



# GLENN COUNTY GENERAL PLAN UPDATE



# EXISTING CONDITIONS REPORT 2020

De Novo Planning Group

A Land Use Planning, Design, and Environmental Firm





Glenn County General Plan Existing Conditions Report

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## **INTRODUCTION**

The Glenn County General Plan identifies the community’s vision for the future and provides a framework to guide decisions on growth, development, and conservation of open space and resources in a manner consistent with the quality of life desired by residents, businesses, and local elected officials.

This Existing Conditions Report prepared for the General Plan Update provides an overview of Glenn County’s physical, environmental, economic, and demographic setting, as of 2019.

County staff, the General Plan Update consultant (De Novo Planning Group), and its subconsultants have worked together to ensure that this is an accurate and reliable source of information. This document is intended to serve as a comprehensive reference document for community members, policymakers, staff, the County’s General Plan Advisory Committee (GPAC), and the consultant team throughout the General Plan Update process.

The Glenn County General Plan Update is a multi-year process that will include a comprehensive update of the General Plan, which sets a vision for the future of the County, goals and strategies to achieve the County’s vision, and an Environmental Impact Report (EIR), which investigates the possible impacts of the General Plan Update policy changes to the surrounding physical environment. This Existing Conditions Report document provides information about these components and establishes the existing setting for the EIR.

This chapter provides a brief background summary of Glenn County, summarizes the contents of this Existing Conditions Report, and provides an overview of the General Plan Update.

## **BACKGROUND**

Glenn County is located in the northern Sacramento Valley and the eastern foothills and mountains of the Coast Range, approximately 80 miles north of the City of Sacramento. The county extends from the Sacramento River west to the Coast Range. Located in Glenn County are the cities of Willows and Orland and the unincorporated communities of Hamilton City, Ord Bend, Artois, Elk Creek, Butte City, West Orland, and Glenn, and numerous other small areas of developments. The county has remained predominantly an agricultural region due to its alluvial soil, mild climate, and access to water resources.

Glenn County was formed from parts of Colusa County. Glenn County was incorporated on March 5, 1891. The County seat, Willows, was created March 11, 1891. Glenn County’s current General Plan was last comprehensively updated in 1993. An update to the Housing Element was completed in 2015 which covers the 2014 – 2019 Housing Element cycle.

## **EXISTING CONDITIONS REPORT CONTENTS**

To prepare a meaningful General Plan, existing conditions must be understood and documented. The Existing Conditions Report identifies development patterns, natural resources, socioeconomic conditions, and environmental conditions in the county and identifies the regulatory environment for each topic. This report will be a resource for the Board of Supervisors, Planning Commission, General Plan Advisory Committee, County staff, and the De Novo Planning Group team for the General Plan Update and EIR. The Existing Conditions Report makes use of maps, graphics, and user-friendly non-technical terms to help make it accessible to the general public.

The Existing Conditions Report provides background data and will serve as a technical framework, while the General Plan will focus on goals, policies, and implementation actions. The information collected for

the Existing Conditions Report will also be used as the basis for the “existing setting” sections of the General Plan EIR.

The following topic areas are addressed in the Existing Conditions Report:

## 1.0 LAND USE AND SOCIOECONOMICS

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The Land Use and Socioeconomics chapter addresses land use and demographics, including issues related to land use patterns, housing and demographics, economic development, and market conditions. The information in this chapter provides both an historical and current perspective on land use and is intended to assist the General Plan Update process by providing both historical context and a baseline of existing land use information to be used when formulating and considering amendments to the county’s current land use pattern or when considering alternate growth and land use scenarios for the county.

The economic development and setting section contains information about employment characteristics, sales and spending, and economic trends and conditions. The purpose of this information is to describe the county, its residents, and business activity from an economic market perspective. This section discusses the current economic base, and local employment conditions. This section identifies the employment and industry sectors present in the county, jobs by employment and industry sector, and employment trends.

## 2.0 CIRCULATION

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The Circulation chapter describes the circulation network serving the county. Existing conditions are described for roadway operations, pedestrian-bicycle facilities, transit service, and multimodal operations. This chapter includes a review of relevant transportation planning documents, describes the existing physical and operational characteristics affecting the County of Glenn’s transportation system. A review of the regulatory setting is followed by an overview of travel behavior in the County; descriptions of the roadway network, pedestrian, bicycle, and transit facilities; collision analysis; vehicle operations on the roadway network; and rail, goods movement, aviation, and waterways in the County,

## 3.0 COMMUNITY SERVICES AND FACILITIES

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The Community Services and Facilities chapter describes the existing conditions and regulatory context regarding community services, including water, wastewater, drainage and flood control, education, public safety services, schools, and parks and recreational resources within the county. These facilities and services provide a framework that supports growth and development in the County. This chapter describes existing service levels, and available resources.

## 4.0 HAZARDS, SAFETY, AND NOISE

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The Hazards, Safety, and Noise chapter includes a listing of key significant issues that will ultimately guide the preparation of the Safety and Noise Elements of the General Plan. This chapter provides a summary of the existing setting and conditions associated with natural and man-made hazards that may pose a danger to county residents, employees, and visitors including: dangers from hazardous materials including hazardous materials sites (i.e., landfills, superfund sites, pipelines and sites with the potential for chemical spills); fire hazards; aircraft hazards; and major inclement weather conditions. Known hazardous conditions listed in available State and County databases are also described.

The noise section includes descriptions of the characteristics of sound and noise and a description of transportation, stationary, and construction noise sources within the County. A description of the noise



monitoring survey results, tabularized noise exposure contours, and an existing conditions description that explains local traffic and stationary noise sources are included.

Noise measurement locations were selected to quantify noise levels along major thoroughfares, near significant stationary noise sources, in developed areas, and in other areas that may be problematic. Based on the results of the noise monitoring and the traffic data, noise data associated with major roadways have been quantified and tabulated, using the U.S. Federal Highway Traffic Noise Prediction Model. Noise levels associated with stationary and railroad sources were identified in tabular format, and background noise levels within the community are quantified. A summary of the regulatory framework related to noise, including Federal, State, and County laws, ordinances, plans, policies, and standards is also provided.

## 5.0 CONSERVATION AND NATURAL RESOURCES

The Conservation and Natural Resources chapter discusses conservation issues related to cultural and historic preservation, air quality, greenhouse gases, biological resources, geologic and mineral resources, hydrology and water quality, and visual resources in and around the county. This chapter also discusses open space as it relates to the preservation of natural resources as part of the biological resources discussion, and the managed production of surface water and groundwater resources as part of the hydrology discussion. Federal, State, and local regulations that pertain to each of these topics are also described.

## 6.0 ENVIRONMENTAL JUSTICE

The Environmental Justice chapter analyzes the potential for Disadvantaged Communities (DACs) within the County, and addresses a wide range of topics related to Environmental Justice issue areas. Environmental topics addressed in this chapter include:

- Pollution Exposure and Air Quality
- Public Facilities
- Food Access
- Safe and Sanitary Homes
- Physical Activity
- “Civil” or Community Engagement
- Improvements and Programs (that address the needs of Disadvantaged Communities)

## GENERAL PLAN OVERVIEW

State law requires every city and county in California to prepare and maintain a planning document called a general plan. A general plan is a “constitution” or “blueprint” for the future physical development of a county or city. All future planning decisions and project approvals must be consistent with the general plan, including, but not limited to: specific plans, subdivisions, public works projects, and zoning decisions.

A general plan has four defining features:

**General.** As the name implies, a general plan provides general guidance for future land use, transportation, infrastructure, environmental, and resource decisions.

**Long-Range.** A general plan provides guidance on achieving a long-range vision of the future for a city or county. To reach this envisioned future, the general plan includes goals, policies, and implementation

programs that address both near-term and long-term needs. The County’s General Plan Update will look ahead approximately 20 years, to the year 2040.

**Integrated and Coherent.** The goals, policies, and implementation programs in a general plan must present a comprehensive, unified program for development and resource conservation. A general plan uses a consistent set of assumptions and projections to assess future demands for housing, employment, public services, and infrastructure. A general plan has a coherent set of policies and implementation programs that enables citizens to understand the vision of the general plan, and enables landowners, businesses, and industry to be more certain about how future planning decisions will be made and implemented.

**Comprehensive.** A general plan covers a wide range of social, economic, infrastructure, and natural resource issues. There are seven mandatory elements: land use, circulation, housing, conservation, open space, safety, and noise. State law allows local governments to organize and format their general plans however they desire, as long as the required topics or elements are addressed. Counties can also choose to include additional elements, such as economic development and agricultural resources. The Glenn County General Plan is expected to address the following topics:

- **Land Use and Community Character:** Establishes land use patterns and densities, and ensures that there are opportunities for growth to meet future needs, while protecting the County's lands and resources in such a way that the County's lifestyle is protected.
- **Circulation:** Guides decisions for how people of all ages and abilities can safely and efficiently get around the community— including by car, bike, walking, and transit. It will also consider new transportation technology and trends.
- **Noise:** Provides measures to manage the effect of sound in the community, protecting the health and welfare of the community by promoting development and activities that are compatible with noise level criteria.
- **Safety:** Addresses natural and man-made safety hazards such as fires, flooding, seismic safety and geologic hazards, hazardous materials, aircraft, noise, and emergency operations and preparedness.
- **Conservation and Open Space:** Provides measures to protect and improve the County’s natural, historic, cultural, and biological resources. Addresses the topic of local and regional parks, recreation and open space, including trails and scenic vistas.
- **Economic Development:** Provides tools and strategies to foster a strong and sound local economy, including goals and policies related to business retention and attraction, job creation, and Glenn County’s role in the regional economy.
- **Agricultural Resources:** Addresses the County's agricultural economy and seeks ways to foster economic development while protecting agricultural lands and reducing land use conflicts.
- **Community Services and Facilities:** Gives direction on community infrastructure and facilities and services including water supply, wastewater, flood control, waste and recycling, storm drainage and water quality, and public facilities.

## **USING THE GENERAL PLAN**

The General Plan is used by the County Board of Supervisors, Planning Commission, and County staff on a regular basis to make decisions with direct and indirect land use implications. It also provides a framework for inter-jurisdictional coordination of planning efforts among officials and staff of the County and other government agencies such as the State and Federal agencies, and other local jurisdictions.

The General Plan is the basis for a variety of regulatory mechanisms and administrative procedures. California planning law requires consistency between the General Plan and its implementation programs. Implementation programs and regulatory systems of the General Plan include zoning and subdivision ordinances, capital improvement programs, specific plans, environmental impact procedures, and building and housing codes.

Over time, the county's population, demographics, and economy will change, its goals will be redefined, and the physical environment in which its residents live and work will be altered. In order for the General Plan to be a useful document, it must be monitored and periodically revised to respond to and reflect changing conditions and needs.

The General Plan should also be user-friendly. To this end, the Glenn County General Plan Update will be divided into several primary documents: the Existing Conditions Report, Issues and Opportunities and Land Use Alternatives reports, and the Goals and Policies document.

As described above, this Existing Conditions Report provides a summary of a range of conditions in the county as they exist in 2019, and provides the baseline framework for the development of the General Plan Update's goals, policies, and implementation programs.

The Goals and Policies document, which will be developed in coordination with County staff, decision-makers, and the General Plan Advisory Committee, is the essence of the General Plan. It contains the goals and policies that will guide future decisions within the county. It also identifies a full set of implementation programs that will ensure the goals and policies in the General Plan are carried out.

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# Chapter 1

## Land Use and Socioeconomics



This chapter addresses land use, including issues related to the current General Plan, existing land use patterns, local planning context, and community character. The information in this chapter provides a current perspective on land use in Glenn County and is intended to assist the General Plan update process by providing a baseline of existing land use information to be used when formulating and considering amendments to the County's current land use pattern.

This Chapter includes the following topics:

- 1.1 Land Use
- 1.2 Population, Housing, and Demographics
- 1.3 Economic Setting
- 1.4 Real Estate Market Conditions





## 1.0 LAND USE AND SOCIOECONOMICS

This chapter examines the land use and development patterns in Glenn County, the county's demographics and housing profile, economic characteristics, and real estate market conditions. The information and analysis is intended to inform the General Plan Update process by providing both historical context and a baseline of existing land use, demographic, housing development, economic and market condition information. This chapter includes the following sections:

- 1.1 Land Use
- 1.2 Population, Housing, and Demographics
- 1.3 Economic Setting
- 1.4 Real Estate Market Conditions

### 1.1 LAND USE

This section describes land use and development patterns in Glenn County and identifies the regulatory framework associated with land use. Existing land use conditions, including land uses by existing General Plan designation and assessed land uses, are described. This chapter provides an overview of existing land use patterns, types and location of development in the county.

#### KEY TERMS

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**City Limits:** The city limits include the area within a City's corporate boundary, over which the City exercises land use authority and provides public services. Within Glenn County there are two incorporated cities (Willows and Orland).

**Sphere of Influence:** A Sphere of Influence (SOI) is the probable physical boundary and service area of a local agency, as adopted by a Local Agency Formation Commission (LAFCO). An SOI includes both incorporated and unincorporated areas within which a city or special district will have primary responsibility for the provision of public facilities and services.

**Planning Area:** For the purposes of the Glenn County General Plan Update, the Planning Area is defined as all lands within the unincorporated County, exclusive of those lands located within the incorporated city limits of Willows and Orland.

**Urban Limit Lines (ULL):** Reflects the boundary around cities and unincorporated communities within which urban development will be directed. These lines represent those areas where growth can be accommodated because urban services and infrastructure sufficient to serve development is either available or can be made available within the planning period. ULL's are included for the Cities of Willows, and Orland, and the unincorporated communities of Hamilton City, Artois, Butte City and Elk Creek.

Figure 1.1-1 shows the General Plan's Planning Area.

## REGULATORY FRAMEWORK

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The regulatory framework discussion describes laws and regulations that guide land use decisions. Adopted plans that pertain to the County are also described.

### *FEDERAL*

#### **Mendocino National Forest**

The Mendocino National Forest Land and Resource Management Plan (LRMP) provides the framework to guide the ongoing land and resource management operations of the Mendocino National Forest. The LRMP's goal is to provide a management program reflecting a mix of activities for the use and protection of the Forest. The LRMP:

- Establishes the management direction and associated long-range goals and objectives for the Forest,
- Specifies the standards, approximate timing, and vicinity of the practices necessary to implement that direction, and
- Establishes the monitoring and evaluation requirements needed to ensure that the direction is being carried out, and to determine if outputs and effects have been reasonably estimated.

