matter and ozone under year 2030 conditions (see **Table 4.6-11**). Buildout of the Planning Area would generate additional emissions beyond 2030 and could further conflict with attainment efforts. This impact is identified as **significant and unavoidable**.

Alternative 3 would result in similar air pollutant emissions (though there would be an approximately 4 percent reduction in residential emissions as compared to the proposed General Plan Update) as the proposed General Plan Update. Alternative 3 would result in a significant and unavoidable impact.

Greenhouse Gas Emissions and Climate Change (Impact 4.6.6)

CO₂e emissions associated with growth in the Planning Area under the proposed General Plan Update are projected to increase from 2008 to 2030. **Table 4.6-12** illustrates that most of these increases are likely to come from increases in housing associated with the city's population growth. It should be noted that the emission estimates provided in **Table 4.6-12** consist of major emission sources and do not include emission sources in the Planning Area (e.g., agricultural operations, emissions from electrical generation by Pacific Gas & Electric Company, airport operations). These increases would increase the carbon footprint of Madera in 2030. Stationary and mobile source emissions would further increase under buildout conditions (post 2030). In addition, the Planning Area could be impacted by environmental impacts of climate change (water supply shortages, increased flooding, impacts to agricultural operations, biological resource impacts, air quality, and electricity generation). This impact is identified as **significant and unavoidable**.

While this impact would still be considered significant and unavoidable, Alternative 3 would generate reduced (approximately 4 percent reduction in residential emissions as compared to the proposed General Plan Update) greenhouse gas emissions than the proposed General Plan Update. Thus, Alternative 3 would have reduced greenhouse gas and climate change impacts as compared to the proposed General Plan Update.

Consistency with Greenhouse Gas Reduction Measures (Impact 4.6.7)

Implementation of the proposed General Plan Update would implement a number of policies that would complement and be consistent with the current implementation and strategies for AB 32 and Executive Order S-3-05 as well as current efforts by SJVAPCD under its Climate Change Action Plan. These policy provisions are provided under the proposed Circulation Element (see Action Item CI-1.2 and policies and action items CI-28 through CI-39) and the proposed Conservation Element (see policies and action items CON-33 through CON-39). In

addition, the General Plan Update proposed urban growth boundary, in conjunction with the establishment of an average residential density that is higher for new development than existing residential development, as well as compact development form that will encourage pedestrian, bicycle and transit use, are also features of the proposed General Plan Update that are intended to minimize greenhouse gas emissions. This impact is identified as **less than cumulatively considerable**.

Alternative 3 would result in same impact as the proposed General Plan Update.

Noise

Construction Noise Impacts (Impact 4.7.1)

With continued compliance with the City's Municipal Code limiting construction activities to the hours of 6 a.m. to 8 p.m., and with the proposed policies in the Noise Element of the General Plan Update which impose quantitative limits on noise generation and standards for mitigation, this impact would be considered **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Transportation Noise Impacts (Impacts 4.7.2, 4.7.3, and 4.7.7)

Projected future (year 2030) noise contours for major roadways within the city and predicted increases in traffic noise levels associated with future development are summarized in **Table 4.7-7** and **Table 4.7-8**, respectively (refer to Impact 4.7-2). Projected noise contours for major transportation noise sources are depicted in **Figure 4.7-6**. Buildout of the Planning Area as set forth in the proposed General Plan Update would result in additional traffic along these roadways and result in increased noise. This impact would be **significant and unavoidable**.

Alternative 3 would result in similar traffic noise impacts given the reduced extent of development under this alternative is not considerable enough to substantially reduce traffic noise as compared to the proposed General Plan Update. Alternative 3 would result in a significant and unavoidable impact.

Airport Noise Impacts (Impact 4.7.4)

Implementation of the applicable policies and standards contained in the City's proposed General Plan Update would ensure that future development near Madera Municipal Airport would either meet applicable noise criteria for land use compatibility and/or include noise attenuation features to meet applicable noise standards. Accordingly, proposed future development projects located within air traffic patterns, corridors, and airport influence zones would be reviewed to ensure continued consistency with the Madera County Airport Land Use Compatibility Plan. With incorporation of the proposed General Plan policies, this impact would be considered **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Stationary Noise Impacts (Impacts 4.7.5 and 4.7.7)

Implementation of the proposed General Plan Update policies and actions would reduce noise associated with new stationary noise sources and the placement of new noise-sensitive land

uses over which the City has jurisdiction (e.g., commercial and industrial sites, residential uses). However, some stationary noise impacts cannot be mitigated to a less than significant level due to limitations on the City to control the exact placement of substantial noise-generating uses (e.g., school facilities) in proximity to noise-sensitive land uses (e.g., residential). Accordingly, stationary source noise levels from activities on uses for which the City has limited control could result in noise levels that exceed the City's maximum allowable noise standards. Thus, this impact is considered **significant and unavoidable**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Geology and Soils

Seismic Events (Impact 4.8.1)

Adherence to the Uniform Building Code and the California Building Code would reduce to a minimum the exposure of people and structures to potential substantial adverse effects. Thus, this impact is considered **less than significant** for the proposed General Plan Update.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Soil Erosion (Impact 4.8.2)

The City is subject to the NPDES Permit for stormwater quality that involves the implementation of the SQIP that calls for the use of BMPs to mitigate potential soil erosion impacts. In addition, development in the city would be subject to the NPDES General Construction Storm Water Permit. Project applicants are required to prepare and comply with a Storm Water Pollution Prevention Plan that specifies best management practices to avoid soil erosion and associated pollution of waterways and are also required to report any water pollution and remediate the pollution occurrence. The proposed General Plan Update policies would involve further implementation of these water quality protection requirements. As result, this impact is **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update. However, Alternative 3 would disturb less land area than the proposed General Plan Update.

Expansive and Unstable Soils (Impact 4.8.3)

Compliance with CBC regulations ensures the adequate design and construction of building foundations to resist soil movement associated with subsequent development under the proposed General Plan Update. In addition, the CBC also contains drainage-related requirements in order to control surface drainage and reduce seasonal fluctuations in soil moisture content. In addition, implementation of Policy HS-8, as well as mitigation measure MM 4.8.3, would reduce the impacts of expansive soils to **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Septic System Operation (Impact 4.8.4)

The impacts associated with the soil suitability for septic systems can be reduced or avoided through proper site inspection and project monitoring and maintenance on a project-by-project basis as well as through compliance with Madera County septic system design requirements. Site inspection should include percolation testing to determine soil suitability. When soil suitability is identified, septic systems should be designed accordingly. When appropriate field-testing is conducted and current system location and design standards are used combined with post construction monitoring and maintenance, the potential adverse impacts to septic suitability of soils can be reduced to acceptable levels. Urban development associated with the proposed General Plan Update would connect to the City's wastewater system, while rural development may involve the use of a septic system. Thus, this impact would be **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Cumulative Geologic Impacts (Impact 4.8.5)

Implementation of the proposed General Plan Update, along with potential development in the Planning Area as well as continued development within Madera County, would result in cumulative soil erosion and other geologic impacts. Compliance with the City's NPDES permit would reduce the City's contribution to cumulative soil erosion impacts. Development projects are analyzed on an individual basis and must comply with established requirements of the City and the UBC as they pertain to protection against known geologic hazards and potential geologic and expansive soil related impacts. There are no known active faults in the Planning Area, there is a low incidence of historical geologic activity in the vicinity, and there is no contribution with other regional geologic impacts. Therefore, the proposed General Plan Update's contribution to cumulative geology-related impacts is considered **less than cumulatively considerable**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Hydrology and Water Quality

Construction, Operation and Cumulative Water Quality Impacts (Impacts 4.9.1, 4.9.2, 4.9.3, and 4.9.7)

Continued compliance with applicable SWRCB statewide water quality permits and the City's Storm Water Quality Management Program would minimize the pollutant load of storm drainage within the Planning Area from development and buildout. Implementation of General Plan Update policies (see Impacts 4.9.1, 4.9.2, and 4.9.3) would further protect surface and groundwater quality and mitigate the City's contribution to this impact by protecting natural streams and drainages, reducing potential sources of pollutants, and requiring the use of landscaping and other BMPs to prevent pollutants from entering surface and groundwater resources. As such, the City's contribution to cumulative water quality impacts is considered a **less than significant** impact.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update. However, Alternative 3 would disturb less land area than the proposed General Plan Update.

Project and Cumulative Flooding Hazards (Impacts 4.9.4 and 4.9.8)

As described under Impact 4.9.4, continued maintenance and expansion of the City's municipal storm drain system, review of drainage plans for future development projects, participation in the NFIP, and implementation of the additional measures required by the General Plan policies listed under Impact 4.9.4 would reduce the City's contribution to potential flood hazard impacts within the Planning Area to a less than significant level. Therefore, the proposed General Plan would not contribute to regional flood impacts within the larger San Joaquin River watershed and this impact is considered **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Dam Failure (Impact 4.9.5)

Failure of the Hidden Dam could potentially result in the inundation of properties within the city and other portions of the Planning Area under the proposed General Plan Update. However, such an event has an extremely low probability of occurring and is not considered to be a reasonably foreseeable event. The dam is regularly inspected and maintained by the U.S. Army Corp of Engineers, and repairs and improvements are completed as necessary. In addition, dams are regulated by the California Department of Water Resources, Division of Safety of Dams and are routinely inspected during their impoundment life, which includes monitoring for compliance with seismic stability standards. As such, this impact is considered to be **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Groundwater Supply Impacts (Impacts 4.9.6 and 4.9.9)

Buildout of the Planning Area, which would occur sometime after 2030, would result in an ultimate city population of about 263,278 (206,572 new residents). Based on the city's per capita water demand rate of 280 gpcd, at buildout the city would have a total water demand of approximately 82,575 acre-feet per year. Other areas served by groundwater supplies from the Madera Subbasin are also projected to grow, resulting in greater demands for groundwater supplies. Cumulative agricultural and urban growth within the greater San Joaquin Valley Groundwater Basin would result in a cumulatively considerable impact on the Madera Subbasin as the overall demand for water increases. Additionally, the construction and operation of new water supply projects could have significant impacts on the environment related to hydrology, wildlife habitat, soils, air quality, noise, traffic, and other issues. As determined in Impact 4.9.6, implementation of the proposed General Plan Update would significantly contribute to this cumulative impact regardless of the City's current and planned water conservation policies and programs and the proposed General Plan policies listed under Impact 4.9.6. This impact is considered **significant and unavoidable**.

While this impact would still be considered significant and unavoidable, Alternative 3 would result in a reduced water demand (approximately 79,272 acre-feet annually under Alternative 3 as compared to 82,575 acre-feet annually under the proposed General Plan Update). Thus, Alternative 3 would have less impact than the proposed General Plan Update.

Biological Resources

Impacts to Special-Status Species (Impact 4.10.1)

Development under the proposed General Plan Update could potentially cause direct and indirect impacts to approximately 15,628 acres of ruderal habitat (vacant), agricultural land, annual grasslands, wetlands/open waters, and riverine/riparian habitat that may serve as occupied or potential habitat for listed species. As the final design and extent of future development is not currently known, the acreages listed in **Table 4.10-5** represent the maximum area that could be directly affected. Implementation of the policies and action items in the proposed General Plan Update would ensure that impacts to special-status species are identified and mitigated to ensure viability of the species, and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Alternative 3 would have reduced impacts in comparison to the proposed General Plan Update given that it would result in less land disturbance in annual grassland areas. Alternative 3 would have a less than significant impact.