The LRMP is a strategic document that provides guidance for, but does not make, project-level decisions. Those decisions are made after more detailed, site-specific environmental analysis and further public comment. The National Forest Management Act (NFMA) requires that resource plans and permits, contracts, and other instruments issued for the use and occupancy of National Forest System lands be consistent with the forest plan. The following are some examples of project decisions that require more detailed environmental analysis:

- Timber harvesting and related activities, such as slash disposal and road construction,
- Range allotment management plans,
- Fish or wildlife habitat improvement projects,
- Watershed improvement projects, and
- Developed recreation sites or trail construction.

The LRMP focuses primarily on management prescriptions for habitat, wilderness, and recreation uses. The LRMP anticipates a steady workforce and does not foresee the need for extensive construction of new facilities for administrative activities and to house the workforce, but rather anticipates that existing facilities will need to be maintained and improved.

The LRMP does not provide much direction regarding private development within the Mendocino National Forest. However, the U.S. Forest Service provides for special use permits for private activities. Special Use Permits may be requested from the U.S. Forest Service for a variety of land uses in national forests, including water transmission, agriculture, timber production, outfitting and guiding, recreation,

telecommunication, research, photography and video productions, and granting road and utility rights-of-ways.

Recreation residences are also a federally permitted use in national forests. In 1968, a moratorium was placed on establishing additional residential tracts within forests and the moratorium was expanded in 1976 to also prohibit development of new lots within existing tracts. Existing recreation residences within a national forest are required to obtain a special use permit, which has a maximum term of 20 years. However, there is no guarantee that a new special use permit will be issued at the end of the permit term.

## *STATE*

### **California General Plan Law**

Government Code Section 65300 requires that each county and city adopt a General Plan “for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning.”

The General Plan is a comprehensive long-term plan for the physical development of the county or city and is considered a "blueprint" for development. The General Plan provides a statement of the community’s development, economic, circulation, and environmental goals and includes diagrams and text setting forth objectives, standards, policies, and programs. The General Plan must contain seven State-mandated elements: Land Use, Open Space, Conservation, Housing, Circulation, Noise, and Safety. It may also contain any other elements that the County wishes to include. The land use element designates the general location and intensity of designated land uses to accommodate housing, business, industry, open space, education, public buildings and grounds, recreation areas, and other land uses.

The 2017 General Plan Guidelines, established by the Governor’s Office of Planning and Research (OPR) to assist local agencies in the preparation of their general plans, further describe the mandatory land use element as a guide to planners, the general public, and decision makers prescribing the ultimate pattern of development for the city. The General Plan Guidelines include resources, data, tools, and model policies to help cities and counties update their general plans.

### **California Environmental Quality Act**

The California Environmental Quality Act (CEQA) was developed to protect the quality of the environment and the health and safety of persons from adverse environmental effects. Discretionary projects are required to be reviewed consistent with the requirements of CEQA to determine if there is potential for the project to cause a significant adverse effect on the environment. Depending on the type of project and its potential effects, technical traffic, noise, air quality, biological resources, and geotechnical reports may be needed. If potential adverse effects can be mitigated, a mitigated negative declaration is required. If potentially adverse effects cannot be mitigated, an environmental impact report is required. These documents have mandated content requirements and public review times. Preparation of CEQA documents can be costly and, despite maximum time limits set forth in the Public Resources Code, can extend the processing time of a project by a year or longer.

## **Subdivision Code**

A subdivision is any division of land for the purpose of sale, lease or finance. The State of California Subdivision Map Act (Government Code § 66410) regulates subdivisions throughout the state. The goals of the Subdivision Map Act are as follows:

- To encourage orderly community development by providing for the regulation and control of the design and improvement of a subdivision with proper consideration of its relationship to adjoining areas.
- To ensure that areas within the subdivision that are dedicated for public purposes will be properly improved by the subdivider so that they will not become an undue burden on the community.
- To protect the public and individual transferees from fraud and exploitation.

The Map Act allows some flexibility in the processing of subdivisions. Glenn controls this process through the subdivision regulations in the Municipal Code (Title 15 - Unified Development Code) Chapter 15.200 Tentative Parcel Maps, and Chapter 15.210 Final Maps.

### *LOCAL*

## **Glenn County General Plan – Policy Document**

Glenn County’s current General Plan was last comprehensively updated in 1993. An update to the Housing Element was completed in 2015 which covers the 2014 – 2019 Housing Element cycle. Land uses in the county have been developed based on the Land Use Map, and goals and policies established by the County’s General Plan. The General Plan includes a broad goal and policy framework that guides land use and planning decisions within the County. Land Use goals and policies are included in the General Plan’s Community Development Element (Land Use/Growth).

### GOALS:

**CDG-1 Preservation of agricultural land.**

**CDG-2 Avoidance of land use conflicts in agricultural areas.**

**CDG-3 Appropriate distribution and regulation of land uses.**

**CDG-4 Establishment and maintenance of formal lines of communication between the County and the cities.**

### POLICIES:

**CDP-1** Establish urban-rural interface areas within which all new development shall incorporate a buffer zone to separate the development from surrounding agricultural land. This requirement may be eliminated or modified if there are significant topographical differences, substantial vegetation, or existing physical barriers between urban and rural areas.

**CDP-2** Require that permanent, well-defined buffer areas be provided as part of new non-agricultural development proposals located adjacent to agricultural land uses on Important Farmlands designated as prime, of statewide importance, unique, or of local importance. These buffer areas shall be dedicated in perpetuity, shall be of sufficient size to protect agriculture from the impacts of

incompatible development and to mitigate the effects of agricultural operations on adjacent land uses, and shall be credited as open space.

CDP-3 Use permanent physical features or barriers to separate agricultural from rural or urban uses wherever possible. Such features include rivers, streams, canals, roads, railroads, and topographical features.

CDP-4 Encourage clustering of residential development when parcels are adjacent to commercial agricultural lands, so as to place dwellings as far as possible from the agricultural land.

CDP-5 Encourage use of rural residential lot design which allows for the re-subdivision of such lots, particularly when rural residential development occurs in proximity to growing communities.

CDP-6 Utilize urban limit lines as a method to preserve agricultural land and promote orderly growth in the county.

CDP-7 Solicit and encourage the voluntary donation of conservation easements or other development restrictions to the County or a qualified private nonprofit corporation to preserve the agricultural use of the land in areas designated for agricultural use, where subdivision of land would promote incompatible development.

CDP-8 Provide for the orderly transition of lands within urban limit lines from agricultural to urban use, and encourage and allow agricultural uses to continue until such time as urban development occurs.

CDP-9 Permit the conversion of agricultural or open land to urban development within urban limit lines to occur only as an extension of the urbanizing area Urban Limit Lines shall not be used as justification for leapfrog development.

CDP-10 Encourage the preservation of agricultural lands, including those lands in production, and those which are potentially productive.

CDP-11 Direct nonagricultural development to marginal agricultural lands, avoiding Important Farmlands, wherever feasible alternative sites have been identified.

CDP-12 Utilize a "Right to Farm" Ordinance as a method to reduce the impacts of potential land use conflicts.

CDP-13 Require any new agricultural use or application to mitigate anticipated conflicts between proposed new agricultural use and existing agricultural activities.

CDP-14 Require environmental review of all applications for residential building permits on undeveloped lots in antiquated subdivisions located in agriculturally designated areas.

CDP-15 Encourage the merger of lots or the reversion to acreage of lots in antiquated subdivisions in areas where development of the lots is substandard for agricultural purposes, and where development to non-agricultural use would impair surrounding agricultural operations.

CDP-16 Recognize that due to discrepancies arising from the original land surveys conducted in the State, which resulted in acreage shortages in sections of land, the existence of physical barriers such as canals, roads, streams, levees, etc., and parcel configuration, exceptions to minimum parcel size

for properties zoned to exclusive agricultural categories may be necessary and appropriate to promote the spirit and intent of the General Plan.

CDP-17 Encourage agricultural water suppliers to make changes in their service requirements to increase the minimum sized parcel to be served in agricultural areas to ten (10) acres, and recommend that new parcels created within water supply district boundaries which are less than ten (10) acres in size be detached from the district(s), except for the Orland Unit Water Users' Association, for which the minimum size shall be 5.01 acres.

CDP-18 Within the Orland-Artois Water District, approve no zone changes allowing parcels smaller than twenty (20) acres in size, and approve no tentative maps for parcels less than twenty (20) acres in size.

CDP-19 Limit residential uses on agriculturally designated lands to farm-related single-family residences and quarters for farm labor and senior citizens, in accordance with State law.

CDP-20 Assure that adequate provision is made in this General Plan for all types of uses and establish coherent land use patterns.

CDP-21 Establish standards for population density and building intensity for each land use category identified on the Land Use Diagram.

CDP-22 Allow a limited number of new planned communities and include within an existing or establish a new urban limit line for all approved planned communities.

CDP-23 Allow development nodes along the 1-5 corridor at Road 7, Road 27, Road 33, Road 39, Road 57 and Road 68, and establish urban limit lines for all approved developments. All developments within development nodes shall be developed through the Planned Development process.

CDP-24 Discourage development of new planned communities away from established urban centers unless it can be demonstrated that they are self-sufficient and functional.

CDP-25 Prepare community plans for the unincorporated communities of Artois, Elle Creek, Hamilton City and Butte City which are consistent with this General Plan.

CDP-26 Adopt land use plans for the areas within the Orland and Willows urban limit lines, as recommended by the respective city, and as modified by the County to maintain consistency with this General Plan.

CDP-27 Encourage the cities of Orland and Willows to utilize the County-adopted urban limit lines as planning boundaries for their respective General Plans.

CDP-28 Locate major new residential development in proximity to opportunities for employment. Establish distinct land use categories for single family and multiple family residential uses.

CDP-29 Establish distinct land use categories for single family and multiple family residential uses.

CDP-30 Relate decisions concerning land use to the functional classification of nearby roadways.

CDP-31 Encourage commercial and industrial development in areas where adequate facilities and services exist or where facilities and services can be made available, including areas within incorporated cities, planned communities and along the I-5 corridor. Adequate facilities and services



shall include community water and sewer if located within an incorporated city or urban limit line. In other areas, adequacy of sewer and water service shall be as determined by local health standards/regulations.

CDP-32 Encourage a diverse range of commercial and industrial development, consistent with community plans and the level of service available.

CDP-33 Prevent the loss of designated industrial land to other nonindustrial uses.

CDP-34 Ensure that industrial or commercial development which requires public water, sewer and other urban services is located within an urban limit line.

CDP-35 Allow resource-dependent industrial uses to locate outside urban limit lines and other areas planned for development, when such uses are dependent upon close proximity to resource production lands, and are not dependent on an urban level of service.

CDP-36 Where appropriate, promote development of well planned and designed industrial parks catering to local businesses, as well as to outside opportunities.

CDP-37 Discourage strip commercial development and locate future commercial development in well designed commercial centers having adequate and controlled access to public roads.

CDP-38 Allow home occupations in areas not otherwise designated for commercial and industrial use, subject to review.

CDP-39 Design commercial and industrial subdivisions and uses to prevent the intrusion of incompatible uses.

CDP-40 Discourage scattered unplanned urban development.

CDP-41 Establish a procedure for utilizing development agreements in conjunction with development proposals, and provide for the rezoning of property where development agreements are violated.

CDP-42 Encourage the clustering of radio and other communication towers exceeding present zoning height requirements in specific locations in order to minimize overall visual impacts, and to discourage unplanned location of towers.

CDP-43 Establish a threshold for when to use gross or net acreage to determine minimum parcel size in rural residential zones.

CDP-44 Discourage urban growth in floodplains, aquifer recharge areas, scenic and historic sites, or other sensitive areas as specified in this General Plan.

CDP-45 Refine existing design review guidelines for application to areas within urban limit lines, and establish new and creative design guidelines for development nodes along the I-5 corridor area.

CDP-46 Require a general plan of development for large-scale development proposals, including planned communities and development nodes, and a specific plan for planned communities.

CDP-47 Reserve adequate sites for new and expanded public facilities needed to serve new growth and development and designate general locations for such facilities, including but not limited to schools,

solid and liquid waste disposal facilities, drainage facilities, fire stations, and County government buildings and facilities.

CDP-48 Consider septic system and septage disposal limitations when determining areas suitable for new development not served by wastewater treatment facilities, and assure that density standards allow adequate area for septage disposal.

CDP-49 Support the orderly growth of the Willows-Glenn County and Orland-Haigh Field airports, the development of compatible uses for the areas surrounding these airports, and safeguard the general welfare of the inhabitants within the vicinity of each airport and the public in general.

CDP-50 Provide an orderly framework for communication and coordination between the County and the cities of Willows and Orland regarding development, public services and improvements.

CDP-51 Afford the cities of Orland and Willows the opportunity to review and comment on matters within their adopted urban limit lines and consider their recommendations in rendering land use decisions.

CDP-52 Encourage urban development proximate to incorporated cities to occur within incorporated cities first, and within urban limit lines of incorporated cities upon satisfaction of all of the following:

- (a) The city will not consent to annex or annexation is not possible under State law;
- (b) Public service impacts of development are within service capabilities of the County and affected special districts; and
- (c) The use and density is consistent with the County's General Plan and compatible with the City's General Plan.

CDP-53 Seek equitable tax-sharing agreements for proposed annexations which address property tax, sales tax and (when applicable) redevelopment funds, in exchange for directing new urban development to incorporated cities.

### Glenn County General Plan – Land Use Map

Planned land uses within the county include single and multiple family residential, business park, commercial, industrial, public facilities, agricultural and conservation land and recreational uses which are included within specific designations identified by the County’s Land Use Map.

Figure 1.1-1 (General Plan Land Use Map) illustrates the County’s current General Plan land use designations and their respective distributions throughout the county. Table 1.1-1 summarizes the County’s General Plan land use designations, by number of parcels and acreage.

**TABLE 1.1-1: EXISTING GLENN COUNTY LAND USE DESIGNATIONS – UNINCORPORATED COUNTY**

<i>LAND USE</i>	<i>PARCELS</i>	<i>TOTAL PLANNING AREA ACREAGE</i>	<i>PERCENT OF AREA</i>
General Agriculture	805	14,321.36	1.71%
Foothill Agriculture/Forestry	1,253	290,688.56	34.73%
Intensive Agriculture	3,834	304,743.26	36.40%
Agricultural/Residential	21	510.65	0.06%

<i>LAND USE</i>	<i>PARCELS</i>	<i>TOTAL PLANNING AREA ACREAGE</i>	<i>PERCENT OF AREA</i>
Rural Residential	767	4,631.38	0.55%
Suburban Residential	811	1,945.95	0.23%
Single Family Residential	1,219	650.03	0.08%
Multiple Family Residential	94	85.12	0.01%
Local Commercial	21	55.77	0.01%
Service Commercial	122	537.09	0.06%
Community Commercial	88	71.29	0.01%
Highway and Visitor Service Commercial	43	728.46	0.09%
Business Park	13	171.46	0.02%
Industrial	177	1,602.86	0.19%
Public Facilities	14	701.61	0.08%
Recreation	525	213,062.28	25.45%
ROW/Canal	233	2,600.70	0.31%
<b>Grand Total</b>	<b>10,040</b>	<b>837,107.83</b>	<b>100.00%</b>

SOURCES: GLENN COUNTY, 2019; GIS LAND USE DATA FILE; DE NOVO PLANNING GROUP, 2019.

A brief description of each of the General Plan land use designations is provided below. These descriptions are based on the existing 1993 General Plan's land use descriptions. Each land use classification has been defined and its purpose stated. Uses which would typically be permitted in each classification have been identified, as well as population density and building intensity standards. Where building intensity standards refer to net acreage, the standard must be met after roads and other dedications have been removed from the property. Where no reference to net acreage is made, acreages may be assumed to be gross acreage, including roads and other encumbrances.

### **Open Space/Public Lands:**

**Definition and Purpose:** The Open Space/Public Lands classification is used to identify areas having open space value as primitive or natural areas; to identify areas in public ownership which are reserved for wilderness use or as a wildlife or nature preserve; to retain certain lands in a natural or undisturbed state; to identify lake recreation areas and to provide for use of these areas for active or passive public recreation purposes.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: wildlife or nature preserves; passive, non-intensive recreational uses; public campgrounds; public parks; and important natural resource areas.

**Standards for Population Density and Building Intensity:** Areas designated as Open Space/Public Lands shall not be utilized for permanent residences.

Currently no parcels or acreage within the county are included within the Open Space/Public Lands land use designation, even though this land use designation exists, on paper, within the current General Plan.

### **General Agriculture:**

**Definition and Purpose:** The General Agriculture classification is used to identify those areas where it is desirable to retain agriculture as the primary land use.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: growing and harvesting field crops, grain and hay crops; growing and harvesting fruit and nut trees, vines and vegetables; pasture and grazing land; and animal raising operations.

**Standards for Population Density and Building Intensity:** The minimum parcel size shall be twenty (20) acres. Population density shall not exceed 200 persons per square mile (640 acres) and building intensity shall not exceed one residential unit per twenty (20) acres except that housing for farm labor and senior citizens in excess of the above standard may be permitted subject to permitting procedures established in the Glenn County Zoning Code.

Currently 805 parcels totaling 14,321.36 acres (approximately 1.71% of the unincorporated county) are included with the General Plan's General Agriculture Land Use Designation.

**Foothill Agriculture/Forestry:**

**Definition and Purpose:** The Foothill Agriculture/Forestry classification is used to preserve foothill areas of the county by providing for areas of intensive and extensive agricultural uses; to protect grazing land; to protect timber and forest lands economically suitable for logging; and to promote and encourage the use of forest lands for multiple purposes such as preserving wildlife, hunting, hiking, or other compatible uses.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: grazing; animal raising operations; growing and harvesting timber; uses directly related to growing, harvesting and processing forest products; growing and harvesting agricultural crops; uses directly related to growing, harvesting and processing agricultural products; and bunting lodges, clubs and camps.

**Standards for Population Density and Building Intensity:** The minimum parcel size shall be one hundred sixty (160) acres. Population density shall not exceed 12 persons per square mile (640 acres) and building intensity shall not exceed one permanent residence for every 160 acres.

Currently 1,253 parcels totaling 290,688.56 acres (approximately 34.73% of the unincorporated county) are included with the General Plan's Foothill Agriculture/Forestry Land Use Designation.

**Intensive Agriculture:**

**Definition and Purpose:** The Intensive Agriculture classification is used to identify areas suitable for commercial agriculture which provide a major segment of the county's economic base; to protect the agricultural community from encroachment of unrelated agricultural uses which, by their nature, would be injurious to the physical and economic well-being of the agricultural community; to accommodate lands under Williamson Act contracts; to encourage the preservation of agricultural land, both in production and potentially productive, which contain State-designated Important Farmlands or Locally Significant Farmlands.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: growing and harvesting field crops, grain and hay crops; growing

and harvesting fruit and nut trees, vines and vegetables; pasture and grazing land; and animal raising operations.

Standards for Population Density and Building Intensity: The minimum parcel size shall be forty (40) acres. Population density shall not exceed 100 persons per square mile (640 acres) and building intensity shall not exceed one residential unit per forty (40) acres except that housing for farm labor and senior citizens in excess of the above standard may be permitted subject to permitting procedures established in the Glenn County Zoning Code.

Currently 3,834 parcels totaling 304,743.26 acres (approximately 36.40% of the unincorporated county) are included with the General Plan's Intensive Agriculture Land Use Designation.

#### **Agricultural/Residential:**

Definition and Purpose: The Agriculture/Residential classification is utilized to identify areas suitable for agricultural use and to provide for residential development with a range of densities compatible with a rural character and life-style; to use as a transition from Rural Residential to Intensive Agriculture; and to provide areas for "hobby farms".

Permitted Uses: Examples of uses which are considered appropriate under this classification include, but are not limited to: growing and harvesting field crops, grain and hay crops; growing and harvesting fruit and nut trees, vines and vegetables; pasture and grazing land; domestic livestock farming on a limited scale; single family residential uses; and home occupations.

Standards for Population Density and Building Intensity: The minimum parcel size shall be ten (10) acres. Population density shall not exceed 400 persons per square mile (640 acres) and building intensity shall not exceed one residential unit per ten (10) acres except that housing for senior citizens in excess of the above standard may be permitted, subject to permitted procedures established in the Glenn County Zoning Code.

Currently 21 parcels totaling 510.65 acres (approximately 0.06% of the unincorporated county) are included with the General Plan's Agricultural/Residential Land Use Designation.

#### **Rural Residential:**

Definition and Purpose: The Rural Residential classification is utilized to identify areas suitable for large lot, low density residential use that provide for development which is compatible with a rural character and life-style.

Permitted Uses: Examples of uses which are considered appropriate under this classification include, but are not limited to: single-family residences; agricultural and domestic livestock farming on a limited scale; and home occupations.

Standards for Population Density and Building Intensity: The minimum parcel size shall be five (5) acres. Population density shall not exceed 800 persons per square mile (640 acres) and building intensity shall not exceed one residential unit per five (5) acres except that housing for

senior citizens in excess of the above standard may be permitted, subject to the permitting procedures established in the Glenn County Zoning Code.

Currently 767 parcels totaling 4,631.38 acres (approximately 0.55% of the unincorporated county) are included with the General Plan's Rural Residential Land Use Designation.

**Suburban Residential:**

**Definition and Purpose:** The Suburban Residential classification is utilized to identify areas suitable for smaller lots, yet rural in character, and to provide for development that is compatible with subdivisions in a suburban setting.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: single-family residences; agricultural and domestic livestock farming on a limited scale; and home occupations.

**Standards for Population Density and Building Intensity:** The minimum parcel size shall be one (1) acre with building intensity not exceeding one residential unit per net acre. In areas containing gravelly soils similar to those found in the West Orland area, the minimum parcel size shall be two (2) acres with building intensity not exceeding one residential unit per two net acres. In addition, housing for senior citizens in excess of the above standard may be permitted, subject to the permitting procedures established in the Glenn County Zoning Code. Population density shall not exceed 4,000 persons per square mile (640 acres), except in gravelly soil areas where population density shall not exceed 2,000 persons per square mile.

Currently 811 parcels totaling 1,945.95 acres (approximately 0.23% of the unincorporated county) are included with the General Plan's Suburban Residential Land Use Designation.

**Single Family Residential:**

**Definition and Purpose:** The Single Family Residential classification is utilized to provide areas suitable for development of dwelling units intended for occupancy by only one household, and physically independent from other dwelling units or structures.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: "traditional" single-family detached housing; mobile home subdivisions; mobile home parks; and planned residential developments.

**Standards for Population Density and Building Intensity:** The minimum parcel size shall be 6,000 square feet. Population density shall not exceed 8,000 persons per square mile (640 acres) and building intensity is limited to one main dwelling unit per parcel and shall not exceed six (6) residential units per net acre except that in areas served by public sewer and water systems with adequate capacity; one second dwelling unit may be permitted subject to the permitting procedures established in the Glenn County Zoning Code. The maximum height of structures shall be thirty feet (30'). The maximum lot coverage shall be forty percent (40%) except in areas with slopes of more than 30 percent (30%), where the maximum lot coverage shall be thirty percent (30%).

Currently 1,219 parcels totaling 650.03 acres (approximately 0.08% of the unincorporated county) are included with the General Plan's Single Family Residential Land Use Designation.



**Multiple Family Residential:**

**Definition and Purpose:** The Multiple Family Residential classification is utilized to provide for areas suitable for development of structures containing more than one dwelling unit, including duplexes and triplexes.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: attached housing; apartments; group housing; condominiums; mobile home parks; and planned residential developments.

**Standards for Population Density and Building Intensity:** The minimum parcel size shall be 6,000 square feet. Population density shall not exceed 16,000 persons per square mile (640 acres) and building intensity may range from eight (8) residential units per net acre to fifteen (15) dwelling units per net acre. The maximum height of structures shall be forty-five feet (45'). The maximum lot coverage shall be forty percent (40%) for single story buildings; thirty-five percent (35%) for two story buildings; and thirty percent (30%) for three story buildings.

Currently 94 parcels totaling 85.12 acres (approximately 0.01% of the unincorporated county) are included with the General Plan's Multiple Family Residential Land Use Designation.

**Local Commercial:**

**Definition and Purpose:** The Local Commercial classification provides for the designation of areas for small, localized retail, recreational and service businesses which provide goods and merchandise serving the immediate surrounding area.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: eating and drinking establishments; food and beverage retail sales; limited personal, medical, professional and repair services; and retail sales. Such facilities may range from a single use to a cluster of uses.

**Standards for Population Density and Building Intensity:** Areas designated as Local Commercial shall not be utilized for permanent residences. The minimum parcel size shall be 8,000 square feet. Structures shall not cover more than forty percent (40%) of the site if single-story or thirty percent (30%) of the site if multi-story, or be higher than thirty feet (30').

Currently 21 parcels totaling 55.77 acres (approximately 0.01% of the unincorporated county) are included with the General Plan's Local Commercial Land Use Designation.

**Service Commercial:**

**Definition and Purpose:** The purpose of the Service Commercial classification is to provide areas suitable for heavier commercial uses involving outdoor storage, display and work activity.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: automotive-related or heavy equipment services and sales; lumber yards; machine shops; trucking terminals/ printing/publishing facilities; and warehousing. The Service Commercial classification may be used in agriculturally-designated areas where it provides an area for agricultural equipment sales and services; wholesale commodities sales; and other agricultural-related service and commercial uses.

Standards for Population Density and Building Intensity: Areas designated as Service Commercial shall not be utilized for permanent residences. The minimum parcel size shall be 12,500 square feet. Structures shall not cover more than seventy five percent (75%) of the site or be higher than thirty-five feet (35'), unless developed as part of a Planned Development. Outdoor storage shall be screened and generally shall not exceed fifty percent (50%) of the gross floor area.

Currently 122 parcels totaling 537.09 acres (approximately 0.06% of the unincorporated county) are included with the General Plan's Service Commercial Land Use Designation.

**Community Commercial:**

Definition and Purpose: The Community Commercial classification provides for a full range of commercial retail and service establishments. Community Commercial areas should satisfy a variety of personal needs as well as those of other nearby businesses.

Permitted Uses: Examples of uses which are considered appropriate under this classification include, but are not limited to: gasoline service stations; hardware stores; eating and drinking establishments; food and beverage sales; public buildings; general merchandise stores; professional offices; and finance offices. Community Commercial uses also include agricultural supply and commodities sales; veterinary services; and other agricultural-related services.

Standards for Population Density and Building Intensity: Areas designated as Community Commercial shall not be utilized for permanent residences. The minimum parcel size shall be 8,000 square feet. Structures shall not cover more than fifty percent (50%) of the site or be higher than thirty-five feet (35').

Currently 88 parcels totaling 71.29 acres (approximately 0.01% of the unincorporated county) are included with the General Plan's Community Commercial Land Use Designation.

**Highway and Visitor Service Commercial:**

Definition and Purpose: The purpose of the Highway and Visitor Service Commercial classification is to provide sites to serve the commercial needs of travelers and visitors to the county.

Permitted Uses: Examples of uses which are considered appropriate under this classification include, but are not limited to: travel-related services such as gasoline service stations, truck stops, food and beverage sales, eating and drinking establishments and lodging located along major streets, major collectors, and major highways for travelers. Resort development is appropriate under this designation, as are other types of development that would attract visitors to the county.

Standards for Population Density and Building Intensity: Areas designated as Highway and Visitor Service Commercial shall not be utilized for permanent residences except for those units required for caretaker and/ or employee housing incidental to hotel or motel uses. The minimum parcel size shall be 8,000 square feet. Structures shall not cover more than fifty percent (50%) of the site or be higher than thirty feet (30'), unless developed as part of a Planned Development.

Currently 43 parcels totaling 728.46 acres (approximately 0.09% of the unincorporated county) are included with the General Plan's Highway and Visitor Service Commercial Land Use Designation.

**Business Park:**

**Definition and Purpose:** The purpose of the Business Park classification is to strengthen and enhance industrial and business development potential by designating areas where adequate infrastructure can be provided to support new industries or the relocation of industries, and a "workplace use" environment can be provided.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: offices; research and development parks; light industrial parks; warehousing; health clubs and gymnasiums; small proprietary industries; "incubator" businesses and industries; and incidental retail uses.

**Standards for Population Density and Building Intensity:** Areas designated as Business Park shall not be used for permanent residential uses. The minimum parcel size shall one (1) acre. Structures shall not cover more than thirty percent (30%) of the site or be higher than forty-five feet (45').

Currently 13 parcels totaling 171.46 acres (approximately 0.02% of the unincorporated county) are included with the General Plan's Business Park Land Use Designation.

**Industrial:**

**Definition and Purpose:** The purpose of the Industrial classification is to provide for a range of manufacturing operations; the processing of natural resources; and the processing of agricultural products. The intent is to encourage appropriate industrial/manufacturing development that will be compatible with adjacent land uses and will not create adverse environmental impacts.