Impacts to Species of Concern and Other Non-Listed Special-Status Species (Impact 4.10.2)

Suitable habitat exists in the Planning Area for unlisted but nonetheless special-status species. These species are designated as a species of concern by the USFWS or the CDFG, and/or listed in the CNPS's online inventory as List 2. Direct impacts to these species would occur for the same reasons and in the same manner as direct and indirect impacts to listed species as identified and discussed in Impact 4.10.1. See **Table 4.10.4**, as well as **Table 4.10-6**, for information on the acreages of suitable habitat that would be affected by implementation of the proposed General Plan Update. Implementation of the policies and action items in the proposed General Plan Update would ensure that impacts to special-status species are identified and mitigated to ensure viability of the species, and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Alternative 3 would have reduced impacts in comparison to the proposed General Plan Update given that it would result in less land disturbance in annual grassland areas. Alternative 3 would have a less than significant impact.

Impacts to Sensitive Habitats (Impact 4.10.3)

Implementation of the proposed General Plan Update could result in disturbance, degradation, and removal of up to 1,850 acres of annual grassland habitat which has a high potential to support vernal pools, a CDFG sensitive habitat. Vernal pools require the surrounding upland habitat to maintain their habitat value and function. Approximately 74 acres of wetland and open water habitat would also be in direct conflict with the proposed land use designation (i.e. industrial, residential and other built environment) (see **Table 4.10-4**). Implementation of the General Plan Update could also result in disturbance, degradation, and removal of riparian habitat (potentially up to 2,740 acres), and would result in the conversion of farmland (approximately 10,825 acres) that provides habitat to listed species such as the Swainson's hawk and San Joaquin kit fox. Implementation of the proposed General Plan Update policies and action items (in addition to those identified for water quality impacts in Section 4.9, Hydrology and Water Quality) would limit sensitive habitat impacts. However, implementation of the proposed General Plan Update could still result in the loss of substantial sensitive habitat areas as

well as farmland utilized by state and federally listed species. Given the extent of this potential conversion (approximately 15,415 acres of habitat), this impact is considered **significant and unavoidable**.

Alternative 3 would have reduced impacts in comparison to the proposed General Plan Update given that it would result in less land disturbance in annual grassland areas. However, Alternative 3 would still result in a significant and unavoidable impact.

Impacts to Migratory Corridors (Impact 4.10.4)

Implementation of the proposed General Plan Update policies and action items would ensure that impacts to special-status species are mitigated to ensure viability of the species (which would include consideration of movement needs), and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Conflicts with Conservation or Recovery Plans (Impact 4.10.5)

The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Although the City is within the boundaries of the Recovery Plan for Upland Species of the San Joaquin Valley, the General Plan Update does not conflict with the Recovery Plan. The reader is referred to Impact 4.10.3 for a discussion of potential impacts to sensitive habitats within the Planning Area that are covered by the Recovery Plan for Upland Species of the San Joaquin Valley, California and the U.S Fish and Wildlife Service Draft Vernal Pool Recovery Plan. Thus, **no impact** would occur.

Alternative 3 would result in the same no impact determination as the proposed General Plan Update.

Cumulative Biological Resource Impacts (Impact 4.10.6)

Implementation of the proposed General Plan Update policies and action items would limit sensitive habitat impacts. However, implementation of the proposed General Plan Update could still result in the loss of substantial sensitive habitat areas as well as farmland utilized by state and federally listed species that would add to cumulative loss of such habitat. Given the extent of this potential conversion (approximately 15,415 acres of habitat), this impact is considered **cumulatively considerable and significant and unavoidable**.

Alternative 3 would have reduced impacts in comparison to the proposed General Plan Update given that it would result in less land disturbance in annual grassland areas. However, Alternative 3 would still result in a significant and unavoidable impact.

Cultural and Paleontological Resources

Project and Cumulative Prehistoric and Historic Resource Impacts (Impacts 4.11.1 and 4.11.3)

Cumulative development in the region would result in the loss and/or degradation of cultural resources. These cumulative effects of development on cultural resources would be significant.

As less than 5 percent of the Planning Area has been surveyed for cultural resources, there is the potential for future development to uncover previously undiscovered cultural resources because of the area's historic occupation by Native Americans, Spanish, and other groups of settlers. Buildout of the Planning Area could contribute to the cumulative loss of cultural resources in the region. The proposed General Plan Update contains several policies and action items that would mitigate its contribution to this impact. Thus, this impact is **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Paleontological Resource Impacts (Impacts 4.11.2 and 4.11.4)

A search of the University of California, Berkeley Museum of Paleontology collections database did not identify any paleontological resources within the boundaries of the City of Madera and its Sphere of Influence. The sensitivity of the area for paleontological resources, however, has not been assessed and no formal paleontological investigations were identified for the area. Consequently, implementation of the proposed General Plan Update could impact undiscovered paleontological resources. However, the proposed General Plan Update policies and action items in the Historic and Cultural Resources Element include provisions that would ensure paleontological resources are protected. Thus, this impact is **less than significant**.

Alternative 3 would result in the same less than significant impact as the proposed General Plan Update.

Public Services and Utilities

Project and Cumulative Fire Protection and Emergency Medical Service Impacts (Impacts 4.12.1.1 and 4.12.1.2)

Implementation of the proposed City of Madera General Plan Update would require additional fire-related services and equipment to adequately serve a potential population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030). Continued implementation with City Fire Code provisions and implementation of the policies would ensure that adequate fire protection and emergency medical services are provided. Policies CI-47 and CI-49 specifically require the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels. Policy HS-33 requires that adequate first response capabilities be maintained as the city develops. Therefore, the proposed General Plan Update would not contribute to cumulative fire protection and emergency service impacts, and this impact is considered **less than significant**.

Alternative 3 would result in reduced service demands for fire protection and emergency services, given reduced development potential as compared to the proposed General Plan Update. Alternative 3 would have a less than significant impact.

Project and Cumulative Law Enforcement Impacts (Impacts 4.12.2.1 and 4.12.2.2)

Implementation of the proposed City of Madera General Plan would require additional law enforcement services and equipment to adequately serve a potential population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030). Implementation of policies CI-47 and CI-49 specifically requires the identification and financing of public facilities and that public services and facilities be available

on time to maintain desired service levels. Policy HS-35 requires that adequate first response capabilities be maintained as the city develops. Therefore, the proposed General Plan Update would not contribute to cumulative law enforcement service impacts and this impact is considered **less than significant**.

Alternative 3 would result in reduced service demands for law enforcement services, given reduced development potential as compared to the proposed General Plan Update. Alternative 3 would have a less than significant impact.

Project and Cumulative Water Supply Infrastructure Impacts (Impacts 4.12.3.1 and 4.12.3.2)

Additional water supply production and distribution infrastructure improvements to serve development beyond year 2020 would likely involve groundwater facilities, such as raw water pipelines, water storage tanks, pump facilities, and treatment and distribution facilities. Implementation of the proposed City of Madera General Plan Update would further increase the need for upgraded and expanded water supply infrastructure to adequately serve a potential population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030). Implementation of policies CI-47 and CI-49 specifically requires the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels, while Policy CI-51 and action items CI-51.1 and CI-51.2 would require that water supply and infrastructure be available at the same as development occurs. Therefore, the proposed General Plan Update would not contribute to cumulative water supply infrastructure impacts, and this impact is considered **less than significant**.

Alternative 3 would result in reduced demand for water supply infrastructure given its reduced development potential as compared to the proposed General Plan Update. Alternative 3 would have a less than significant impact.

Project and Cumulative Wastewater Service (Impacts 4.12.4.1 and 4.12.4.2)

Additional wastewater treatment and infrastructure capacity improvements would be needed to serve future development. Buildout of the Planning Area under the proposed General Plan Update would further increase the need for upgraded and expanded wastewater infrastructure to adequately serve a potential population of 263,278 residents and associated nonresidential development which may occur beyond 2030. Implementation of policies CI-47 and CI-49 specifically requires the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels, while Policy CI-55 and action items CI-55.1 and CI-55.2 would require that wastewater treatment and infrastructure capacity be available at the same time as development occurs. Therefore, the proposed General Plan Update would not contribute to cumulative wastewater infrastructure impacts and this impact is considered **less than significant**.

Alternative 3 would result in reduced demand for wastewater service and infrastructure given its reduced development potential as compared to the proposed General Plan Update. Alternative 3 would have a less than significant impact.

Project and Cumulative Solid Waste Service (Impacts 4.12.5.1 and 4.12.5.2)

Subsequent development under the proposed General Plan Update would increase solid waste service demands. At full buildout of the Planning Area (beyond year 2030), the proposed General Plan Update could generate solid waste of up to 387,019 tons per year associated with the population increase, which would place further demands on disposal needs. While the

Fairmead Landfill is anticipated to be closed after the year 2027, other landfills would be available to accept city solid waste. Subsequent development would also be subject to City source reduction programs. Adequate landfill capacity is available to be available under cumulative conditions to meet the needs of the City beyond 2030. Implementation of General Plan Update policies and the associated action item would further assist in solid waste reduction measures. Therefore, the proposed General Plan Update would not contribute to cumulative solid waste impacts, and this impact is considered **less than significant**.

Alternative 3 would generate less solid waste (approximately 371,538 tons per year under Alternative 3 versus 387,019 tons per year under the proposed General Plan Update) as compared to the proposed General Plan Update. Alternative 3 would have a less than significant impact.

Project and Cumulative Public School Facilities (Impacts 4.12.6.1 and 4.12.6.2)

MUSD would need to add new elementary, middle, high, and alternative schools to provide sufficient capacity to accommodate buildout associated with the proposed General Plan Update at and beyond the year 2030. Based on current MUSD generation rates, the district is expected to accommodate approximately 49,109 students under the proposed General Plan Update at buildout. The adoption of all or some combination of Mello-Roos taxes and state funding would mitigate potential cumulative impacts on schools. However, California Government Code Section Sections 65995 (h) and 65996 (b) provide that the payment of school impact fees is considered to provide full and complete school facilities mitigation. The proposed General Plan Update contains goals, policies, and action items that would address potential impacts associated with public services. Those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact are listed under Impact 4.12.6.1. Implementation of General Plan Update policies and the associated action item would further assist in the provision of adequate public school facilities. Therefore, the proposed General Plan Update would not contribute to cumulative public school impacts and this impact is considered **less than significant**.

Alternative 3 would generate less public school service demand (approximately 47,145 students under Alternative 3 versus 49,109 students under the proposed General Plan Update) as compared to the proposed General Plan Update. Alternative 3 would have a less than significant impact.

Project and Cumulative Provision of Electrical, Natural Gas, and Other Infrastructure (Impacts 4.12.7.1 and 4.12.7.2)

The majority of the infrastructure for these services would be collocated and constructed concurrently with other utilities where feasible and be located within roadway and other public rights-of-way to lessen or eliminate potential environmental impacts. PG&E does not currently foresee any issues in servicing growth in the Planning Area. Development under the General Plan Update would be required to comply with recently adopted changes to Title 24 of the California Code of Regulations regarding energy efficiency. These new energy efficiency standards were developed in response to the state's energy crisis as well as AB 970 and SB 5X in regard to improving residential and nonresidential building energy efficiency, minimizing impacts to peak energy usage periods, and reducing impacts on overall state energy needs. While implementation of the General Plan Update would result in growth in the Planning Area and require the expansion of these services, most of the underground and aerial telephone transmission lines are generally collocated with other utilities on poles or in underground trenches and are constructed in public and roadway rights-of-way to reduce visual and aesthetic

impacts and potential safety hazards. Implementation of Policy CI-49 would ensure that adequate public utility services are timed with development, while Action Item CON-37.3 would ensure that City energy use is efficient. Coordination between service providers and subsequent developers would preclude conflicts between utility providers. Therefore, this impact is considered **less than significant**.

Alternative 3 would result in reduced demand for electricity, natural gas, and other infrastructure services given its reduced development potential as compared to the proposed General Plan Update. Alternative 3 would have a less than significant impact.

Project and Cumulative Park and Recreation Impacts (Impacts 4.12.8.1 and 4.12.8.2)

Buildout of the Planning Area under the proposed General Plan Update would contribute to the cumulative demand for regional and local recreational facilities and services. The estimated population in the Planning Area at buildout is anticipated to be 263,278 persons. Based on the standard of 3.0 acres of parkland per 1,000 population, the City would need to have approximately 790 acres of parkland to meet the anticipated demand. Implementation of the General Plan Update policies and associated action items, and compliance with City development impact fees would reduce park and recreation impacts to **less than significant**. Specifically, Policy PR-1 sets a parkland provision standard that would improve the existing ratio of parkland to residents (3.0 acres per 1,000 residents), while policies PR-4 and PR-7 provide standards regarding park and recreation facility types and the timing of park facilities.

Alternative 3 would result in reduced demand for parks and recreation (approximately 758 acres of parkland demand under Alternative 3 versus 790 acres of parkland under the proposed General Plan Update) given its reduced development potential as compared to the proposed General Plan Update. Alternative 3 would have a less than significant impact.

Visual Resources/Light and Glare

Alteration of Scenic Resources (Impact 4.13.1)

Proposed General Plan Update policy provisions assist in minimizing visual impacts related to the conversion of agricultural lands to urban uses by adopting and enforcing development design standards, landscape and façade maintenance programs, building codes, and community standards, as well as by implementing open space preservation techniques, building design standards, and growth boundary programs. The General Plan Update would nevertheless result in a substantial change in visual resources in the Planning Area. There are no feasible mitigation measures available to offset this change in visual resources, as the urban uses proposed under the General Plan are fundamentally different from current farmland uses. Thus, this impact is considered **significant and unavoidable**.

Alternative 3 would result in a similar visual resources impact as compared to the proposed General Plan Update. Alternative 3 would have a significant and unavoidable impact.

Daytime Glare and Nighttime Lighting (Impact 4.13.2)

Implementation of the proposed General Plan Update policies and action items would minimize impacts associated with light and glare through the adoption and enforcement of development design standards, building codes, and community standards, as well as the control of nighttime lighting. Thus, implementation of these provisions would reduce impacts related to daytime glare and nighttime lighting to **less than significant**.

Alternative 3 would result in a similar impact as compared to the proposed General Plan Update. Alternative 3 would have a less than significant impact.

Cumulative Visual Resource Impacts (Impact 4.13.3)

Implementation of proposed policies and action items would reduce the proposed General Plan Update's cumulative impacts on visual resources through the adoption and enforcement of development design standards, landscape and façade maintenance programs, building codes, and community standards, as well as the implementation of open space preservation techniques, building design standards, growth boundary programs, and nighttime lighting controls. However, with implementation of the proposed General Plan, increased development would occur and changes to existing scenic resources would be inevitable. Therefore, this impact is considered **significant and unavoidable**.

Alternative 3 would result in a similar visual resources impact as compared to the proposed General Plan Update. Alternative 3 would have a significant and unavoidable impact.

6.6 ALTERNATIVE 4 – LAND USE MODIFICATION REQUESTS ALTERNATIVE

DESCRIPTION OF ALTERNATIVE

Under this alternative, the proposed City of Madera General Plan Update Land Use Map would be modified to incorporate the land use designation requests shown in **Table 6.0-2**. All other aspects of the proposed General Plan Update would remain the same.

**TABLE 6.0-2
ALTERNATIVE 4 LAND USE MODIFICATION REQUESTS**

Request Number	Name of Person Requesting Change	Assessor's Parcel Number of Affected Property	General Plan Update Designation	Requested General Plan Designation
1	Edward R. Blumberg	003-073-007	Commercial	Medium Density Residential
2	Fagundes Dairy (Dairyland Village)	033-070-002, -003, -004, -005	Village Reserve	Mixed Use (combined residential, commercial/office, light industrial development)
3	Escobar/Morales	029-230-016	Village Reserve	Unspecified Future Residential
4	Berry Construction (Olive Business Park)	Numerous (Olive Business Park)	Industrial, Village Reserve, Low Density Residential, Resource Conservation/Agriculture, Service Commercial	Mixed Use (business park with residential and other uses)
4a	Peter Biscay	Numerous (Portion of Olive Business Park)	Industrial, Village Reserve, Low Density Residential, Resource Conservation/Agriculture, Service Commercial	Agricultural uses
5	Berry Construction (West Cleveland)	033-180-002, -003	Village Reserve, Low Density Residential	Mixed Use (combined residential,

6.0 ALTERNATIVES

Request Number	Name of Person Requesting Change	Assessor's Parcel Number of Affected Property	General Plan Update Designation	Requested General Plan Designation
	Village)		Medium Density Residential, High Density Residential, Village Mixed Use, Open Space	commercial/office, light industrial development)
6	Kevorkian	029-230-011, -012	Village Reserve	Low Density Residential
7	K.S. Romana	038-100-003	Low Density Residential	Neighborhood Commercial
8	Adolph and Charlotte Martinelli	046-030-002	Industrial	Medium Density Residential, Commercial-Mixed Use
9	Madera Auto Center	047-110-014, -016	Village Reserve	Not specified (combined commercial and high density residential development proposed)
10	Ryan Gutile	046-020-008	Industrial	Resource Conservation/Agriculture
13	Emilio & Yesenia Gonzalez	029-230-015	Village Reserve	Unspecified Residential Future
14	Ramon R. and Martha L. Fernandez	029-230-014	Village Reserve	Unspecified Residential Future

ENVIRONMENTAL ANALYSIS

The following analysis is based on the significant environmental impacts identified in Sections 4.1 through 4.13.

Land Use

Land Use Incompatibilities (Impact 4.1.1)

The proposed General Plan Land Use Map was developed with the intent to designate areas for the most appropriate type of land use based on existing land uses, the existing and planned circulation system, and the specific needs of the Madera community, environmental constraints, and other factors. As such, implementation of the proposed Land Use Map would not be expected to result in many significant land use incompatibilities. This impact is identified as **less than significant**.

Alternative 4 land use requests 4 and 8 could conflict with adjoining industrial land uses that would result in a greater land use conflict than the proposed General Plan Update.

Project and Cumulative Consistency Impacts with Relevant Land Use Planning Documents (Impacts 4.1.2 and 4.1.3)

The more intensive land use patterns within the Planning Area under the proposed General Plan Update would contribute to the environmental effects of growth anticipated to occur in the region over the next 30 years. The proposed General Plan provides environmental benefits by accommodating a larger population and employment base within the Planning Area through the intensification of development and provision of transit and opportunities for alternative

transportation. The proposed General Plan Update would also designate more land for open space as compared to the existing County General Plan and would establish a permanent agricultural buffer surrounding the city (see **Table 4.1-4**). This would assist in reducing the conversion of additional land area under lower development intensities and preserve natural and agricultural land. However, the proposed General Plan land use pattern and development intensity would still substantially contribute to the conversion of land in the region to more urban uses through the designation of currently vacant lands for residential, mixed-use, commercial, and industrial development. The significant environmental effects of such conversions are discussed and analyzed in greater detail in the various sections of this Draft EIR that relate specifically to those particular issue areas (see Section 4.2 through 4.13). This impact is identified as **significant and unavoidable**.

Alternative 4 would result in the same significant and unavoidable impact as the proposed General Plan Update.

Agricultural Resources

Project and Cumulative Loss and Conversion of Agricultural Lands (Impacts 4.2.1 and 4.2.4)

Within the city limits, implementation of the proposed General Plan Update Land Use Map would result in the conversion of approximately 1,682 acres of important farmland, including 878 acres of Prime Farmland, 292 acres of Farmland of Statewide Importance, and 156 acres of Unique Farmland. In addition to this loss, implementation of the proposed General Plan Update Land Use Map would result in the conversion of approximately 11,503 acres falling outside of the city limits, within the Growth Boundary. Of the 11,503 acres, 5,347 acres are Prime Farmland, 1,664 acres are Farmlands of Statewide Importance, and 2,997 acres are Unique Farmlands. This impact is identified as **significant and unavoidable**.

Alternative 4 would also result in a similar loss of loss of important farmlands as the proposed General Plan Update. Alternative 4 would have a significant and unavoidable impact.

Agricultural/Urban Interface Conflicts (Impact 4.2.2)

Implementation of the proposed City of Madera General Plan Update Land Use Map would place urbanized land uses adjacent to agricultural uses and would replace existing agricultural uses. It is anticipated that as the city builds out, new agriculture/urban interface conflicts may occur, although the establishment of the agricultural buffer associated with the Planning Area would help alleviate some of the agriculture/urban interface conflicts. This impact is identified as **significant and unavoidable**.

Alternative 4 would also result in the same interface conflict impact as the proposed General Plan Update. Alternative 4 would have a significant and unavoidable impact.

Agricultural Zoned Lands and Williamson Act Contract Conflicts (Impact 4.2.3)

There are approximately 39 acres within the existing city limits under a Williamson Act contract and in non-renewal status. This area is Prime Farmland and Farmland of Statewide Importance and is designated for industrial development in the proposed General Plan Update. Outside of the city limits and within the Planning Area (within the Growth Boundary), there are approximately 3,908 acres under Williamson Act contracts as well as lands currently designated and zoned for agricultural uses by the County that will be converted to urban uses from

implementation of the proposed General Plan Update Land Use Map. This impact is identified as **significant and unavoidable**.

Alternative 4 would also result in a similar loss of agricultural zoned lands and Williamson Act contract lands and would still be considered significant and unavoidable.

Population/Housing/Employment

Project and Cumulative Population, Housing and Employment Increases (Impacts 4.3.1 and 4.3.3)

Development under the proposed General Plan Update would lead to an increase in population and employment. Development and growth in the city, as a result of the implementation of the proposed General Plan Update, would contribute to cumulative population and housing conditions in the unincorporated areas of Madera County, as well as in surrounding cities and counties. This impact is identified as **significant and unavoidable**.

Alternative 4 would result in a similar increase in population and employment that would also result in physical effects to the environment as the proposed General Plan Update. Alternative 4 would have a significant and unavoidable impact.

Displacement of Substantial Persons or Housing (Impact 4.3.2)

Implementation of the proposed General Plan Update would not, in and of itself, displace substantial numbers of housing units or people nor does it propose substantial redesignations of residential areas to land uses that would require relocation of residents. State and federal law require due compensation for persons required to relocate as a result of redevelopment projects carried out by the City or any projects that use federal or state funding. Any private development that may occur would pay the fair market price for any land/housing acquired as a result of project development. Therefore, although some isolated displacement of persons or housing may result, due compensation offsets any cost-related effects. Therefore, impacts related to a substantial displacement of housing units or people as a result of implementation of the proposed General Plan Update are **less than significant**.

Alternative 4 would also not result in the substantial displacement of persons or housing similar to the proposed General Plan Update.

Hazards and Human Health

Routine Transport of Hazardous Materials (Impact 4.4.1)

The use, storage, and transport of hazardous materials by developers, contractors, business owners, and others are required to be in compliance with local, state, and federal regulations during project construction and operation. Facilities that use hazardous materials are required to obtain permits and comply with appropriate regulatory agency standards and regulations designed to avoid hazardous material releases. All existing and future development in the unincorporated city would be required to comply with federal, state, and local regulations regarding the handling and transportation of hazardous materials. Therefore this impact would be **less than significant** for the proposed General Plan Update.

Alternative 4 would result in a similar less than significant impact as the proposed General Plan Update.

Release and Exposure to Hazardous Materials (Impact 4.4.2)

Implementation of the proposed General Plan policies would require that hazardous materials and wastes are handled consistent with state and federal laws associated with public and worker safety, require that adequate buffers and boundaries are provided to protect the public from industries that utilize hazardous materials, ensure that reasonably foreseeable hazards are adequately addressed, and address and coordinate cleanup efforts of contaminated sites. Thus implementation of these provisions would reduce this impact to **less than significant**.

Alternative 4 would result in a similar less than significant impact as the proposed General Plan Update. However, land use modification requests associated with 4 and 8 could cause conflicts and limit adjacent industrial operations.