**Permitted Uses:** Examples of uses which are be considered appropriate under this classification include, but are not limited to: light manufacturing uses; uses permitted in the Service Commercial category; fabrication shops; large warehouses; equipment storage yards; distribution sales; batch plants; lumber mills; auto wrecking, salvage and junk yards; fuel tank farms; and energy facilities.

**Standards for Population Density and Building Intensity:** Areas designated as Industrial shall not be utilized for permanent residences. The minimum parcel size shall be 10,000 square feet. Structures shall not cover more than seventy-five percent (75%) of the site or be higher than forty-five feet (45'), unless developed as part of a Planned Development. Outdoor storage shall be completely screened and shall not exceed one hundred percent (100%) of the gross floor area of all structures.

Currently 177 parcels totaling 1,602.86 acres (approximately 0.19% of the unincorporated county) are included with the General Plan's Industrial Land Use Designation.

**Public Facilities:**

**Definition and Purpose:** The purpose of the Public Facilities classification is to provide areas for development of public facilities to meet public needs.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: institutional, academic, governmental and community services,

either publicly-owned or operated by non-profit organizations, such as fire stations, parks and community centers.

**Standards for Population Density and Building Intensity:** Areas designated as Public Facilities shall not be utilized for permanent residences. The minimum parcel size shall be 6,000 square feet. Structures shall not cover more than fifty to seventy-five percent (50 to 75%) of the site or be higher than forty-five feet (45').

Currently 14 parcels totaling 701.61 acres (approximately 0.08% of the unincorporated county) are included with the General Plan's Public Facilities Land Use Designation.

**Recreation:**

**Definition and Purpose:** The Recreation classification is used to identify areas having open space value for recreation purposes and provide for utilization of these areas for public or private recreational development.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: private and public campgrounds; private and public parks or playgrounds; water-related recreation activities; golf courses and/ or driving ranges; restaurants; recreationally- related commercial activity; outdoor theaters; ball parks; and race tracks.

**Standards for Population Density and Building Intensity:** Areas designated as Recreation shall not be utilized for permanent residences. The minimum parcel size shall be five (5) acres. Structures shall not cover more than twenty percent (20%) of the site or be higher than thirty feet (30').

Currently 525 parcels totaling 213,062.28 acres (approximately 25.45% of the unincorporated county) are included with the General Plan's Recreation Land Use Designation.

**General Plan Special Overlay Designations**

In addition to the above land use classifications, several designations have been created in the form of overlays, to be applied in combination with the classifications listed above. These Special Overlay Designations reflect special concerns and include the following:

**Biological Importance:** This overlay designation reflects areas of biological importance in Glenn County which are critical to the preservation of plant and animal life. The purpose of the designation is to identify areas where certain types of development may have an adverse impact on biological resources. In some instances, development should not occur; in others, development should occur only when it can be shown that proper protection of resources will be achieved either through mitigation or compensation. Areas identified include the Sacramento River corridor, the Sacramento National Wildlife Refuge, migratory deer herd range, naturally occurring wetlands, and stream courses such as Butte and Stony Creeks. In addition to these general areas, twelve specific sites have been identified as discussed in Section 2.4.2 of the existing General Plan's Environmental Setting Technical Paper (Biological Importance areas included in the adopted General Plan Figure 3-14).

**Restorable Wetlands:** This overlay designation reflects those areas approved by the Glenn County Board of Supervisors, by Resolution No. 92-56, for waterfowl or wetland habitat easement acquisition by the U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service proposes to acquire easements, upon a

willing seller basis, using Migratory Bird Conservation Funds in accordance with the North American Waterfowl Management Plan and Central Valley Habitat Joint Venture Implementation Plan (Restorable Wetlands are included in the adopted General Plan Figure 3-15).

**Historic/Cultural:** This overlay designation reflects those areas of unique historical or cultural value within Glenn County. The purpose of this designation is to preserve those sites identified for educational, scientific and aesthetic purposes (Historic/Cultural areas are included in the adopted General Plan Figure 3-16).

**Floodplain:** This overlay reflects those areas which are subject to flooding in a 100-year storm as determined by the Federal Emergency Management Agency (FEMA). The purpose of this designation is to identify those areas in which special precautions should be taken to ensure that structures and other property are not exposed to undue risk of flood during periods of heavy rainfall and runoff (Floodplain areas are included in the adopted General Plan Figure 3-17).

**Floodway:** Floodways are areas necessary for the safe passage of water during periods of high flow, and are based on State Reclamation Board Designated Floodway maps. Such areas should be carefully regulated to protect them from encroachment by structures or other modifications which would impede the flow of water. They are also areas in which close coordination with the State Reclamation Board is required (Floodway areas are included in the adopted General Plan Figure 3-18).

**Groundwater Recharge:** This overlay identifies an area with very high groundwater recharge value. Groundwater recharge areas should be protected from excessive over-covering and the County should ensure that septic systems and other potential sources of groundwater pollution are carefully regulated and monitored. Groundwater recharge areas also identify areas potentially rich in aggregate resources. Included within the groundwater recharge overlay area is the Stony Creek Fan (Groundwater Recharge areas are included in the adopted General Plan Figure 3-19).

### **General Plan Development Areas**

**Urban Limit Lines:** Urban Limit Lines reflects the boundary around incorporated cities and unincorporated communities within which urban development will be directed. These lines represent those areas where growth can be accommodated because full urban services and infrastructure sufficient to serve development is either available or can be made available within the planning period.

Urban Limit Lines are not to be confused with Spheres of Influence as administered by the Local Agency Formation Commission. A Sphere of Influence is defined as "... the probable ultimate physical boundary and service area of a local agency, as determined by the (Local Agency Formation) commission." They are also distinct from city limit lines, and may include territory within city limits as well as unincorporated areas. When an unincorporated area is included within an Urban Limit Line adjacent to a city, there is no obligation on the part of the affected city to plan for or to serve the subject area.

Within Glenn County, Urban Limit Lines are associated with the cities of Orland and Willows, as well as several community areas within the county, including Hamilton City, Artois, Butte City, and Elk Creek. A brief description and land uses within the unincorporated communities of Hamilton City, Artois, Butte City, and Elk Creek is included below.

**Artois:** The community of Artois is located south of Road 33, between Walker Creek and the Southern Pacific tracks. General Plan land use designations within the Artois planning area (ULL and SOI) are

included in Table 1.1-2 below. Figure 1.1-2 shows the location and distribution of land uses within the community of Artois.

**TABLE 1.1-2: EXISTING GLENN COUNTY LAND USE DESIGNATIONS – ARTOIS**

GENERAL PLAN LAND USE DESIGNATIONS	ACRES (GIS) ULL	ACRES (GIS) SOI <sup>A</sup>	TOTAL ACRES ULL AND SOI
Agricultural/Residential	-	92.09	92.09
Community Commercial	6.77	0.00	6.77
General Agriculture	20.31	81.72	102.03
Highway and Visitor Service Commercial	119.91	0.00	119.91
Industrial	38.39	0.00	38.39
Intensive Agriculture	31.25	581.23	612.48
Rural Residential	159.33	0.00	159.33
Single Family Residential	116.42	0.00	116.42
<b>Grand Total</b>	<b>492.38</b>	<b>755.03</b>	<b>1,247.41</b>

NOTES (A) INCLUDES AREAS WITHIN THE SOI THAT ARE OUTSIDE OF THE ULL.

SOURCES: GLENN COUNTY, 2019; GIS LAND USE DATA FILE; DE NOVO PLANNING GROUP, 2019.

**Hamilton City:** Hamilton City is bounded by the Glenn County Irrigation Canal on the west, Highway 32 on the north, Sacramento Avenue on the east and First Street on the South. General Plan land use designations within the Hamilton City planning area are included in Table 1.1-3 below. Figure 1.1-3 shows the location and distribution of land uses within the community of Hamilton City.

**TABLE 1.1-3: EXISTING GLENN COUNTY LAND USE DESIGNATIONS – HAMILTON CITY**

GENERAL PLAN LAND USE DESIGNATIONS	TOTAL ACRES ULL AND SOI <sup>A</sup>
Community Commercial	16.86
Highway and Visitor Service Commercial	2.27
Industrial	224.97
Intensive Agriculture	445.60
Multiple Family Residential	19.11
Service Commercial	4.50
Single Family Residential	143.83
<b>Grand Total</b>	<b>857.14</b>

NOTES: (A) ALL LANDS WITHIN THE ULL ARE ALSO WITHIN THE SOI

SOURCES: GLENN COUNTY, 2019; GIS LAND USE DATA FILE; DE NOVO PLANNING GROUP, 2019.

**Elk Creek:** Elk Creek is located near Stony Gorge Reservoir in the foothill area of Glenn County along Road 306 west of Stony Creek. General Plan land use designations within the Elk Creek planning area are included in Table 1.1-4 below. Figure 1.1-4 shows the location and distribution of land uses within the community of Elk Creek.

**TABLE 1.1-4: EXISTING GLENN COUNTY LAND USE DESIGNATIONS – ELK CREEK**

GENERAL PLAN LAND USE DESIGNATIONS	TOTAL ACRES ULL AND SOI <sup>A</sup>
Foothill Agriculture/Forestry	259.31
General Agriculture	164.75
Industrial	72.82

Local Commercial	3.60
ROW/Canal	1.79
Single Family Residential	140.47
<b>Grand Total</b>	<b>642.73</b>

NOTES: (A) ALL LANDS WITHIN THE ULL ARE ALSO WITHIN THE SOI

SOURCES: GLENN COUNTY, 2019; GIS LAND USE DATA FILE; DE NOVO PLANNING GROUP, 2019.

**Butte City:** Butte City is located on the east side of the Sacramento River, south of Highway 162. General Plan land use designations within the Butte City planning area are included in Table 1.1-5 below. Figure 1.1-5 shows the location and distribution of land uses within the community of Butte City.

**TABLE 1.1-5: EXISTING GLENN COUNTY LAND USE DESIGNATIONS – BUTTE CITY**

GENERAL PLAN LAND USE DESIGNATIONS	TOTAL ACRES ULL AND SOI <sup>A</sup>
Community Commercial	2.52
General Agriculture	0.07
Industrial	20.21
Intensive Agriculture	2.05
Single Family Residential	12.37
<b>Grand Total</b>	<b>37.21</b>

NOTES: (A) ALL LANDS WITHIN THE ULL ARE ALSO WITHIN THE SOI

SOURCES: GLENN COUNTY, 2019; GIS LAND USE DATA FILE; DE NOVO PLANNING GROUP, 2019.

### Glenn County Zoning Ordinance - Unified Development Code

Title 15 of the Unified Development Code includes the County's Zoning Ordinance. The Zoning Ordinance carries out the policies of the General Plan by classifying and regulating the uses of land and structures within the unincorporated County, consistent with the General Plan. The Zoning Ordinance is adopted to protect and promote the public health, safety, comfort, convenience, prosperity, and general welfare of residents and businesses. Specifically, the purposes of this title are:

- A. To promote and protect the public health, safety, peace, morals, comfort, convenience and general welfare;
- B. To implement the county general plan, and to facilitate and guide growth in accordance with the general plan; and
- C. To protect the social and economic stability of residential, commercial, industrial, resource production, and recreational activities within the county through the orderly, planned use of real property.

Zoning Designations have been established to implement the intent of the General Plan’s Land Use Designations and Land Use Map. The following zoning designations are included in the Glenn County Unified Development Code (*Title 15 Division 3: Development Districts Chapter 15.300 - Establishment of Zone*). As shown on Table 1.1-6, a zoning consistency matrix has been developed that reflects the appropriate zoning classifications which meet the intent of the land use designations. This matrix is to be utilized when considering zoning reclassification proposals. The Glenn County Zoning Code may further define the uses which are permitted within each classification.

- TPZ - Timberland Preserve Zone
- RZ - Recreation Zone
- FA - Foothill Agricultural/Forestry Zone
- AP - Agricultural Preserve Zone
- FS - Farmland Security Zone
- AE - Exclusive Agricultural Zone
- RE -NW - Rural Residential Estate Zone - North Willows
- RE - Rural Residential Estate Zone
- R-1 - Single-family Residential Zone
- R-M - Multiple Residential Zone
- LC - Local Commercial Zone
- C - Commercial Zone
- CC - Community Commercial Zone
- SC- Service Commercial Zone
- HVC- Highway Visitor Commercial Zone
- M - Industrial Zone
- MP - Industrial Park Zone
- PDR- Planned Development Residential Zone
- PDC - Planned Development Commercial Zone
- FP - Floodplain Zone
- AV - Airport Zone
- AVH - Airport Hazard Zone

**TABLE 1.1-6 GLENN COUNTY LAND USE CLASSIFICATIONS AND ZONING CONSISTENCY MATRIX.**

<i>GENERAL PLAN LAND USE CLASSIFICATIONS</i>	<i>ZONING DESIGNATIONS</i>
Open Space/Public Lands <sup>a</sup>	OS <sup>b</sup>
Foothill Agriculture/Forestry	FA, TPZ, AP, OS
Intensive Agriculture	AE-40, AE-80, AP
General Agriculture	AE-20
Agricultural/Residential	AT
Rural Residential	RE-5, PDR
Suburban Residential	RE-NW, RE-1, RE-2, PDR
Single Family Residential	R-1, PDR
Multiple Family Residential	R-M, PDR
Local Commercial	LC, PDC
Community Commercial	CC, PDC
Service Commercial	SC, PDC



<i>GENERAL PLAN LAND USE CLASSIFICATIONS</i>	<i>ZONING DESIGNATIONS</i>
Highway and Visitor Service Commercial	HVC, PDC
Industrial	M, PDC
Business Park	MP
Public Facilities	All
Recreation	RZ

*NOTES: (A) NO PARCELS WITHIN THE COUNTY ARE INCLUDED WITHIN THIS LAND USE DESIGNATION. (B) THIS ZONING DESIGNATION IS INCLUDED WITHIN THE GENERAL PLANS GP LAND USE AND ZONING MATRIX (GENERAL PLAN TABLE 3-1), HOWEVER THIS IS NOT AN ADOPTED ZONING DESIGNATION UNDER THE ADOPTED GLENN COUNTY UNIFIED DEVELOPMENT CODE (DATED: SEPTEMBER 27, 2018).*

*SOURCE: GLENN COUNTY GENERAL PLAN AND UNIFIED DEVELOPMENT CODE 2018.*

### **Local Agency Formation Commission of Glenn County**

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 a LAFCO. The goals of the LAFCO include preserving agricultural and open space land resources and providing for efficient delivery of services. The Glenn County LAFCO has authority over land use decisions in Glenn County affecting local agency boundaries. Its authority extends to the incorporated cities, including annexation of County lands into a city, and special districts within the County. 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 (SOI) 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.
- Provision of new or different services by districts.
- Proposals that extend service into previously unserved territory in unincorporated areas.