Airport Operations (Impact 4.4.3)

Adherence to federal regulations and Comprehensive Land Use Plan regulations and implementation of the proposed General Plan policies would ensure that new development is designed to provide for public safety from airport operations. Thus, this impact is **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Interference with an Adopted Emergency Response or Evacuation Plan (Impact 4.4.4)

Implementation of the General Plan will add additional traffic and residences requiring evacuation in case of an emergency. Implementation of the proposed roadway system under the proposed General Plan Update would provide for a "modified grid" roadway system, particularly for new development, and encourage pedestrian circulation access around the city and at the neighborhood level through the design of roadways and pedestrian facilities. Implementation of the proposed roadway system within the General Plan Update would improve city roadway connectivity, allowing for better emergency vehicle access to residences as well as evacuation routes for area residents (see **Figure 3.0-5**). Thus, this impact is **less than significant**.

Alternative 4 would have the same less than significant impact as the proposed General Plan Update.

Cumulative Hazards and Health Impacts (Impact 4.4.5)

Development associated with the proposed General Plan Update and future development in the proposed annexation areas could result in increased hazard related impacts; however, these impacts would be specific to individual sites in the Planning Area and are not tied to any regional (beyond the Planning Area) hazard or contamination issues (the reader is referred to Section 4.6, Air Quality, regarding regional public health issues associated with air pollutants and toxic air contaminants). Proposed General Plan policy provisions and mitigation measures identified under Impacts 4.4.1 through 4.4.4 would assist in reducing the impacts. Federal, state, and local regulations would determine appropriate land uses within the vicinity of the airport in the Planning Area. Anticipated development projects (e.g., residential, commercial, park, and recreational land uses) that would occur under the proposed General Plan Update would also include, but not be limited to, public and utility extension projects, roadway widenings and extensions, intersection improvements, water system distribution improvements, and trail

extensions. These proposed land use activities would not significantly increase human health or safety risks. Thus, this impact is **less than significant**.

Alternative 4 would have a similar less than significant impact as the proposed General Plan Update regarding cumulative hazard impacts.

Transportation and Circulation

Project and Cumulative Roadway Segment and Freeway Impacts (Impacts 4.5.1, 4.5.2, and 4.5.7)

Implementation of the proposed General Plan Update would provide service levels consistent with the City's LOS "C" standard with few exceptions. The proposed General Plan would result in LOS F within the General Plan planning horizon of 2030 on Madera Avenue (SR 145) – Almond Avenue to SR 99, Avenue 17 – Road 23 to SR 99, and all freeway segments in the Planning Area. With full buildout of the Planning Area and regional growth in traffic, these impacts are anticipated to worsen. This impact is identified as **significant and unavoidable**.

Alternative 4 would result in similar traffic impacts as the proposed General Plan Update. Alternative 4 would have a significant and unavoidable impact.

Roadway Safety and Emergency Access (Impact 4.5.3)

As implementation of the proposed roadway system within the General Plan Update would improve city roadway connectivity, allowing for better emergency vehicle access to residences as well as evacuation routes for area residents, this impact is considered **less than significant**. Policies and action items specifically address the prioritization of improvement of roadways with safety issues (Policy CI-8) and driveway and left-turn design provisions (Policy CI-17 and CI-18). In addition, construction of facilities to City design standards would also result in the provision of facilities without unacceptable safety conflicts.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Transit System (Impact 4.5.4)

As implementation of the General Plan Update would not conflict with transit services and would promote transit use, this impact is considered **less than significant**. Policies and action items specifically address the provision of transit connections with new development areas (Policy CI-29) and street design provisions (policies CI-32 and CI-42).

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Bicycle and Pedestrian System (Impact 4.5.5)

As implementation of the General Plan Update would improve bicycle and pedestrian facilities, this impact is considered **less than significant**. Policies and action items specifically address the provision of bicycle and pedestrian connections with new development areas (Policy CI-29) and street design provisions (policies CI-32 and CI-42).

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

At-Grade Railway Conflicts (Impact 4.5.6)

The proposed General Plan Update policies HS-29 and HS-30 would require safety improvements at railroad-at-grade crossings and commits the City to ensuring that the crossings are safe. Thus, this impact is **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Air Quality

Construction Emissions (Impact 4.6.1)

Construction emissions of PM₁₀ under the proposed General Plan Update can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. **Table 4.6-5** illustrates a profile of construction-related emissions from a hypothetical one-acre development site with moderate grading and construction activities. SJVAPCD's approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions. SJVAPCD has identified a set of feasible PM₁₀ control measures for construction activities. Implementation of the control measures required by SJVAPCD under Regulation VIII constitutes sufficient mitigation to reduce PM₁₀ impacts to a level considered **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Odor and Toxic Emissions (Impact 4.6.2)

SJVAPCD requirements (e.g., Rule 4102), implementation of AB 2588, and proposed General Plan Update policies CON-26 and CON-27 (placement of sensitive receptors in relation to air pollutant sources) would ensure that sensitive receptors are not exposed to inappropriate levels of TACs or odors. Thus, this impact is **less than significant**.

Alternative 4 would result in a similar less than significant impact as the proposed General Plan Update. However, land use modification requests associated with 4 and 8 could cause conflicts and limit adjacent industrial operations.

Elevated CO Emissions (Impact 4.6.3)

SJVAPCD has established a preliminary screening protocol that can be used to determine with fair certainty whether the proposed General Plan would potentially cause a future CO exceedance of federal standards. The Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas (April 1996) demonstrated that the SJVAB was in compliance with the NAAQS for carbon monoxide and requested redesignation to attainment status. This plan was approved by EPA on June 1, 1998. As shown in **Table 4.6-3**, monitoring station data has not identified any exceedance of state or federal CO standards. Thus, this impact is **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Criteria Pollution Increases and Attainment Conflict (Impacts 4.6.4 and 4.6.5)

Subsequent development under the proposed General Plan Update would exceed growth projections used in regional air quality planning and attainment efforts for particulate matter and ozone under year 2030 conditions (see **Table 4.6-11**). Buildout of the Planning Area would generate additional emissions beyond 2030 and could further conflict with attainment efforts. This impact is identified as **significant and unavoidable**.

Alternative 4 would result in similar air pollutant emissions as the proposed General Plan Update. Alternative 4 would have a significant and unavoidable impact.

Greenhouse Gas Emissions and Climate Change (Impact 4.6.6)

CO₂e emissions associated with growth in the Planning Area under the proposed General Plan Update are projected to increase from 2008 to 2030. **Table 4.6-12** illustrates that most of these increases are likely to come from increases in housing associated with the city's population growth. It should be noted that the emission estimates provided in **Table 4.6-12** consist of major emission sources and do not include emission sources in the Planning Area (e.g., agricultural operations, emissions from electrical generation by Pacific Gas & Electric Company, airport operations). These increases would increase the carbon footprint of Madera in 2030. Stationary and mobile source emissions would further increase under buildout conditions (post 2030). In addition, the Planning Area could be impacted by environmental impacts of climate change (water supply shortages, increased flooding, impacts to agricultural operations, biological resource impacts, air quality, and electricity generation). This impact is identified as **significant and unavoidable**.

Alternative 4 would generate similar greenhouse gas emissions as the proposed General Plan Update. Alternative 4 would have a significant and unavoidable impact.

Consistency with Greenhouse Gas Reduction Measures (Impact 4.6.7)

Implementation of the proposed General Plan Update would implement a number of policies that would complement and be consistent with the current implementation and strategies for AB 32 and Executive Order S-3-05 as well as current efforts by SJVAPCD under its Climate Change Action Plan. These policy provisions are provided under the proposed Circulation Element (see Action Item CI-1.2 and policies and action items CI-28 through CI-39) and the proposed Conservation Element (see policies and action items CON-33 through CON-39). In addition, the General Plan Update proposed urban growth boundary, in conjunction with the establishment of an average residential density that is higher for new development than existing residential development, as well as compact development form that will encourage pedestrian, bicycle and transit use, are also features of the proposed General Plan Update that are intended to minimize greenhouse gas emissions. This impact is identified as **less than cumulatively considerable**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Noise

Construction Noise Impacts (Impact 4.7.1)

With continued compliance with the City's Municipal Code limiting construction activities to the hours of 6 a.m. to 8 p.m., and with the proposed policies in the Noise Element of the General Plan Update which impose quantitative limits on noise generation and standards for mitigation, this impact would be considered **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Transportation Noise Impacts (Impacts 4.7.2, 4.7.3, and 4.7.7)

Projected future (year 2030) noise contours for major roadways within the city and predicted increases in traffic noise levels associated with future development are summarized in **Table 4.7-7** and **Table 4.7-8**, respectively (refer to Impact 4.7-2). Projected noise contours for major transportation noise sources are depicted in **Figure 4.7-6**. Buildout of the Planning Area as set forth in the proposed General Plan Update would result in additional traffic along these roadways and result in increased noise. This impact would be **significant and unavoidable**.

Alternative 4 would result in similar traffic noise impacts as compared to the proposed General Plan Update. Alternative 4 would have a significant and unavoidable impact.

Airport Noise Impacts (Impact 4.7.4)

Implementation of the applicable policies and standards contained in the City's proposed General Plan Update would ensure that future development near Madera Municipal Airport would either meet applicable noise criteria for land use compatibility and/or include noise attenuation features to meet applicable noise standards. Accordingly, proposed future development projects located within air traffic patterns, corridors, and airport influence zones would be reviewed to ensure continued consistency with the Madera County Airport Land Use Compatibility Plan. With incorporation of the proposed General Plan policies, this impact would be considered **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Stationary Noise Impacts (Impacts 4.7.5 and 4.7.7)

Implementation of the proposed General Plan Update policies and actions would reduce noise associated with new stationary noise sources and the placement of new noise-sensitive land uses over which the City has jurisdiction (e.g., commercial and industrial sites, residential uses). However, some stationary noise impacts cannot be mitigated to a less than significant level due to limitations on the City to control the exact placement of substantial noise-generating uses (e.g., school facilities) in proximity to noise-sensitive land uses (e.g., residential). Accordingly, stationary source noise levels from activities on uses for which the City has limited control could result in noise levels that exceed the City's maximum allowable noise standards. Thus, this impact is considered **significant and unavoidable**.

Alternative 4 would result in the same significant and unavoidable impact as the proposed General Plan Update.

Geology and Soils

Seismic Events (Impact 4.8.1)

Adherence to the Uniform Building Code and the California Building Code would reduce to a minimum the exposure of people and structures to potential substantial adverse effects. Thus, this impact is considered **less than significant** for the proposed General Plan Update.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Soil Erosion (Impact 4.8.2)

The City is subject to the NPDES Permit for stormwater quality that involves the implementation of the SQIP that calls for the use of BMPs to mitigate potential soil erosion impacts. In addition, development in the city would be subject to the NPDES General Construction Storm Water Permit. Project applicants are required to prepare and comply with a Storm Water Pollution Prevention Plan that specifies best management practices to avoid soil erosion and associated pollution of waterways and are also required to report any water pollution and remediate the pollution occurrence. The proposed General Plan Update policies would involve further implementation of these water quality protection requirements. As result, this impact is **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Expansive and Unstable Soils (Impact 4.8.3)

Compliance with CBC regulations ensures the adequate design and construction of building foundations to resist soil movement associated with subsequent development under the proposed General Plan Update. In addition, the CBC also contains drainage-related requirements in order to control surface drainage and reduce seasonal fluctuations in soil moisture content. In addition, implementation of Policy HS-8, as well as mitigation measure MM 4.8.3, would reduce the impacts of expansive soils to **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Septic System Operation (Impact 4.8.4)

The impacts associated with the soil suitability for septic systems can be reduced or avoided through proper site inspection and project monitoring and maintenance on a project-by-project basis as well as through compliance with Madera County septic system design requirements. Site inspection should include percolation testing to determine soil suitability. When soil suitability is identified, septic systems should be designed accordingly. When appropriate field-testing is conducted and current system location and design standards are used combined with post construction monitoring and maintenance, the potential adverse impacts to septic suitability of soils can be reduced to acceptable levels. Urban development associated with the proposed General Plan Update would connect to the City's wastewater system, while rural development may involve the use of a septic system. Thus, this impact would be **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Cumulative Geologic Impacts (Impact 4.8.5)

Implementation of the proposed General Plan Update, along with potential development in the Planning Area as well as continued development within Madera County, would result in cumulative soil erosion and other geologic impacts. Compliance with the City's NPDES permit would reduce the City's contribution to cumulative soil erosion impacts. Development projects are analyzed on an individual basis and must comply with established requirements of the City and the UBC as they pertain to protection against known geologic hazards and potential geologic and expansive soil related impacts. There are no known active faults in the Planning Area, there is a low incidence of historical geologic activity in the vicinity, and there is no contribution with other regional geologic impacts. Therefore, the proposed General Plan Update's contribution to cumulative geology-related impacts is considered **less than cumulatively considerable**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Hydrology and Water Quality

Construction, Operation and Cumulative Water Quality Impacts (Impacts 4.9.1, 4.9.2, 4.9.3, and 4.9.7)

Continued compliance with applicable SWRCB statewide water quality permits and the City's Storm Water Quality Management Program would minimize the pollutant load of storm drainage within the Planning Area from development and buildout. Implementation of General Plan Update policies (see Impacts 4.9.1, 4.9.2, and 4.9.3) would further protect surface and groundwater quality and mitigate the City's contribution to this impact by protecting natural streams and drainages, reducing potential sources of pollutants, and requiring the use of landscaping and other BMPs to prevent pollutants from entering surface and groundwater resources. As such, the City's contribution to cumulative water quality impacts is considered a **less than significant** impact.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Flooding Hazards (Impacts 4.9.4 and 4.9.8)

As described under Impact 4.9.4, continued maintenance and expansion of the City's municipal storm drain system, review of drainage plans for future development projects, participation in the NFIP, and implementation of the additional measures required by the General Plan policies listed under Impact 4.9.4 would reduce the City's contribution to potential flood hazard impacts within the Planning Area to a less than significant level. Therefore, the proposed General Plan would not contribute to regional flood impacts within the larger San Joaquin River watershed and this impact is considered **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Dam Failure (Impact 4.9.5)

Failure of the Hidden Dam could potentially result in the inundation of properties within the city and other portions of the Planning Area under the proposed General Plan Update. However, such an event has an extremely low probability of occurring and is not considered to be a reasonably foreseeable event. The dam is regularly inspected and maintained by the U.S. Army Corp of Engineers, and repairs and improvements are completed as necessary. In addition, dams are regulated by the California Department of Water Resources, Division of Safety of Dams and are routinely inspected during their impoundment life, which includes monitoring for compliance with seismic stability standards. As such, this impact is considered to be **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Groundwater Supply Impacts (Impacts 4.9.6 and 4.9.9)

Buildout of the Planning Area, which would occur sometime after 2030, would result in an ultimate city population of about 263,278 (206,572 new residents). Based on the city's per capita water demand rate of 280 gpcd, at buildout the city would have a total water demand of approximately 82,575 acre-feet per year. Other areas served by groundwater supplies from the Madera Subbasin are also projected to grow, resulting in greater demands for groundwater supplies. Cumulative agricultural and urban growth within the greater San Joaquin Valley Groundwater Basin would result in a cumulatively considerable impact on the Madera Subbasin as the overall demand for water increases. Additionally, the construction and operation of new water supply projects could have significant impacts on the environment related to hydrology, wildlife habitat, soils, air quality, noise, traffic, and other issues. As determined in Impact 4.9.6, implementation of the proposed General Plan Update would significantly contribute to this cumulative impact regardless of the City's current and planned water conservation policies and programs and the proposed General Plan policies listed under Impact 4.9.6. This impact is considered **significant and unavoidable**.

Alternative 4 would result in similar groundwater and water supply impact as the proposed General Plan Update. Alternative 4 would have a significant and unavoidable impact.

Biological Resources

Impacts to Special-Status Species (Impact 4.10.1)

Development under the proposed General Plan Update could potentially cause direct and indirect impacts to approximately 15,628 acres of ruderal habitat (vacant), agricultural land, annual grasslands, wetlands/open waters, and riverine/riparian habitat that may serve as occupied or potential habitat for listed species. As the final design and extent of future development is not currently known, the acreages listed in **Table 4.10-5** represent the maximum area that could be directly affected. Implementation of the policies and action items in the proposed General Plan Update would ensure that impacts to special-status species are identified and mitigated to ensure viability of the species, and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Alternative 4 would have the same less than significant impact as the proposed General Plan Update.

Impacts to Species of Concern and Other Non-Listed Special-Status Species (Impact 4.10.2)

Suitable habitat exists in the Planning Area for unlisted but nonetheless special-status species. These species are designated as a species of concern by the USFWS or the CDFG, and/or listed in the CNPS's online inventory as List 2. Direct impacts to these species would occur for the same reasons and in the same manner as direct and indirect impacts to listed species as identified and discussed in Impact 4.10.1. See **Table 4.10.4**, as well as **Table 4.10-6**, for information on the acreages of suitable habitat that would be affected by implementation of the proposed General Plan Update. Implementation of the policies and action items in the proposed General Plan Update would ensure that impacts to special-status species are identified and mitigated to ensure viability of the species, and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Alternative 4 would have the same less than significant impact as the proposed General Plan Update.

Impacts to Sensitive Habitats (Impact 4.10.3)

Implementation of the proposed General Plan Update could result in disturbance, degradation, and removal of up to 1,850 acres of annual grassland habitat which has a high potential to support vernal pools, a CDFG sensitive habitat. Vernal pools require the surrounding upland habitat to maintain their habitat value and function. Approximately 74 acres of wetland and open water habitat would also be in direct conflict with the proposed land use designation (i.e. industrial, residential and other built environment) (see **Table 4.10-4**). Implementation of the General Plan Update could also result in disturbance, degradation, and removal of riparian habitat (potentially up to 2,740 acres), and would result in the conversion of farmland (approximately 10,825 acres) that provides habitat to listed species such as the Swainson's hawk and San Joaquin kit fox. Implementation of the proposed General Plan Update policies and action items (in addition to those identified for water quality impacts in Section 4.9, Hydrology and Water Quality) would limit sensitive habitat impacts. However, implementation of the proposed General Plan Update could still result in the loss of substantial sensitive habitat areas as well as farmland utilized by state and federally listed species. Given the extent of this potential conversion (approximately 15,415 acres of habitat), this impact is considered **significant and unavoidable**.

Alternative 4 would have the same impact as the proposed General Plan Update. Alternative 4 would have a significant and unavoidable impact.

Impacts to Migratory Corridors (Impact 4.10.4)

Implementation of the proposed General Plan Update policies and action items would ensure that impacts to special-status species are mitigated to ensure viability of the species (which would include consideration of movement needs), and ensure that habitat areas are avoided or mitigated if avoidance is determined to be infeasible. As such, this impact is considered **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Conflicts with Conservation or Recovery Plans (Impact 4.10.5)

The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Although the City is within the boundaries of the Recovery Plan for Upland Species of the San Joaquin Valley, the General Plan Update does not conflict with the Recovery Plan. The reader is referred to Impact 4.10.3 for a discussion of potential impacts to sensitive habitats within the Planning Area that are covered by the Recovery Plan for Upland Species of the San Joaquin Valley, California and the U.S Fish and Wildlife Service Draft Vernal Pool Recovery Plan. Thus, **no impact** would occur.

Alternative 4 would result in the same no impact determination as the proposed General Plan Update.

Cumulative Biological Resource Impacts (Impact 4.10.6)

Implementation of the proposed General Plan Update policies and action items would limit sensitive habitat impacts. However, implementation of the proposed General Plan Update could still result in the loss of substantial sensitive habitat areas as well as farmland utilized by state and federally listed species that would add to cumulative loss of such habitat. Given the extent of this potential conversion (approximately 15,415 acres of habitat), this impact is considered **cumulatively considerable** and **significant and unavoidable**.

Alternative 4 would have the same impact as the proposed General Plan Update. Alternative 4 would have a significant and unavoidable impact.

Cultural and Paleontological Resources

Project and Cumulative Prehistoric and Historic Resource Impacts (Impacts 4.11.1 and 4.11.3)

Cumulative development in the region would result in the loss and/or degradation of cultural resources. These cumulative effects of development on cultural resources would be significant. As less than 5 percent of the Planning Area has been surveyed for cultural resources, there is the potential for future development to uncover previously undiscovered cultural resources because of the area's historic occupation by Native Americans, Spanish, and other groups of settlers. Buildout of the Planning Area could contribute to the cumulative loss of cultural resources in the region. The proposed General Plan Update contains several policies and action items that would mitigate its contribution to this impact. Thus, this impact is **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Project and Cumulative Paleontological Resource Impacts (Impacts 4.11.2 and 4.11.4)

A search of the University of California, Berkeley Museum of Paleontology collections database did not identify any paleontological resources within the boundaries of the City of Madera and its Sphere of Influence. The sensitivity of the area for paleontological resources, however, has not been assessed and no formal paleontological investigations were identified for the area. Consequently, implementation of the proposed General Plan Update could impact undiscovered paleontological resources. However, the proposed General Plan Update policies and action items in the Historic and Cultural Resources Element include provisions that would ensure paleontological resources are protected. Thus, this impact is **less than significant**.

Alternative 4 would result in the same less than significant impact as the proposed General Plan Update.

Public Services and Utilities

Project and Cumulative Fire Protection and Emergency Medical Service Impacts (Impacts 4.12.1.1 and 4.12.1.2)

Implementation of the proposed City of Madera General Plan Update would require additional fire-related services and equipment to adequately serve a potential population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030). Continued implementation with City Fire Code provisions and implementation of the policies would ensure that adequate fire protection and emergency medical services are provided. Policies CI-47 and CI-49 specifically require the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels. Policy HS-33 requires that adequate first response capabilities be maintained as the city develops. Therefore, the proposed General Plan Update would not contribute to cumulative fire protection and emergency service impacts, and this impact is considered **less than significant**.

Alternative 4 would result in similar service demands for fire protection and emergency services as compared to the proposed General Plan Update. Alternative 4 would have a less than significant impact.

Project and Cumulative Law Enforcement Impacts (Impacts 4.12.2.1 and 4.12.2.2)

Implementation of the proposed City of Madera General Plan would require additional law enforcement services and equipment to adequately serve a potential population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030). Implementation of policies CI-47 and CI-49 specifically requires the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels. Policy HS-35 requires that adequate first response capabilities be maintained as the city develops. Therefore, the proposed General Plan Update would not contribute to cumulative law enforcement service impacts and this impact is considered **less than significant**.

Alternative 4 would result in similar service demands for law enforcement services as compared to the proposed General Plan Update. Alternative 4 would have a less than significant impact.

Project and Cumulative Water Supply Infrastructure Impacts (Impacts 4.12.3.1 and 4.12.3.2)

Additional water supply production and distribution infrastructure improvements to serve development beyond year 2020 would likely involve groundwater facilities, such as raw water pipelines, water storage tanks, pump facilities, and treatment and distribution facilities. Implementation of the proposed City of Madera General Plan Update would further increase the need for upgraded and expanded water supply infrastructure to adequately serve a potential population of 263,278 residents and associated nonresidential development in the Planning Area at buildout (anticipated beyond 2030). Implementation of policies CI-47 and CI-49 specifically requires the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels, while Policy CI-51 and action items CI-51.1 and CI-51.2 would require that water supply and infrastructure be available at the same as development occurs. Therefore, the proposed General Plan Update

would not contribute to cumulative water supply infrastructure impacts, and this impact is considered **less than significant**.