In addition, the Glenn County LAFCO conducts Municipal Service Reviews (MSRs) for services within its jurisdiction. An MSR typically includes a review of existing municipal services provided by a local agency or district and its infrastructure needs and deficiencies. It also evaluates financing constraints and opportunities, management efficiencies, opportunities for rate restructuring and shared facilities, local accountability and governance, and other issues.

Legislation, including Assembly Bill 1555 and Senate Bill 244, has been enacted to encourage the identification and annexation of islands, which are unincorporated areas substantially surrounded by a city or cities.

### **City of Orland General Plan**

The City of Orland adopted its General Plan in February 2012. The City's General Plan provides a comprehensive set of goals, policies, and implementing actions to guide the City's growth over an approximate 20-year period (2008-2028). The Orland General Plan included the following Land Use Element goals:

Goal 2.1: Maintain and promote the qualities that make Orland a desirable community.

Goal 2.2: Maintain a compact urban form and preserve agricultural land outside of the City.

Goal 2.3: Create and maintain neighborhoods that ensure a high quality of life in Orland.

Goal 2.4: Promote the expansion and retention of existing commercial establishments and encourage new commercial development in the City.

Goal 2.5: Promote economic growth in the City of Orland through attraction and retention of industry in order to enhance employment opportunity and maximize the availability of goods and services within the community.

In addition, the City’s General Plan establishes allowed land uses for lands within the City limits and identifies planned land uses for the sphere of influence (SOI). Figure 1.1-6 shows Glenn County General Plan Land Use Designations within the Orland SOI, and these County designated uses and acreages are summarized below in Table 1.1-7.

**TABLE 1.1-7: GLENN COUNTY GENERAL PLAN LAND USE DESIGNATIONS – ORLAND SOI**

<i>Row Labels</i>	<i>Acres - Orland SOI</i>	<i>Percent of SOI</i>
Business Park	127.33	3.78%
Community Commercial	17.61	0.52%
General Agriculture	347.04	10.30%
Highway and Visitor Service Commercial	6.47	0.19%
Industrial	189.84	5.63%
Intensive Agriculture	267.26	7.93%
Multiple Family Residential	26.56	0.79%
Public Facilities	383.53	11.38%
Rural Residential	935.75	27.77%
Service Commercial	50.11	1.49%
Suburban Residential	913.70	27.12%
ROW/Canal	104.51	3.10%
<b>Total</b>	<b>3,369.70</b>	<b>100.00%</b>

SOURCES: GLENN COUNTY, 2019; GIS LAND USE DATA FILE; DE NOVO PLANNING GROUP, 2019.

### City of Willows General Plan

The City of Willows is in the process of updating its General Plan. The City’s current General Plan was originally adopted in 1974 as the “Glenn County And Cities Of Orland Willows Unit Of The Tri-County Area Planning Council General Plan” with Elements updated in 1981 (Land Use, Open Space Conservation and circulation) and additional updates to the Land Use element adopted in 2010, and the City’s 2014-2019 Housing Element adopted in January of 2015.

The City's General Plan establishes allowed land uses for lands within the City limits. Planned land uses for the sphere of influence are currently only designated by Glenn County. The City's Land Use Diagram, which identifies adopted land uses in the City and County Land Use Designations Identified within the SOI, are shown as Figure 1.1-7 and are summarized below in Table 1.1-8:

**TABLE 1.1-8: GENERAL PLAN LAND USE DESIGNATIONS – WILLOWS PLANNING AREA**

GENERAL PLAN LAND USES	ACRES
<i>WILLOWS – CITY LIMITS</i>	
Commercial/Industrial Combining Use	150.39
Entryway	24.24
General Commercial	109.72
General Industrial	41.18
Highway Commercial	45.78
Light Industrial	157.87
Low Density Residential	591.52
Multiple Family Residential	33.15
Office and Professional	45.26
Open Space	0.11
Public Facilities and Services	229.43
ROW/Canal	27.50
<b>Total</b>	<b>1,456.17</b>
<i>WILLOWS – SOI (GLENN COUNTY LAND USE DESIGNATIONS)</i>	
Agricultural/Residential	84.75
Business Park	44.13
Community Commercial	25.15
General Agriculture	321.09
Highway and Visitor Service Commercial	15.54
Industrial	237.07
Intensive Agriculture	1,683.15
Multiple Family Residential	24.34
Public Facilities	285.26
Rural Residential	240.76
Service Commercial	116.20
Single Family Residential	158.46
Suburban Residential	364.08
ROW/Canal	15.18
<b>Total</b>	<b>3,615.15</b>

SOURCES: GLENN COUNTY, 2019; GIS LAND USE DATA FILE; DE NOVO PLANNING GROUP, 2019.

### **Airport Land Use Commission Law (Public Utilities Code §21670 et seq.)**

The law, passed in 1967, authorized the creation of Airport Land Use Commissions (ALUC) in California. Per the Public Utilities Code, the purpose of an ALUC is to protect *public health, safety, and welfare by*

*encouraging orderly expansion of airports and the adoption of land use measures that minimizes exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses (§21670).* Furthermore, each ALUC must prepare an Airport Land Use Compatibility Plan (ALUCP). Each ALUCP, which must be based on a twenty-year planning horizon, should focus on broadly defined noise and safety impacts.

The Glenn County Airport Land Use Commission is established according the Chapter 22.10 of the Glenn County Code which was adopted by the Glenn County Board of Supervisors in 1985 (Ordinance No. 830).

The 7 member Glenn County Airport Land Use Commission ensures compatible land uses in vicinity of all airport facilities. The Airport Land Use Commission review plans, regulations, & other actions of local agencies & airport operators.

The Land Use Commission oversees the Orland and Willows Airport Comprehensive Land Use Plans. The overall goal for the Orland and Willows Airport Comprehensive Land Use Plans is to provide for the orderly growth of the Airport facilities and from the areas surrounding the airports, to safeguard the general welfare of the inhabitants within the vicinity of the airport and the public in general.

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## EXISTING SETTING

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### Land Use Patterns - Unincorporated County

When discussing land use, it is important to distinguish between planned land uses and existing land uses. The General Plan land use designations identify the long-term planned use of land, but may not present a complete picture of existing land uses (what is actually developed and on the ground). The Glenn County Assessor's office maintains a database of existing (assessed) land uses on individual parcels, including the number of dwelling units and related improvements such as non-residential building square footage. This information is used as the basis for property tax assessments and is summarized in Table 1.1-9 and depicted on Figure 1.1-8. For more detailed information related to housing units, and industry sector square footage see Sections 1.2 through 1.4, which include information related to population, housing, and demographics, economic setting, and real estate market conditions.

**TABLE 1.1-9: ASSESSED LAND USES – GLENN COUNTY (UNINCORPORATED COUNTY)**

ASSESSOR LAND USE CODE*	RESIDENTIAL UNITS	NON-RES SQ FT	ACRES (GIS)	% OF AREA
Commercial	0	1,294,928	2,324.16	0.28%
Industrial	0	267,130	896.81	0.11%
Residential	2,771	0	5,257.88	0.63%
Governmental/Institutional	0	87,011	522.16	0.06%
Agricultural	0	1,276,436	553,602.86	66.13%
Recreational	0	21,673	1,131.43	0.14%
Timber	0	4,188	3,476.92	0.42%
Quarry	0	0	200.95	0.02%
Tax Exempt	0	0	236,955.47	28.31%
ROW/Undefined/No Assessor Match	0	0	32,739.18	3.91%
<b>Total</b>	<b>2,771</b>	<b>2,951,366</b>	<b>837,107.83</b>	<b>100.00%</b>

*NOTE: \* ASSESSED USES INCLUDE THE ASSESSORS "PRIMARY" USE CODE CATEGORIES. IN SOME CASES PRIMARY USES MAY DIFFER FROM USE DESCRIPTIONS AND SECONDARY USES IDENTIFIED BY THE ASSESSOR, THEREFORE UNIT COUNTS AND SQUARE FOOTAGES LISTED MAY DIFFER FROM ACTUAL CONDITIONS.*

*SOURCE: GLENN COUNTY ASSESSOR'S OFFICE, 2019; DE NOVO PLANNING GROUP, 2019.*

Existing assessed uses refer to the existing built environment and site uses, which may be different from the land use or zoning designations applied to land for planning purposes. Existing uses are based on data provided by the County Assessor. As shown in Table 1.1-9 and Figure 1.1-8 the majority of assessed land acreage (66.13 percent) within the unincorporated county is for agricultural purposes. The majority of all development indicated in Table 1.1-9 and shown on Figure 1.1-8, is within or near the Hamilton City, and Artois community areas, or in the areas surrounding the incorporated cities of Willows and Orland.

## REFERENCES

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Glenn County. 2015. Glenn County General Plan 2014 – 2019 Housing Element Adoption Draft March 2015.

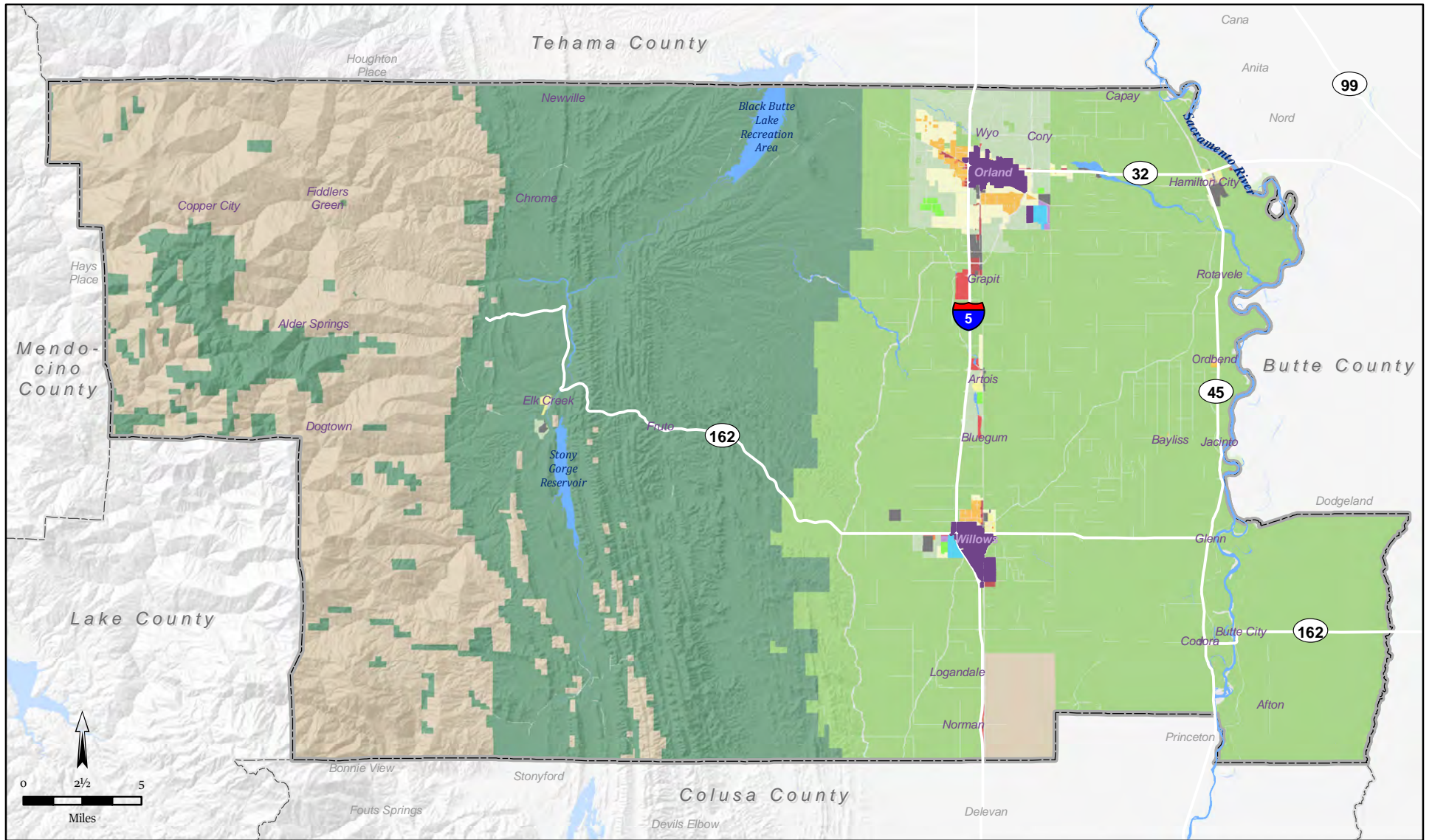
Glenn County Planning Division In Process Project And Status Report – October 2019.

Glenn County Code. Title 15 Unified Development Code. September 27, 2018

Glenn County. 2019. Parcel Data provided by the County Assessor’s Office.

California Department of Finance. 2019. Table E-5, Population and Housing Estimates for Cities, Counties and the State, January 1, 2010-2019, with 2010 Benchmark.

U.S. Department of Housing and Urban Development, CHAS, 2011-2015.



Sources: USGS National Map; Glenn County; CalAtlas. Map date: May 15, 2019.