Alternative 4 would result in similar demand for water supply infrastructure as compared to the proposed General Plan Update. Alternative 4 would have a less than significant impact.

Project and Cumulative Wastewater Service (Impacts 4.12.4.1 and 4.12.4.2)

Additional wastewater treatment and infrastructure capacity improvements would be needed to serve future development. Buildout of the Planning Area under the proposed General Plan Update would further increase the need for upgraded and expanded wastewater infrastructure to adequately serve a potential population of 263,278 residents and associated nonresidential development which may occur beyond 2030. Implementation of policies CI-47 and CI-49 specifically requires the identification and financing of public facilities and that public services and facilities be available on time to maintain desired service levels, while Policy CI-55 and action items CI-55.1 and CI-55.2 would require that wastewater treatment and infrastructure capacity be available at the same time as development occurs. Therefore, the proposed General Plan Update would not contribute to cumulative wastewater infrastructure impacts and this impact is considered **less than significant**.

Alternative 4 would result in similar demand for wastewater service as compared to the proposed General Plan Update. Alternative 4 would have a less than significant impact.

Project and Cumulative Solid Waste Service (Impacts 4.12.5.1 and 4.12.5.2)

Subsequent development under the proposed General Plan Update would increase solid waste service demands. At full buildout of the Planning Area (beyond year 2030), the proposed General Plan Update could generate solid waste of up to 387,019 tons per year associated with the population increase, which would place further demands on disposal needs. While the Fairmead Landfill is anticipated to be closed after the year 2027, other landfills would be available to accept city solid waste. Subsequent development would also be subject to City source reduction programs. Adequate landfill capacity is available to be available under cumulative conditions to meet the needs of the City beyond 2030. Implementation of General Plan Update policies and the associated action item would further assist in solid waste reduction measures. Therefore, the proposed General Plan Update would not contribute to cumulative solid waste impacts, and this impact is considered **less than significant**.

Alternative 4 would have similar solid waste generation impacts as compared to the proposed General Plan Update. Alternative 4 would have a less than significant impact.

Project and Cumulative Public School Facilities (Impacts 4.12.6.1 and 4.12.6.2)

MUSD would need to add new elementary, middle, high, and alternative schools to provide sufficient capacity to accommodate buildout associated with the proposed General Plan Update at and beyond the year 2030. Based on current MUSD generation rates, the district is expected to accommodate approximately 49,109 students under the proposed General Plan Update at buildout. The adoption of all or some combination of Mello-Roos taxes and state funding would mitigate potential cumulative impacts on schools. However, California Government Code Section Sections 65995 (h) and 65996 (b) provide that the payment of school impact fees is considered to provide full and complete school facilities mitigation. The proposed General Plan Update contains goals, policies, and action items that would address potential impacts associated with public services. Those policies and action items that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that

address this impact are listed under Impact 4.12.6.1. Implementation of General Plan Update policies and the associated action item would further assist in the provision of adequate public school facilities. Therefore, the proposed General Plan Update would not contribute to cumulative public school impacts and this impact is considered **less than significant**.

Alternative 4 would generate similar public school service demands as compared to the proposed General Plan Update. Alternative 4 would have a less than significant impact.

Project and Cumulative Provision of Electrical, Natural Gas, and Other Infrastructure (Impacts 4.12.7.1 and 4.12.7.2)

The majority of the infrastructure for these services would be collocated and constructed concurrently with other utilities where feasible and be located within roadway and other public rights-of-way to lessen or eliminate potential environmental impacts. PG&E does not currently foresee any issues in servicing growth in the Planning Area. Development under the General Plan Update would be required to comply with recently adopted changes to Title 24 of the California Code of Regulations regarding energy efficiency. These new energy efficiency standards were developed in response to the state's energy crisis as well as AB 970 and SB 5X in regard to improving residential and nonresidential building energy efficiency, minimizing impacts to peak energy usage periods, and reducing impacts on overall state energy needs. While implementation of the General Plan Update would result in growth in the Planning Area and require the expansion of these services, most of the underground and aerial telephone transmission lines are generally collocated with other utilities on poles or in underground trenches and are constructed in public and roadway rights-of-way to reduce visual and aesthetic impacts and potential safety hazards. Implementation of Policy CI-49 would ensure that adequate public utility services are timed with development, while Action Item CON-37.3 would ensure that City energy use is efficient. Coordination between service providers and subsequent developers would preclude conflicts between utility providers. Therefore, this impact is considered **less than significant**.

Alternative 4 would generate similar demand for electricity, natural gas and other infrastructure services as compared to the proposed General Plan Update. Alternative 4 would have a less than significant impact.

Project and Cumulative Park and Recreation Impacts (Impacts 4.12.8.1 and 4.12.8.2)

Buildout of the Planning Area under the proposed General Plan Update would contribute to the cumulative demand for regional and local recreational facilities and services. The estimated population in the Planning Area at buildout is anticipated to be 263,278 persons. Based on the standard of 3.0 acres of parkland per 1,000 population, the City would need to have approximately 790 acres of parkland to meet the anticipated demand. Implementation of the General Plan Update policies and associated action items, and compliance with City development impact fees would reduce park and recreation impacts to **less than significant**. Specifically, Policy PR-1 sets a parkland provision standard that would improve the existing ratio of parkland to residents (3.0 acres per 1,000 residents), while policies PR-4 and PR-7 provide standards regarding park and recreation facility types and the timing of park facilities.

Alternative 4 would result in similar demand for parks and recreation as compared to the proposed General Plan Update. Alternative 4 would have a less than significant impact.

Visual Resources/Light and Glare

Alteration of Scenic Resources (Impact 4.13.1)

Proposed General Plan Update policy provisions assist in minimizing visual impacts related to the conversion of agricultural lands to urban uses by adopting and enforcing development design standards, landscape and façade maintenance programs, building codes, and community standards, as well as by implementing open space preservation techniques, building design standards, and growth boundary programs. The General Plan Update would nevertheless result in a substantial change in visual resources in the Planning Area. There are no feasible mitigation measures available to offset this change in visual resources, as the urban uses proposed under the General Plan are fundamentally different from current farmland uses. Thus, this impact is considered **significant and unavoidable**.

Alternative 4 would result in similar visual resources impact as compared to the proposed General Plan Update. Alternative 4 would have a significant and unavoidable impact.

Daytime Glare and Nighttime Lighting (Impact 4.13.2)

Implementation of the proposed General Plan Update policies and action items would minimize impacts associated with light and glare through the adoption and enforcement of development design standards, building codes, and community standards, as well as the control of nighttime lighting. Thus, implementation of these provisions would reduce impacts related to daytime glare and nighttime lighting to **less than significant**.

Alternative 4 would result in similar impact as compared to the proposed General Plan Update. Alternative 4 would have a less than significant impact.

Cumulative Visual Resource Impacts (Impact 4.13.3)

Implementation of proposed policies and action items would reduce the proposed General Plan Update's cumulative impacts on visual resources through the adoption and enforcement of development design standards, landscape and façade maintenance programs, building codes, and community standards, as well as the implementation of open space preservation techniques, building design standards, growth boundary programs, and nighttime lighting controls. However, with implementation of the proposed General Plan, increased development would occur and changes to existing scenic resources would be inevitable. Therefore, this impact is considered **significant and unavoidable**.

Alternative 4 would result in similar visual resources impact as compared to the proposed General Plan Update. Alternative 4 would have a significant and unavoidable impact.

6.7 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. State CEQA Guidelines Section 15126(d)(2) states that if the environmentally superior alternative is the no project alternative, the EIR shall also identify an environmentally superior alternative from among the other alternatives.

Table 6.0-3 provides a summary of the potential impacts of the alternatives evaluated in this section, as compared with the potential impacts of the proposed General Plan Update. The impact significance is identified for each alternative as well as the ranking of the impact as compared to the proposed General Plan Update. A “B” ranking means that the alternative would either avoid or less the identified environmental impacts of the proposed General Plan Update, while a “W” ranking means the alternative would result in a greater impact. The “S” ranking identifies where the alternative has a similar impact as the proposed General Plan Update. Based upon the evaluation described in this section, Alternative 2 would be the environmentally superior alternative.

TABLE 6.0-3
SUMMARY COMPARISON OF ALTERNATIVES

Environmental Impacts	Proposed General Plan Update	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Land Use					
Land Use Incompatibilities (Impact 4.1.1)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	W
Project and Cumulative Consistency Impacts with Relevant Land Use Planning Documents (Impact 4.1.2 and 4.1.3)	Significant and Unavoidable	Less Than Significant	Less Than Significant	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	S	S
Agricultural Resources					
Project and Cumulative Loss and Conversion of Agricultural Lands (Impact 4.2.1 and 4.2.4)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	S	S
Agricultural/Urban Interface Conflicts (Impact 4.2.2)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	S	S
Agricultural Zoned Lands and Williamson Act Lands (Impact 4.2.3)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	S	S
Population/Housing/Employment					
Project and Cumulative Population, Housing and Employment Increases (Impact 4.3.1 and 4.3.3)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	B	S
Displacement of Substantial Persons or Housing (Impact 4.3.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S

6.0 ALTERNATIVES

Environmental Impacts	Proposed General Plan Update	Alternative 1	Alternative 2	Alternative 3	Alternative 4
<i>Hazards and Human Health</i>					
Routine Transport of Hazardous Materials (Impact 4.4.1)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
Release and Exposure to Hazardous Materials (Impact 4.4.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		W	S	S	W
Airport Operations (Impact 4.4.3)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
Interference with an Adopted Emergency Response or Evacuation Plan (Impact 4.4.4)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
Cumulative Hazards (Impact 4.4.5)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
<i>Transportation and Circulation</i>					
Project and Cumulative Roadway Segment and Freeway Impacts (Impact 4.5.1, 4.5.2 and 4.5.7)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	B	S
Roadway Safety and Emergency Access (Impact 4.5.3)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
Transit System (Impact 4.5.4)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		W	S	S	S
Bicycle and Pedestrian System (Impact 4.5.5)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		W	S	S	S

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Environmental Impacts	Proposed General Plan Update	Alternative 1	Alternative 2	Alternative 3	Alternative 4
At-Grade Railway Conflicts (Impact 4.5.6)	Less Than Significant	Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		W	S	S	S
Air Quality					
Construction Emissions (Impact 4.6.1)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
Odor and Toxic Emissions (Impact 4.6.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		W	S	S	W
Elevated CO Emissions (Impact 4.6.3)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
Project and Cumulative Criteria Pollutant Increases Attainment Conflict (Impact 4.6.4 and 4.6.5)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	B	S
Greenhouse Gas Emissions (Impact 4.6.6)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	B	S
Consistency with Greenhouse Gas Reduction Measures (Impact 4.6.7)	Less Than Significant	Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		W	S	S	S
Noise					
Construction Noise Impacts (Impact 4.7.1)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
Project and Cumulative Transportation Noise Impacts (Impact 4.7.2, 4.7.3 and 4.7.7)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	S	S

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Environmental Impacts	Proposed General Plan Update	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Airport Noise Impacts (Impact 4.7.4)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
Project and Cumulative Stationary Noise Impacts (Impact 4.7.5 and 4.7.7)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		S	S	S	S
Geology and Soils					
Seismic Events (Impact 4.8.1)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
Soil Erosion (Impact 4.8.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	S	S
Expansive and Unstable Soils (Impact 4.8.3)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
Septic System Operation (Impact 4.8.4)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
Cumulative Geologic Impacts (Impact 4.8.5)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		S	S	S	S
Hydrology and Water Quality					
Construction, Operation and Cumulative Water Quality Impacts (Impacts 4.9.1, 4.9.2, 4.9.3 and 4.9.7)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	S	S
Project and Cumulative Flooding Hazards (Impact 4.9.4 and 4.9.8)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		W	S	S	S
Dam Failure (Impact 4.9.5)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant

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Environmental Impacts	Proposed General Plan Update	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Rank		S	S	S	S
Project and Cumulative Groundwater Supply Impacts (Impact 4.9.6 and 4.9.9)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	B	S
Biological Resources					
Impacts to Special-Status Species (Impact 4.10.1)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	B	S
Impacts to Species of Concern and Other Non-Listed Special-Status Species (Impact 4.10.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	B	S
Impacts to Sensitive Habitats (Impact 4.10.3)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	B	S
Impacts to Migratory Corridors (Impact 4.10.4)	Less Than Significant	Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		W	S	S	S
Conflicts with Conservation or Recovery Plans (Impact 4.10.5)	No Impact	No Impact	No Impact	No Impact	No Impact
Rank		S	S	S	S
Cumulative Biological Resource Impacts (Impact 4.10.6)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	B	S
Cultural and Paleontological Resources					
Project and Cumulative Prehistoric and Historic Resource Impacts (Impact 4.11.1 and	Less Than Significant	Significant	Less Than Significant	Less Than Significant	Less Than Significant

6.0 ALTERNATIVES

Environmental Impacts	Proposed General Plan Update	Alternative 1	Alternative 2	Alternative 3	Alternative 4
4.11.3)					
Rank		W	S	S	S
Project and Cumulative Paleontological Resource Impacts (Impact 4.11.2 and 4.11.4)	Less Than Significant	Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		W	S	S	S
Public Services and Utilities					
Project and Cumulative Fire Protection and Emergency Medical Service Impacts (Impact 4.12.1.1 and 4.12.1.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	B	S
Project and Cumulative Law Enforcement Impacts (Impact 4.12.2.1 and 4.12.2.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	B	S
Project and Cumulative Water Supply Infrastructure Impacts (Impact 4.12.3.1 and 4.12.3.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	B	S
Project and Cumulative Wastewater Service (Impact 4.12.4.1 and 4.12.4.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	B	S
Project and Cumulative Solid Waste Service (Impact 4.12.5.1 and 4.12.5.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	B	S
Project and Cumulative Public School Facilities (Impact 4.12.6.1 and 4.12.6.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	B	S
Project and Cumulative Electrical, Natural Gas, and Other Infrastructure (Impact	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant

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Environmental Impacts	Proposed General Plan Update	Alternative 1	Alternative 2	Alternative 3	Alternative 4
4.12.7.1 and 4.12.7.2)					
Rank		B	B	B	S
Project and Cumulative Park and Recreation Impacts (Impact 4.12.8.1 and 4.12.8.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	B	S
Visual Resources/Light and Glare					
Alteration of Scenic Resources (Impact 4.13.1)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	S	S
Daytime Glare and Nighttime Lighting (Impact 4.13.2)	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant
Rank		B	B	S	S
Cumulative Park Visual Resource Impacts (Impact 4.12.8.1 and 4.12.8.2)	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable	Significant and Unavoidable
Rank		B	B	S	S

Notes:

- B: Alternative would result in better conditions than the proposed General Plan Update.
 S: Alternative would result in similar conditions as the proposed General Plan Update.
 W: Alternative would result in worse impacts than the proposed General Plan Update.

7.0 LONG-TERM IMPLICATIONS

This section discusses additional topics statutorily required by CEQA, specifically: growth-inducing impacts, significant irreversible environmental changes/irretrievable commitment of resources, and significant and unavoidable environmental impacts.

7.1 GROWTH-INDUCING IMPACTS

INTRODUCTION

The California Environmental Quality Act (CEQA) Guidelines Section 15126.2(d) requires that an Environmental Impact Report (EIR) evaluate the growth-inducing impacts of a proposed action. A growth-inducing impact is defined in the CEQA Guidelines as

“the way[] 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. Included in this are projects which would remove obstacles to population growth... Section 15126.2(d).

Section 15126.2 cautions that “it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.”

A project can have direct and/or indirect growth inducement potential. Direct growth inducement would result if a project, for example, involved construction of new housing. A project would have indirect growth inducement potential if it established substantial new permanent employment opportunities (e.g., through commercial, industrial or governmental enterprises) or if it would involve a construction effort with substantial short-term employment opportunities that would indirectly stimulate the need for additional housing and services to support the new employment demand. Similarly, a project would indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. A project providing an increased water supply in an area where water service historically limited growth could be considered growth inducing.

The State CEQA Guidelines further explain that the environmental effects of induced growth are considered indirect impacts of the proposed action. These indirect impacts or secondary effects of growth may result in significant, adverse environmental impacts. Potential secondary effects of growth include increased demand on other community and public services and infrastructure, increased traffic and noise, and adverse environmental impacts such as degradation of air and water quality, degradation or loss of plant and animal habitat, and conversion of agricultural and open space land to developed uses.

Growth inducement may constitute an adverse impact if the growth is not consistent with or accommodated by the land use plans and growth management plans and policies for the area affected. Local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, sewer service, and solid waste service.

COMPONENTS OF GROWTH

The timing, magnitude, and location of land development and population growth in a community or region are based on various interrelated land use and economic variables. Key variables include regional economic trends, market demand for residential and non-residential uses, land availability and cost, the availability and quality of transportation facilities and public

7.0 LONG-TERM IMPLICATIONS

services, proximity to employment centers, the supply and cost of housing, and regulatory policies or conditions. Since the general plan of a community defines the location, type and intensity of growth, it is the primary means of regulating development and growth in California.

GROWTH EFFECTS OF THE PROJECT

Based on Government Code Section 65300, the proposed General Plan is intended to serve as the overall plan for the physical development of the City of Madera. While the General Plan does not specifically propose any development projects, it does regulate future population and economic growth of the City, which would result in indirect growth-inducing effects.

Implementation of the proposed General Plan would redefine the existing land use designations in the incorporated City and would conceptually redefine land use designations for the areas outside of the City but within the Planning Area. At such time that these areas are annexed into the City, the land use designations would apply to future development. The General Plan would establish new policies, actions and design guidelines to guide and manage future development and land uses in the City. This would also include policy direction on roadway facility improvements, public service improvements, and the extension and expansion of utilities. The specific environmental effects resulting from the proposed land use patterns and associated extension of public services are discussed in the environmental issue areas in Sections 4.1 through 4.13. The proposed General Plan would result in a residential buildout (assumed to occur post year 2030) of approximately 73,747 residential units and a population of 263,278 persons.

Population Growth

As discussed in Section 4.3, Population and Housing, the estimated 2008 population of Madera was 56,750 (California Department of Finance estimate, 2008). The 2000 U.S. Census counted 43,207 Madera residents. The Planning Area outside the Madera city limits had a 2008 estimated population of 21,658. Both the City of Madera and the Planning Area have experienced substantial population growth in the last 18 years (1990 U.S. Census). While the growth rate has slowed in recent years, the city's population growth rate since 2000 has been 3.5 percent annually, while the population of the Planning Area outside the city grew by 2.2 percent annually. The Planning Area outside the city is estimated to have a population of 113,721 by 2030, which is an increase of 425 percent over the Planning Area's 2008 population.

The proposed City General Plan Update would accommodate more growth outside the City limits than would the existing County of Madera General Plan, since much of the land within the proposed City Planning Area is designated for agricultural land uses under the County of Madera's General Plan. However, the proposed development under the City's General Plan Update is a compact/urban form, with a mixture of land uses, reducing vehicle miles traveled (see Section 4.5, Transportation and Circulation). In addition, the City General Plan update includes a growth boundary and greenbelt.

This intensification of urban land uses is in conflict with current Madera County General Plan land use intensities (see Section 4.1, Land Use) and could induce property owners adjacent to the Planning Area to request general plan amendments for urban uses rather than current agricultural designations. The environmental effect of potential development of the Planning Area is addressed in this Draft EIR.

Growth Effects Associated with Infrastructure Improvements

The proposed General Plan Update could potentially indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service.

The proposed General Plan includes proposed roadway improvements that have been designed to support the General Plan Land Use Policy Map and maintain the City's proposed level of service (LOS) standard of LOS "C" where feasible and appropriate for City roadways, LOS "D" in the Downtown District, and LOS below LOS D for State Highways.

The proposed General Plan Update does not include any provisions requiring the oversizing of infrastructure facilities to serve growth not anticipated in the General Plan Land Use Policy Map. The physical environmental effects of the proposed roadway improvements within the Planning Area and any off-site impacts that could result from the proposed roadway improvements, where the roads continue into other jurisdictions, have been disclosed in this Draft EIR.

ENVIRONMENTAL EFFECTS OF GROWTH

As described above, the proposed General Plan Update would induce further population and job growth in the City, and within the Planning Area to the extent that these areas are annexed into the City, as well as potentially induce growth outside of the City and Planning Area (at the interface with other jurisdictions). Growth inducement in areas outside of the City would be limited by the adopted land uses of those jurisdictions, but, as described above, development pressure could result in requests for amendment of the General Plans of other jurisdictions. The following proposed General Plan policies, i.e., to create a greenbelt beyond portions of the City limits and to create a growth boundary would serve to reduce development pressure to intensify development at the boundaries of the City:

Policy LU-10:

The Growth Boundary is considered by the City to define the physical limits of development in Madera. The City shall direct all future growth in Madera and in the unincorporated area outside the city limits to occur inside the Growth Boundary shown on the Land Use Map in this General Plan. Within the City's Planning Area, the City encourages the County to assist the City in maintaining an agricultural green belt around the Growth Boundary by only allowing agricultural uses where land is designated for such use on the City's General Plan Land Use Map.

The following apply to the Growth Boundary:

- *The Growth Boundary may only be revised as part of a comprehensive update of the General Plan involving, at a minimum, the Land Use and Circulation elements.*
- *Any revision to the Growth Boundary shall be accompanied by a statement of findings which demonstrate the following:*
 - 1) *That the revision is consistent with the intent of the Growth Boundary and all other applicable policies in this General Plan*
 - 2) *That the revision is necessary to accommodate planned growth in Madera*

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- Policy LU-11:* *The City specifically envisions the establishment and maintenance of a greenbelt of agricultural and other open space lands around the urbanized portion of the Planning Area, outside the Growth Boundary, as shown on the Land Use Map. In addition to the maintenance of appropriate agricultural land use designations, the City encourages the use of Williamson Act contracts and similar mechanisms to ensure the maintenance of the greenbelt. Along the west edge of the Planning Area, the Greenbelt is intended to be permanent, and the implementing mechanisms on the west edge should reflect that intent, including transfer of development rights, permanent conservation easements, etc. (See specific policies for Villages D & E for requirements to establish a permanent edge/buffer on the western boundary of these Villages)*
- Policy LU-12:* *The City shall plan and install infrastructure to serve only the area inside the Growth Boundary. The expansion of urban services (specifically including residential sewer service) outside this boundary shall not be permitted unless the City Council finds that:*
- 1) The extension is needed to address a clear public health or safety need, and*
 - 2) The infrastructure provided is sized to the minimum level necessary in order to reduce any excess capacity that could be used to support additional growth outside the boundary.*
- Action Item LU-12.1* *Develop and implement programs and strategies that support the Growth Boundary and keep urban growth inside the Growth Boundary.*

Proposed roadway improvements support growth within the City, but would also facilitate further growth. As a result, the proposed General Plan Update is considered to be growth inducing. The environmental effects of growth within the City and Planning Area (Sections 4.1 through 4.13) and the project's cumulative impacts (Section 5.0) would be in addition to the following additional environmental effects of growth in the region:

- Aesthetics – Further conversion of rural, agricultural and natural open space landscape characteristics to urban conditions.
- Agricultural Resources – Continued loss of farmland to urban uses as well as increased conflicts with agricultural operations and urban uses.
- Air Quality – Increases in air pollutant emissions potentially conflicting with air quality attainment efforts under state and federal Clean Air Acts, and increased potential for the exposure to toxic air contaminants.
- Biological Resources – Loss of special-status plant and animal species habitats, degradation of habitats, and loss of special-status species.
- Cultural Resources – Impacts to known and unknown archaeological and historic resources in the region.
- Geology and Soils – Loss of top soil.