**General Plan Designations**

Foothill Agriculture/Forestry	Recreation	Local Commercial	Rural Residential
General Agriculture	Industrial	Community Commercial	Single Family Residential
Intensive Agriculture	Public Facilities	Highway/Visitor Service Commercial	Suburban Residential
Agricultural/Residential	Business Park	Service Commercial	Multiple Family Residential

**Planning Areas**

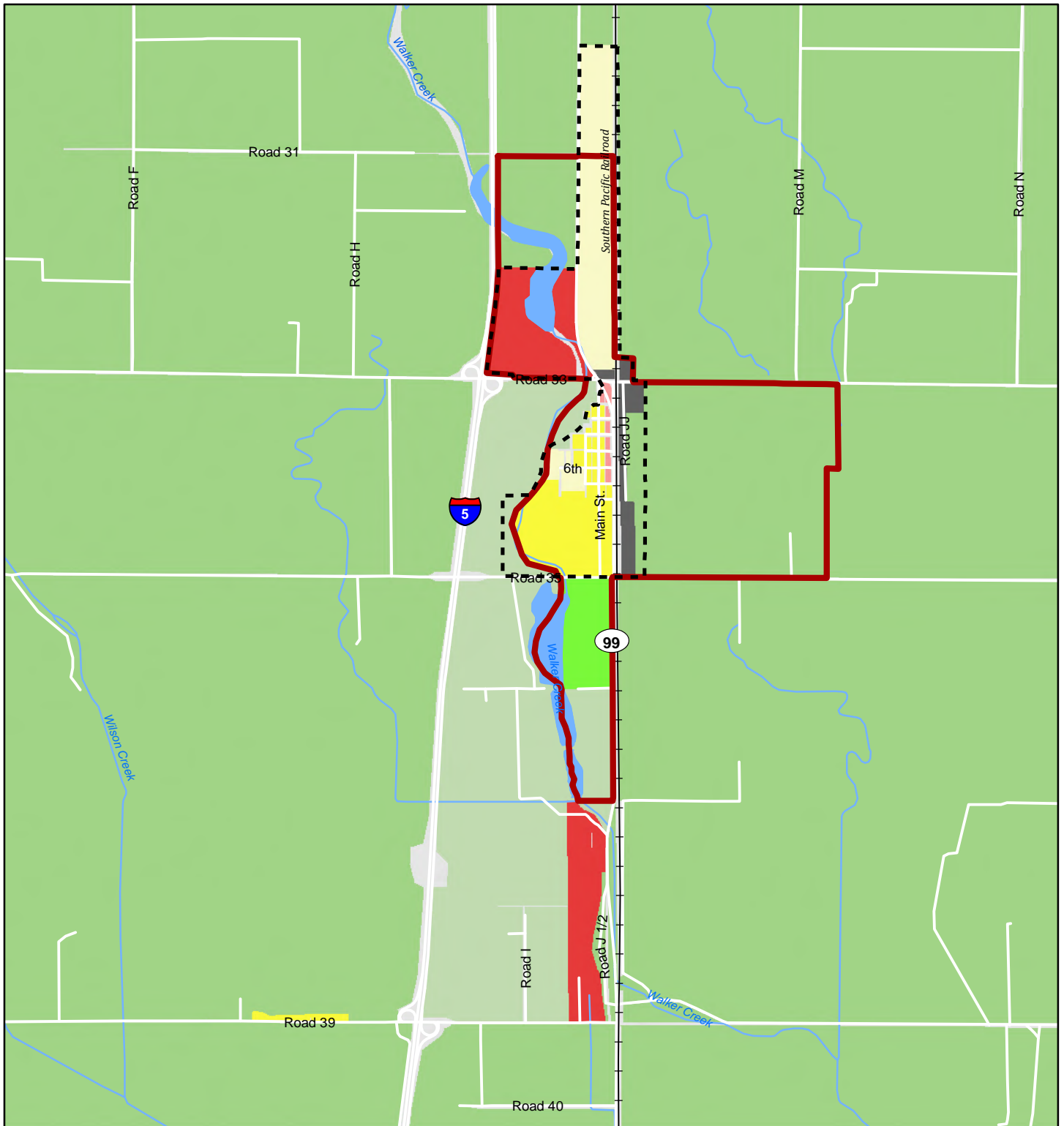
County Boundary	Incorporated Areas (Orland and Willows)
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COUNTY OF GLENN, CALIFORNIA

FIGURE 1.1-1. GENERAL PLAN  
LAND USE MAP

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**General Plan Designations**

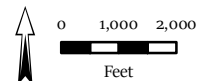
- General Agriculture
- Intensive Agriculture
- Agricultural/Residential
- Industrial
- Community Commercial
- Highway/Visitor Service Commercial
- Rural Residential
- Single Family Residential

**Planning Boundaries**

- Urban Limit Line
- Artois Sphere of Influence

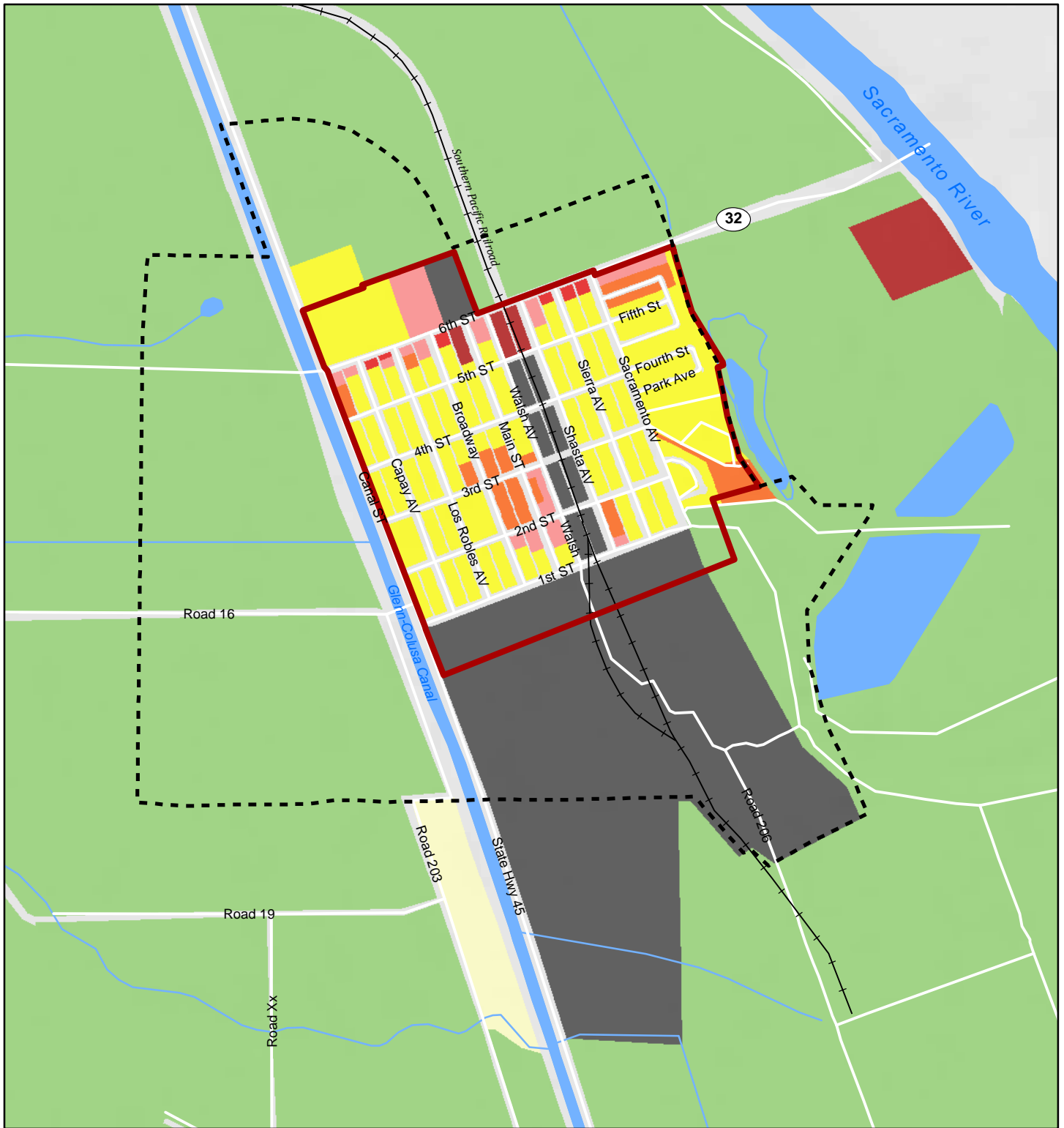
COUNTY OF GLENN, CALIFORNIA

**FIGURE 1.1-2. GENERAL PLAN MAP  
ARTOIS AREA**



Sources: Glenn County; CalAtlas. Map date: September 30, 2019.

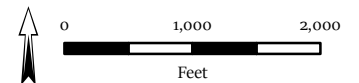
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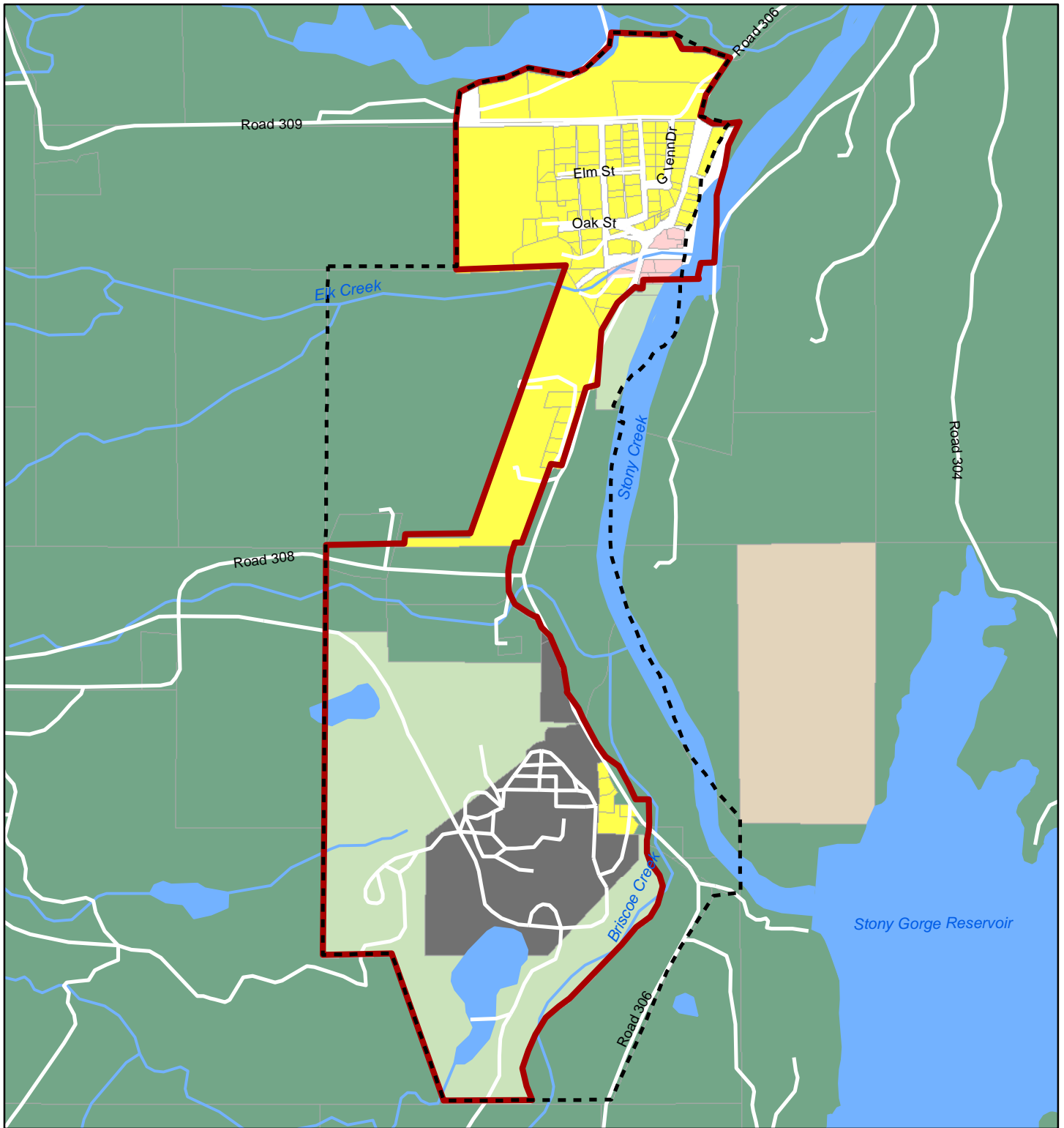
- General Plan Designations**
- Intensive Agriculture
  - Industrial
  - Community Commercial
  - Highway/Visitor Service Commercial
  - Service Commercial
  - Rural Residential
  - Single Family Residential
  - Multiple Family Residential

- Planning Areas**
- Urban Limit Line
  - Hamilton City Sphere of Influence

COUNTY OF GLENN, CALIFORNIA  
**FIGURE 1.1-3. GENERAL PLAN MAP  
 HAMILTON CITY AREA**



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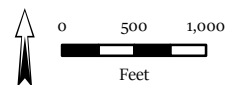
COUNTY OF GLENN, CALIFORNIA  
 FIGURE 1.1-4. GENERAL PLAN MAP  
 ELK CREEK AREA

**General Plan Designations**

- Foothill Agriculture/Forestry
- General Agriculture
- Recreation
- Industrial
- Local Commercial
- Single Family Residential

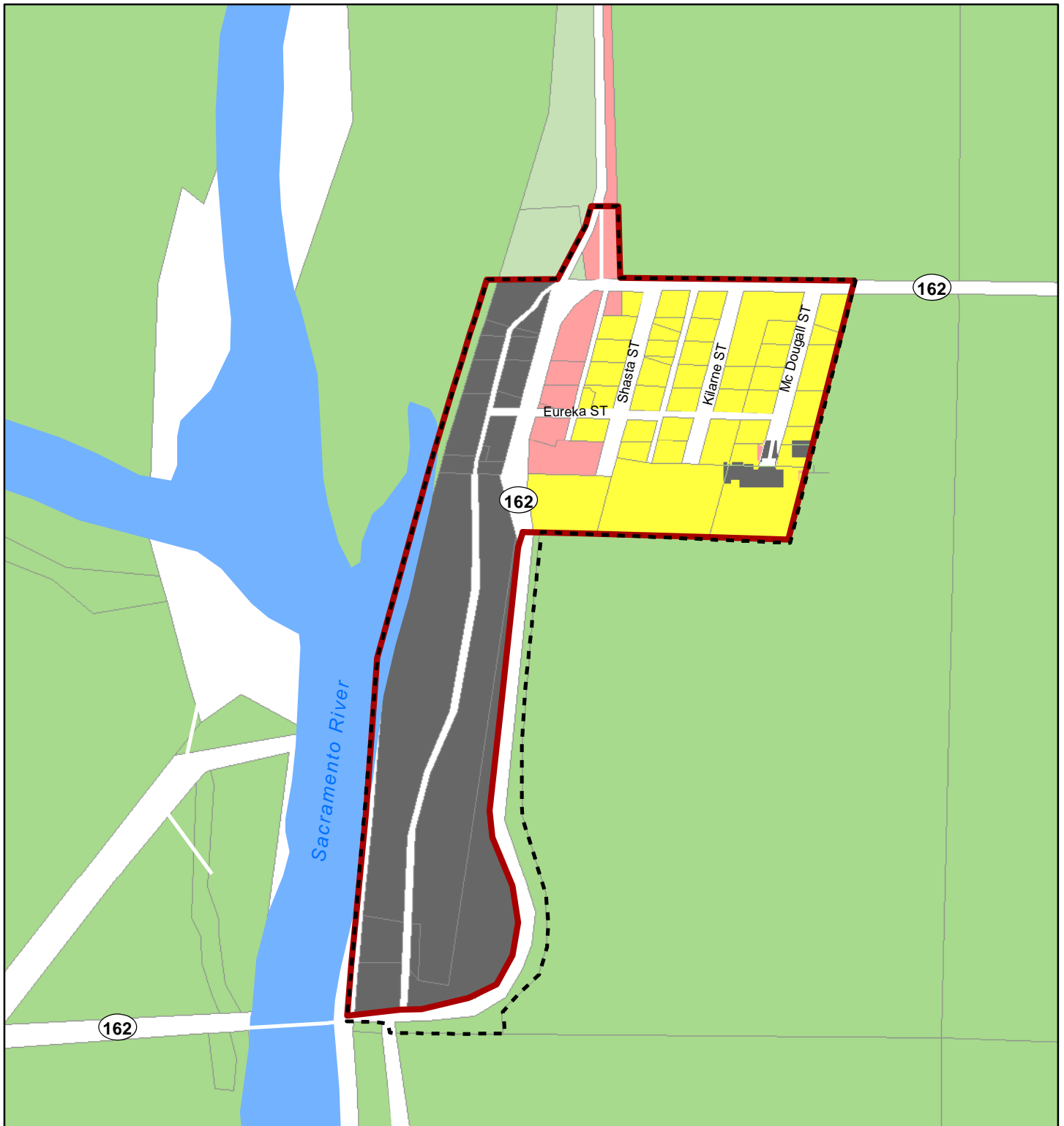
**Planning Areas**

- Urban Limit Line
- Elk Creek Sphere of Influence



Sources: Glenn County, CalAtlas. Map date: October 2, 2019.

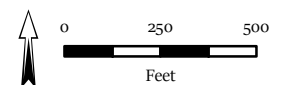
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COUNTY OF GLENN, CALIFORNIA  
 FIGURE 1.1-5. GENERAL PLAN MAP  
 BUTTE CITY AREA

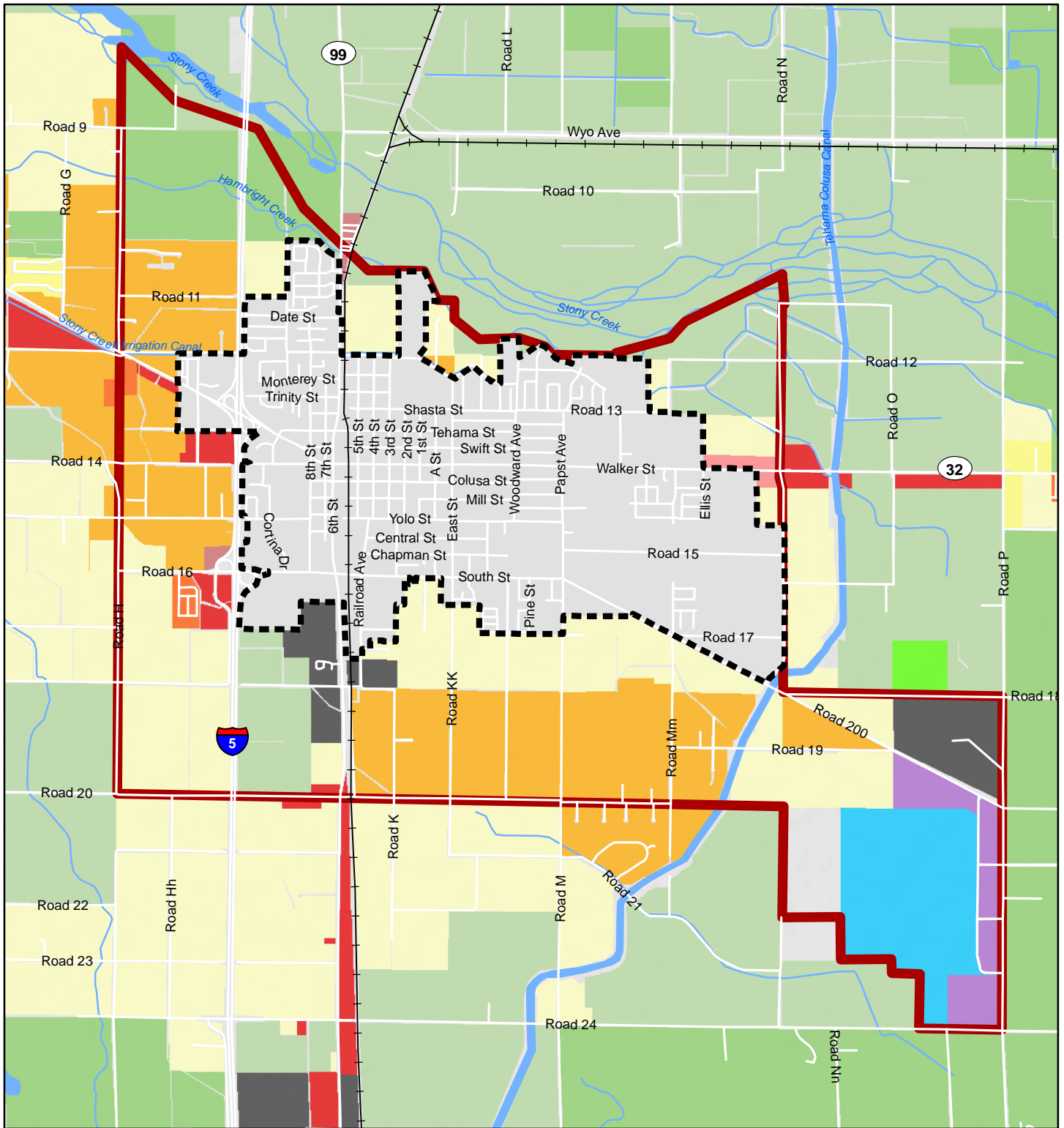
- General Plan Designations**
- General Agriculture
  - Intensive Agriculture
  - Industrial
  - Community Commercial
  - Single Family Residential

- Planning Areas**
- Urban Limit Line
  - Butte City Sphere of Influence


















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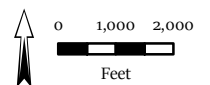
**LEGEND**

-  Orland City Limits
-  Orland Sphere of Influence
- General Plan Designations: Glenn County**
-  General Agriculture
-  Intensive Agriculture
-  Agricultural/Residential
-  Industrial
-  Public Facilities
-  Business Park
-  Community Commercial
-  Highway/Visitor Service Commercial
-  Service Commercial
-  Rural Residential
-  Single Family Residential
-  Suburban Residential
-  Multiple Family Residential

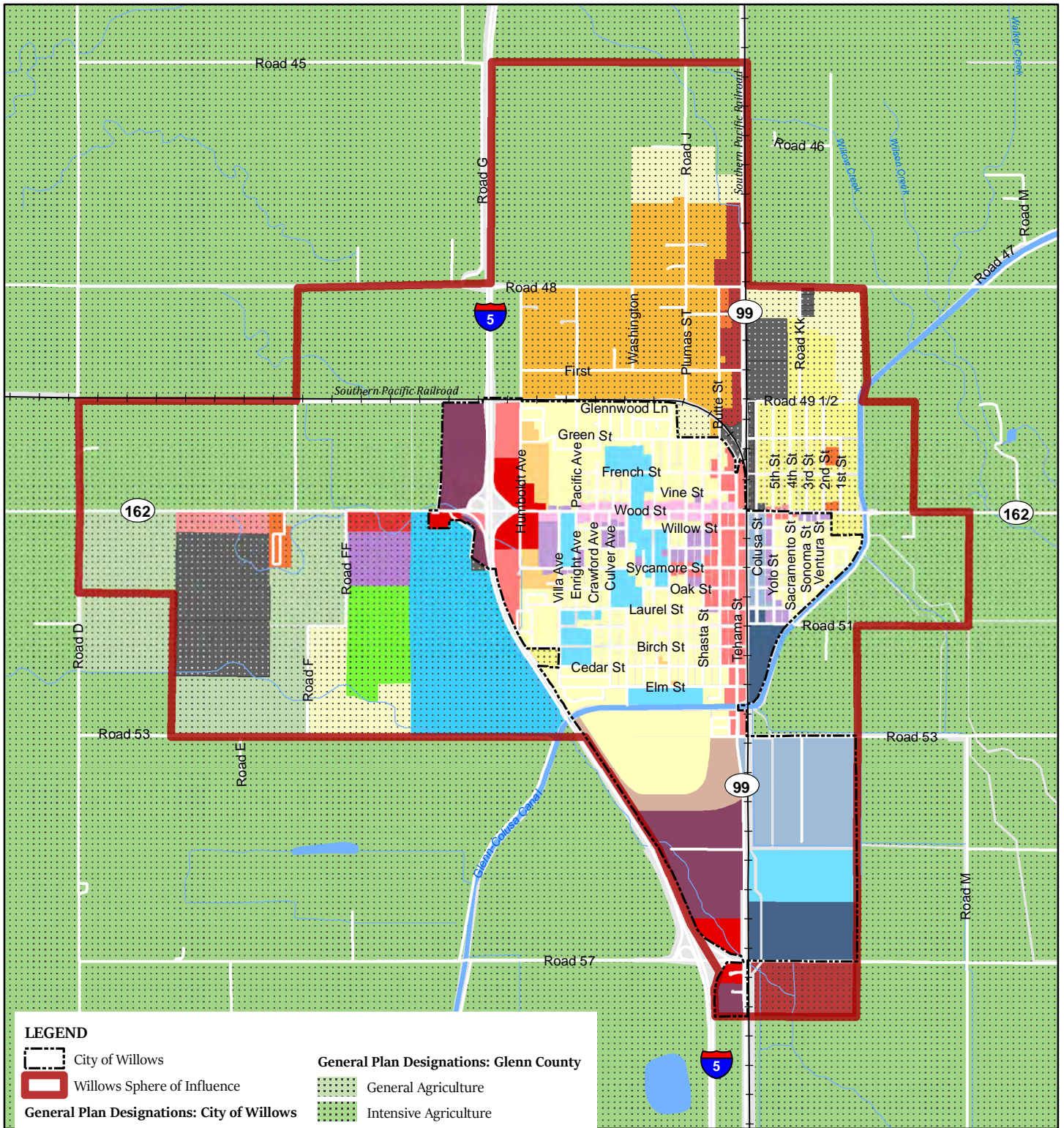
Sources: Glenn County; CalAtlas. Map date: May 29, 2019. Revised October 18, 2019.

COUNTY OF GLENN, CALIFORNIA

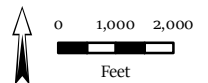
FIGURE 1.1-6. GENERAL PLAN MAP  
Orland SOI County Designations



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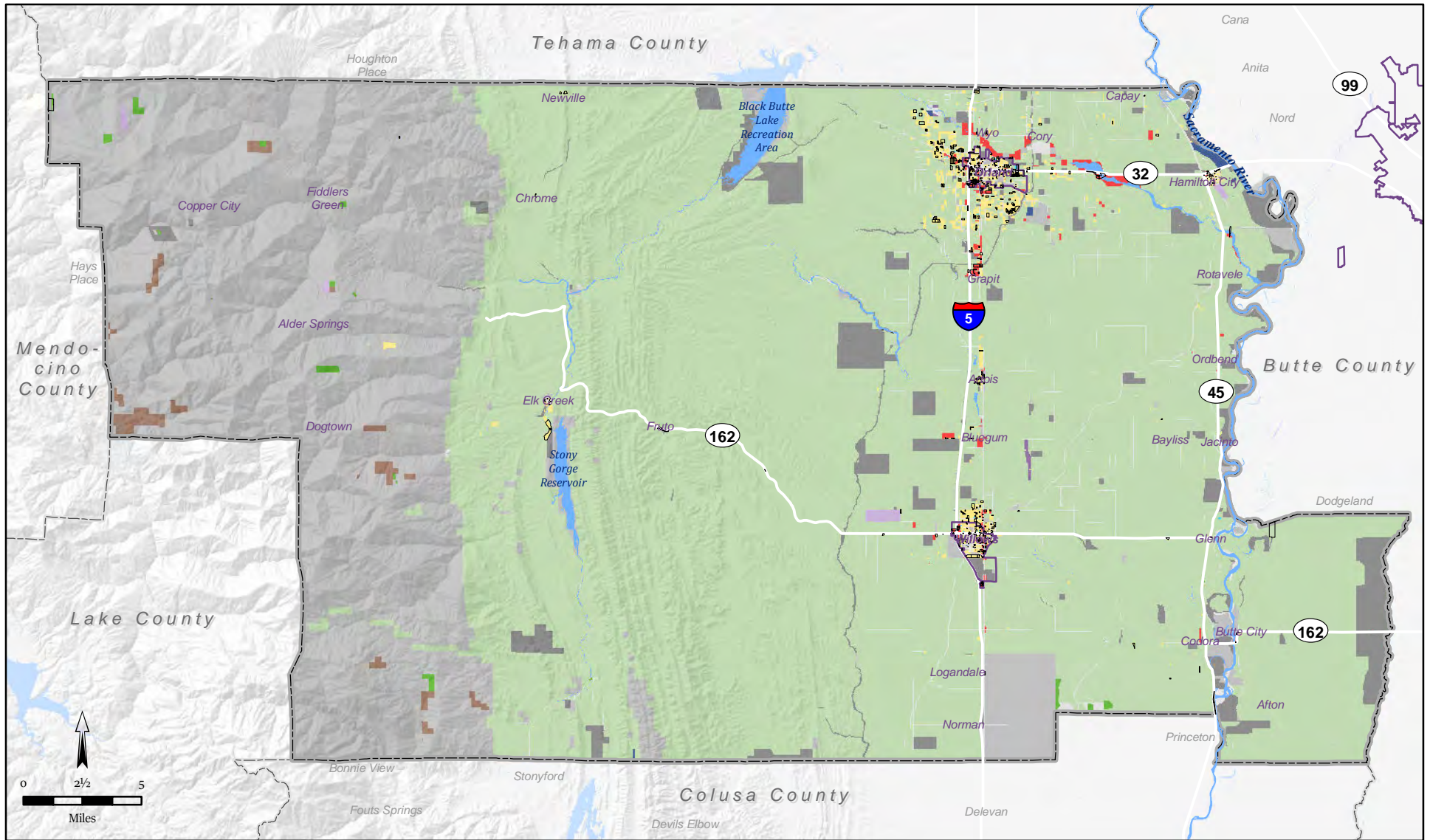


COUNTY OF GLENN, CALIFORNIA  
 FIGURE 1.1-7. GENERAL PLAN MAP  
 CITY OF WILLOWS



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Sources: Glenn County; CalAtlas. Map date: September 25, 2019.