- Hydrology and Water Quality – Additional sources of point and non-point sources of surface water quality pollutants to region waterways. Further demand on groundwater resources and potential overdraft issues.
- Noise – Increased transportation noise levels from increased traffic volumes.
- Public Services and Utilities – Increased demand for the development and expansion of public services and facilities and associated environmental issues.
- Traffic – Increased traffic volumes on the region's highways and regional roadways resulting in deficient levels of service of operation.

7.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL EFFECTS

Public Resources Code Sections 21100(b)(2) and 21100.1(a) require that EIRs prepared for the adoption of a plan, policy, or ordinance of a public agency must include a discussion of significant irreversible environmental changes of project implementation. The CEQA Guidelines Section 15126.2(c) describes irreversible environmental changes as:

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Implementation of the proposed City of Madera General Plan Update would result in the conversion of undeveloped open space and agricultural land areas to residential, commercial, industrial, office, public and recreational uses. Development of the City, and the Planning Area to the extent that the area is annexed into the City, would constitute a long-term commitment to residential land uses and loss of productive agricultural soils and natural resources (e.g., wetland resources). It is unlikely that circumstances would arise that would justify the return of the land to its original (pre-proposed General Plan) condition.

Development under the proposed General Plan Update would irretrievably commit building materials and energy to the construction and maintenance of buildings and infrastructure proposed. Renewable, nonrenewable, and limited resources that would likely be consumed as part of the development of the subsequent projects would include, but are not limited to: oil, gasoline, lumber, sand and gravel, asphalt, water, steel, and similar materials. In addition, development of the project would result in increased demand on public services and utilities (see Sections 4.9 Hydrology and Water Quality and 4.12 Public Services and Utilities).

7.3 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL EFFECTS

State CEQA Guidelines Section 15126.2(b) requires an EIR to discuss unavoidable significant environmental effects, including those that can be mitigated, but not to a level of insignificance. Section 15093(a) of the CEQA Guidelines allows the decision-making agency, in approving a project, to determine that the benefits of a proposed project outweigh the unavoidable adverse environmental impacts of implementing the project. However, the City can approve a project with unavoidable significant adverse impacts if it prepares a "Statement of Overriding

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Considerations" setting forth the specific reasons for making such a judgment, and makes other findings required by CEQA Guidelines Section 15091.

The following impacts of the General Plan Update are those that include significant environmental effects that cannot be avoided if the project is implemented, significant irreversible environmental change and growth-inducing impacts. These are specifically identified in Sections 4.1 through 4.13, and Section 5.0 of this EIR. The reader is referred to the various environmental issue areas of these sections for further details and analysis of the significant and unavoidable impacts identified below.

SECTION 4.1 LAND USE

Consistency with Relevant Land Use Planning Documents

Impact 4.1.2 The proposed General Plan is inconsistent with some existing relevant land use planning documents. This is considered a **significant and unavoidable** impact associated with the environmental effects of inconsistency with the Madera County General Plan.

Cumulative Land Use Impacts

Impact 4.1.3 When considered with existing, proposed, approved and planned development in the region, implementation of the proposed Madera General Plan has the potential to further contribute to cumulative land use changes among local land use plans in the region resulting in significant impacts to the physical environment. This is considered a **cumulatively considerable** and a **significant and unavoidable** impact as a result of the increased environmental effects of growth beyond current adopted land use plans.

SECTION 4.2 AGRICULTURE

Loss and Conversion of Agricultural Land

Impact 4.2.1 Implementation of the proposed General Plan Update would result in the direct loss of important farmlands (Prime Farmland, Unique Farmland, and Farmland of Statewide Importance) as designated by the Farmland Mapping and Monitoring Program. This is considered a **significant and unavoidable** impact.

Agricultural/Urban Interface Conflicts

Impact 4.2.2 Implementation of the proposed General Plan Update could result in the placement of urban uses adjacent to agricultural uses. This is considered a **significant and unavoidable** impact.

Agriculturally Zoned Lands and Williamson Act Contracts

Impact 4.2.3 Implementation of the proposed General Plan Update could result in a conflict with land currently zoned for agriculture as well as with existing Williamson Act contract lands. This is considered a **significant and unavoidable** impact.

Cumulative Impacts to Agricultural Resources

- Impact 4.2.4** Implementation of the proposed General Plan Update along with regional and statewide growth would result in a substantial contribution to the conversion of important farmland and may increase agriculture/urban interface conflicts. This is a **cumulatively considerable** and a **significant and unavoidable** impact.

SECTION 4.3 POPULATION/HOUSING/EMPLOYMENT

Population, Housing and Employment Increases

- Impact 4.3.1** Implementation of the proposed General Plan Update would include land uses that promote the increase in population, housing, and employment to the area, and thus induce substantial growth that would result in physical effects to the environment. This is a **significant and unavoidable** impact.

Cumulative Population and Housing Increases

- Impact 4.3.3** Subsequent land use activities associated with implementation of the proposed General Plan Update, in addition to existing, approved, proposed, and reasonable foreseeable, could result in a cumulative increase in population and housing growth in the City of Madera as well as in the surrounding cities and counties, along with associated environmental impacts. This is considered a **cumulatively considerable** and a **significant and unavoidable** impact.

SECTION 4.7 NOISE

Traffic Noise Impacts

- Impact 4.7.2** Implementation of the proposed General Plan would result in increases in traffic noise levels that would be in excess of City of Madera noise standards. This is considered a **significant impact**.

Rail Noise Impacts

- Impact 4.7.3** Implementation of the proposed General Plan would expose future land uses and residents to train and rail related noise. This is considered a **significant impact**.

Stationary Noise Impacts

- Impact 4.7.5** As additional development occurs throughout the City, the potential exists for new noise-sensitive land uses to encroach upon existing or proposed stationary noise sources. As a result, this impact is considered **potentially significant**.

7.0 LONG-TERM IMPLICATIONS

Cumulative Noise

- Impact 4.7.6** Implementation of the proposed General Plan Update along with potential development of the Planning Area could result in increased noise conflicts. This is considered a **cumulatively considerable** and a **significant and unavoidable** impact.

SECTION 4.8 GEOLOGY AND SOIL

No impacts that are significant.

SECTION 4.11 CULTURAL AND PALEONTOLOGICAL RESOURCES

No impacts that are significant.

SECTION 4.13 VISUAL RESOURCES/LIGHT AND GLARE

Alteration of Scenic Resources

- Impact 4.13.1** Implementation of the proposed General Plan would result in the alteration of scenic resources. This is considered a **significant** impact.

Cumulative Impacts to Visual Resources

- Impact 4.13.3** Implementation of the proposed General Plan along with potential development of the Planning Area would result in the further conversion of the region's rural landscape to residential, commercial, and other land uses. This would contribute to the alteration of the visual resources in the region. This is considered a **cumulatively considerable** impact.

8.0 REPORT PREPARERS

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1.0 INTRODUCTION

2.0 EXECUTIVE SUMMARY

3.0 PROJECT DESCRIPTION

4.0 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS AND ASSUMPTIONS USED

4.1 LAND USE

4.2 AGRICULTURAL RESOURCES

4.3 POPULATION/HOUSING/EMPLOYMENT

4.4 HAZARDS AND HUMAN HEALTH

4.5 TRANSPORTATION AND CIRCULATION

4.6 AIR QUALITY

4.7 NOISE

4.8 GEOLOGY AND SOILS

4.9 HYDROLOGY AND WATER QUALITY

4.10 BIOLOGICAL RESOURCES

4. 11 CULTURAL AND PALEONTOLOGICAL RESOURCES

4.12 PUBLIC SERVICES AND UTILITIES

4.13 VISUAL RESOURCES/LIGHT AND GLARE

5.0 CUMULATIVE IMPACTS

6.0 PROJECT ALTERNATIVES

7.0 LONG-TERM IMPLICATIONS

8.0 REPORT PREPARERS

APPENDICES

APPENDIX A - NOP & LETTER RESPONSES BY INTERESTED PARTIES

APPENDIX B - GROWTH PROJECTIONS FOR YEAR 2030

**APPENDIX C - COMPATIBILITY CRITERIA FOR
EACH SAFETY & NOISE ZONE, PLAN POLICIES
RELEVANT TO THE PROPOSED GP**

APPENDIX D - LIST OF LUST SITES IN THE PLANNING AREA

APPENDIX E - TRAFFIC MODEL OUTPUTS

APPENDIX F – AIR MODEL OUTPUTS

APPENDIX G - NOISE LEVELS/CONTOURS MODELING OUTPUT FILES

**APPENDIX H - COMPLETE SPECIAL-STATUS
SPECIES LIST, HABITAT REQUIREMENTS,
RATIONALE FOR IMPACT ANALYSIS, CNDDB,
CNPS, & USFWS QUERIES FOR SPECIAL-
STATUS SPECIES, AND PLANT & WILDLIFE
SPECIES OBSERVED DURING "WINDSHIELD"
SURVEYS**

NOTICE OF AVAILABILITY

CITY OF MADERA GENERAL PLAN UPDATE DRAFT ENVIRONMENTAL IMPACT REPORT AND COMMENCEMENT OF THE PUBLIC REVIEW PERIOD

NOTICE IS HEREBY GIVEN that the City of Madera General Plan Update Draft Environmental Impact Report has been completed and is available for public and agency review.

LEAD AGENCY: City of Madera
PROJECT NAME: City of Madera General Plan Update
STATE CLEARINGHOUSE # 2007121153

PROJECT LOCATION: The Planning Area for the City of Madera General Plan Update is within Madera County and includes the incorporated City, the City's Sphere of Influence (SOI), and a larger study area. The Planning Area covers roughly 67,414 acres of land (about 105 square miles) in southern Madera County. The City of Madera occupies 9,512 acres (about one-seventh of the total Planning Area).

PROJECT DESCRIPTION: The proposed project is the adoption and implementation of an updated City of Madera General Plan (i.e., technically a General Plan amendment). The last comprehensive update of the City of Madera General Plan was in 1992. The General Plan update will allow the community to establish its long-term vision for the future.

SIGNIFICANT ENVIRONMENTAL EFFECTS: The proposed General Plan Update could result in significant impacts in the areas of: Agricultural Resources, Land Use, Transportation and Circulation, Biological Resources, Noise, Population/Housing/Employment, Air Quality, Climate Change, Geology and Soils, Hazards (including evaluation of hazardous material sites identified under Government Code Section 65962.5), Hydrology and Water Quality, Cultural and Paleontological Resources, Public Services and Utilities, Visual Resources, and Growth Inducement. These environmental issue areas are addressed in the Draft EIR.

PUBLIC REVIEW PERIOD: Written comments on the Draft General Plan Update Draft EIR will be accepted from **May 13, 2009 to June 29, 2009**, at the following address: City of Madera Planning Department, 205 West Fourth Street, Madera, CA 93637, Attn: Dave Randall, or via e-mail: info@maderageneralplan.com.

PUBLIC MEETING: The public is invited to attend and provide oral comment at a public meeting on **June 1st, 2009 at 6:30pm at Frank A. Bergon Senior Center at 238 South D Street, Madera, CA 93638.**

AVAILABILITY OF THE DRAFT EIR AND GENERAL PLAN UPDATE: The Draft General Plan Update and Draft EIR are available for viewing at the City of Madera Planning Department at the address above during regular office hours; at the Madera library at 121 North G Street, Madera; and on-line at <http://maderageneralplan.com>.

CD-ROM's are available on request. Hard copies are available for purchase. Referenced materials used in the preparation of the Draft EIR may be reviewed upon request to the City.