COUNTY OF GLENN, CALIFORNIA

FIGURE 1.1-8. GLENN COUNTY ASSESSOR MAP

**Assessed Land Use**

Agricultural	Professional	Industrial	Quarry	No Assessor Data
Residential	Governmental	Recreational	Undefined	ROW/Canal
Commercial	Institutional	Timber	Exempt	Assessed as Vacant

**Planning Areas**

County Boundary	Incorporated Areas (Orland and Willows)
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## 1.2 POPULATION HOUSING AND DEMOGRAPHICS

This section summarizes the county’s demographics and housing profile and specifically identifies trends within the unincorporated county where possible. Where reliable data are not available for the unincorporated county, this analysis reviews countywide conditions and trends and trends within the combined incorporated cities of Willows and Orland to make inferences about conditions within the unincorporated area. To provide greater context for local conditions, this analysis also reports conditions within the four-county region and the state as a whole. The four-county comparison region, in this case, consists of Butte, Colusa, Glenn, and Tehama counties.

The analysis primarily utilizes data from Esri Business Analyst (a private economic and demographic data vendor) and the U.S. Census Bureau, including both the 2010 Census and 2012-2017 five-year American Community Survey (ACS) estimates. Where appropriate, data are also provided from a variety of other data sources, including the California Employment Development Department (EDD), and California Department of Finance (DoF), among others.

More detailed information regarding population and housing, including population and household characteristics and a housing needs assessment, is provided in the Glenn County Housing Element.

### REGULATORY FRAMEWORK

---

The regulatory framework discussion describes laws and regulations that guide land use decisions. Adopted plans that pertain to the County are also described.

#### *STATE*

#### **California General Plan Law**

Government Code Section 65300 requires that each county and city adopt a General Plan, as described in Section 1.1.

Housing element law (Government Code Sections 65580 through 65589.8) requires local governments to adopt a Housing Element that addresses existing and projected housing needs, including their share of the regional housing need. A Housing Element must include an analysis of existing and projected housing needs, identification of governmental and non-governmental constraints to the provision of housing, an inventory of sites appropriate to accommodate the County’s housing needs, identification of resources available to assist with meeting housing needs, a review of the effectiveness of the previous Housing Element, and a plan to address the identified housing needs and constraints.

#### *LOCAL AND REGIONAL*

#### **Regional Housing Needs Plan**

California General Plan law requires each City and County to have land zoned to accommodate a fair share of the regional housing need. The share is known as the Regional Housing Needs Allocation (RHNA). The determination of the local share of regional housing needs is assigned by the California Department of Housing and Community Development, Division of Housing Policy Development. Regional Housing Needs Allocation numbers are separated into four income categories: very low, low, moderate, and above moderate income levels. A “fair share” policy adjustment of 20% was applied to the city income categories to move city percentages closer to county percentages. The County is responsible for

45% of the total allocation while the City of Orland has 31% of the total and the City of Willows has 24%. Projections have Glenn County (unincorporated) accommodating 117 total new households. Glenn County's RHNA for 2014-2019 is summarized in Table 1.2-1.

**TABLE 1.2-1: REGIONAL HOUSING NEEDS ALLOCATION**

INCOME CATEGORY	CITY OF ORLAND	CITY OF WILLOWS	UNINCORPORATED GLENN COUNTY	TOTAL
Very low (31-50% of AMI)*	20	15	25	60
Low (51-80% of AMI)	10	11	19	40
Moderate (81-120% of AMI)	14	11	25	50
Above Moderate (over 120% of AMI)	36	26	48	110
<b>Total</b>	<b>80</b>	<b>63</b>	<b>117</b>	<b>260</b>

NOTES: \* (AMI) AREA MEDIAN INCOME

SOURCE: GLENN COUNTY 2014-2019 HOUSING ELEMENT UPDATE

The County is not required to ensure that adequate development to accommodate the RHNA occurs; however, the County must facilitate housing production by ensuring that land is available and that unnecessary development constraints have been removed. The County's Housing Element, adopted in 2015, provides for the accommodation of the 2014-2019 RHNA that has been assigned to Glenn County.

## EXISTING SETTING

The following section presents historical population, household, and housing characteristics and trends in Glenn County and the comparison geographies. The analysis draws primarily on data from the 2010 decennial U.S. Census, and the 2013-2017 five-year American Community Survey (ACS), as well as the Comprehensive Housing Affordability Strategy (CHAS) dataset published by the U.S. Department of Housing and Urban Development (HUD) and population and household estimates reported by the California Department of Finance (DOF).

### Housing and Population Overview

There has been very little to no population or household growth in Glenn County since 2010. A total of approximately 28,000 people currently live within the County, with around half living in the unincorporated part of the County. The available demographic data indicate that Glenn County residents are predominantly non-Hispanic White, with Hispanic households making up the largest minority ethnic and racial cohort. The population is also aging. The data show that as the last of the Baby Boomer generation approach retirement age, the cohort is beginning to decrease in size. Conversely, the bulk of the Millennial and Z generations are aging out of childhood and are entering the working age population. While the share of family households residing in Glenn County in 2010 was already higher than the statewide average, the share of family households in the County has only increased as the Millennial Generation begins to start families. These trends all have important implications for land use and public service provision (e.g., EMS and K-12 schooling), as well as workforce and economic development.

Reflecting its rural character, the housing market in Glenn County is generally oriented towards the detached single-family ownership market. Most housing in Glenn County was built prior to 1980, with only around three percent of housing units countywide and six percent of units within the incorporated cities built since 2010. The County also has an above-average prevalence of mobile homes and other non-traditional housing.



With a functional vacancy rate of less than one percent between 2013 and 2017, Glenn County and its incorporated cities face a constrained housing market similar that being experienced throughout the state. As such, approximately 38 percent of households in Glenn County and 36 percent of households in the incorporated cities are currently overpaying for housing (i.e., paying more than 30 percent of income for housing). Housing cost burdens are generally higher for renter households, though to a lesser degree in unincorporated Glenn County. As might be expected, housing cost burdens are also higher for households at lower income levels, as those households have fewer resources with which to offset rising costs.

### Population, Household, and Housing Characteristics

As shown in Table 1.2-2, the U.S. Census Bureau and the Department of Finance (DOF) both estimate the total population of Glenn County at around 28,000 people. These sources also agree that the county is currently home to around 10,000 households. Roughly half of the county's population resides in the unincorporated county, while the other half lives in the incorporated cities of Willows and Orland. The available data indicate that the county experienced relatively little population or household growth between 2010 and 2017. The four-county region, by comparison, experienced somewhat modest growth over this period. The statewide population grew much more quickly, indicating that both the County and the region are growing much more slowly than the state as a whole. Additionally, 2019 DOF estimated 29,132 total population within the county (including incorporated areas) with 14,513 residing within the unincorporated areas of the county.

**TABLE 1.2-2: POPULATION AND HOUSEHOLDS**

	<i>Decennial Census 2010</i>	<i>2013-2017 ACS</i>	<i>2013-2017 % Change 2010- 2017</i>	<i>Avg. Annual Change</i>	<i>2017 DOF</i>	<i>DOF % Change 2010- 2017</i>	<i>Avg. Annual Change</i>
<b>Population</b>							
Incorporated Cities	13,457	13,587	1.0%	0.1%	13,910	3.4%	0.5%
Unincorporated County	14,665	14,348	-2.2%	-0.3%	14,820	1.1%	0.2%
Countywide	28,122	27,935	-0.7%	-0.1%	28,730	2.2%	0.3%
Four-County Region	333,004	337,868	1.5%	0.2%	341,132	2.4%	0.3%
State of California	37,253,956	38,982,847	4.6%	0.7%	39,500,973	6.0%	0.8%
			<i>% Change</i>	<i>Avg. Annual Change</i>		<i>% Change</i>	<i>Avg. Annual Change</i>
<b>Households</b>	<i>2010</i>	<i>2013-2017 ACS</i>	<i>2010- 2017</i>	<i>Annual Change</i>	<i>2017</i>	<i>2010- 2017</i>	<i>Annual Change</i>
Incorporated Cities	4,688	4,638	-1.1%	-0.2%	4,864	3.8%	0.5%
Unincorporated County	5,112	5,298	3.6%	0.5%	5,200	1.7%	0.2%
Countywide	9,800	9,936	1.4%	0.2%	10,064	2.7%	0.4%
Four-County Region	128,241	126,862	-1.1%	-0.2%	132,116	3.0%	0.4%
State of California	12,577,498	12,888,128	2.5%	0.3%	13,053,295	3.8%	0.5%

NOTE: THE FOUR-COUNTY REGION CONSISTS OF BUTTE, COLUSA, GLENN, AND TEHAMA COUNTIES.

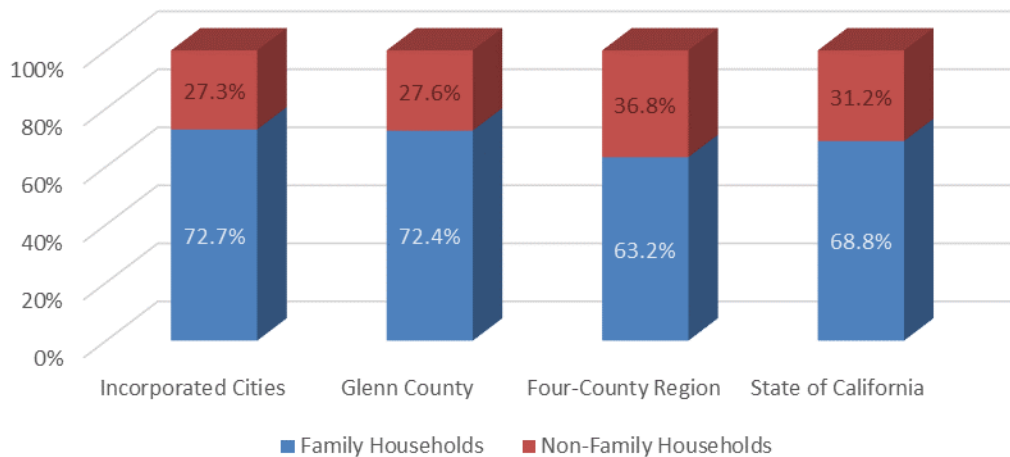
SOURCES: DEPARTMENT OF FINANCE (DOF), TABLE E-5, 2018; U.S. CENSUS BUREAU, DECENNIAL CENSUS 2010, P1, P18, P42, ACS 2013-2017 5-YEAR SAMPLING PERIOD, B01003, S1101, B26001; BAE, 2019.

### Household Composition

As illustrated in Chart 1.2-1, more than 70 percent of all households in Glenn County are families. This is constant across the County as a whole, as well as in the incorporated cities. While family households

also represent the dominant household type in both the four-county region and the state as a whole, the share of family households in Glenn County is still somewhat higher than in these comparison areas by between four and nine percentage points.

**Chart 1.2-1: Household Composition, 2013-2017**



SOURCES: U.S. CENSUS BUREAU, ACS 2013-2017 5-YEAR SAMPLING PERIOD, S1101; BAE, 2019.

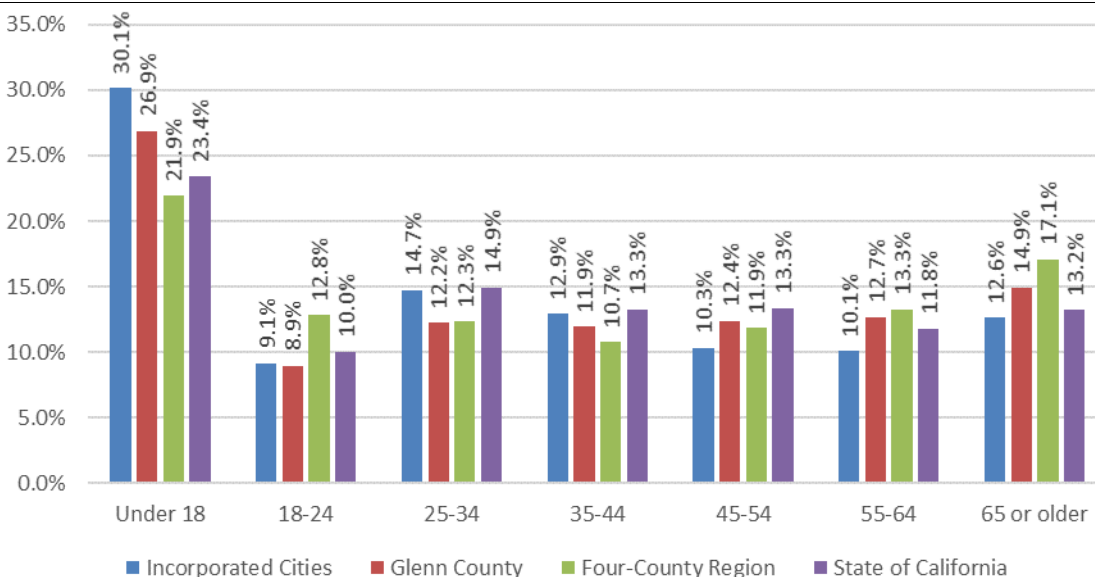
### Resident Age Distribution

The median age of Glenn County residents is around 36 years of age. This is generally consistent with the median age in the four-county region and the state as a whole, but slightly higher than the reported median age within the incorporated cities. As shown in Chart 1.2-2, the incorporated cities of Orland and Willows have a higher proportion of children under the age of 18, which likely contributes to the lower median age around 32 years. Although the median age across all four geographies remained almost unchanged between 2010 and 2017, the distribution of residents by age indicates a general aging of the existing population.

Comparison between the available data for Glenn County as a whole and the two incorporated cities of Orland and Willows indicate that the unincorporated area has a much lower share of residents under the age of 45, compared to the incorporated cities. Although the available estimates are subject to particularly high MOEs, and should thus be interpreted with caution, the data indicate that residents under the age of 45 account for nearly 67 percent of the population in the incorporated cities, compared to only 53 percent in the unincorporated area. Conversely, the unincorporated area has much higher shares of older households, particularly those in the 55 to 64 and 65 and over age categories.

As the Baby Boomer age, many residents in this age group are likely to begin experiencing an increased need for certain municipal services, such as EMS. The needs of this population may also have impacts on the accessibility of public facilities and demand for new types of housing. However, along with growth of the older generation, the aging of the population also means that the Millennials is actively aging out of childhood. This corresponds to an expansion of the working age population, which has important implications for workforce and economic development, housing, and public service provision (e.g., schools).

**Chart 1.2-2: Resident Age Distribution, 2013-2017**

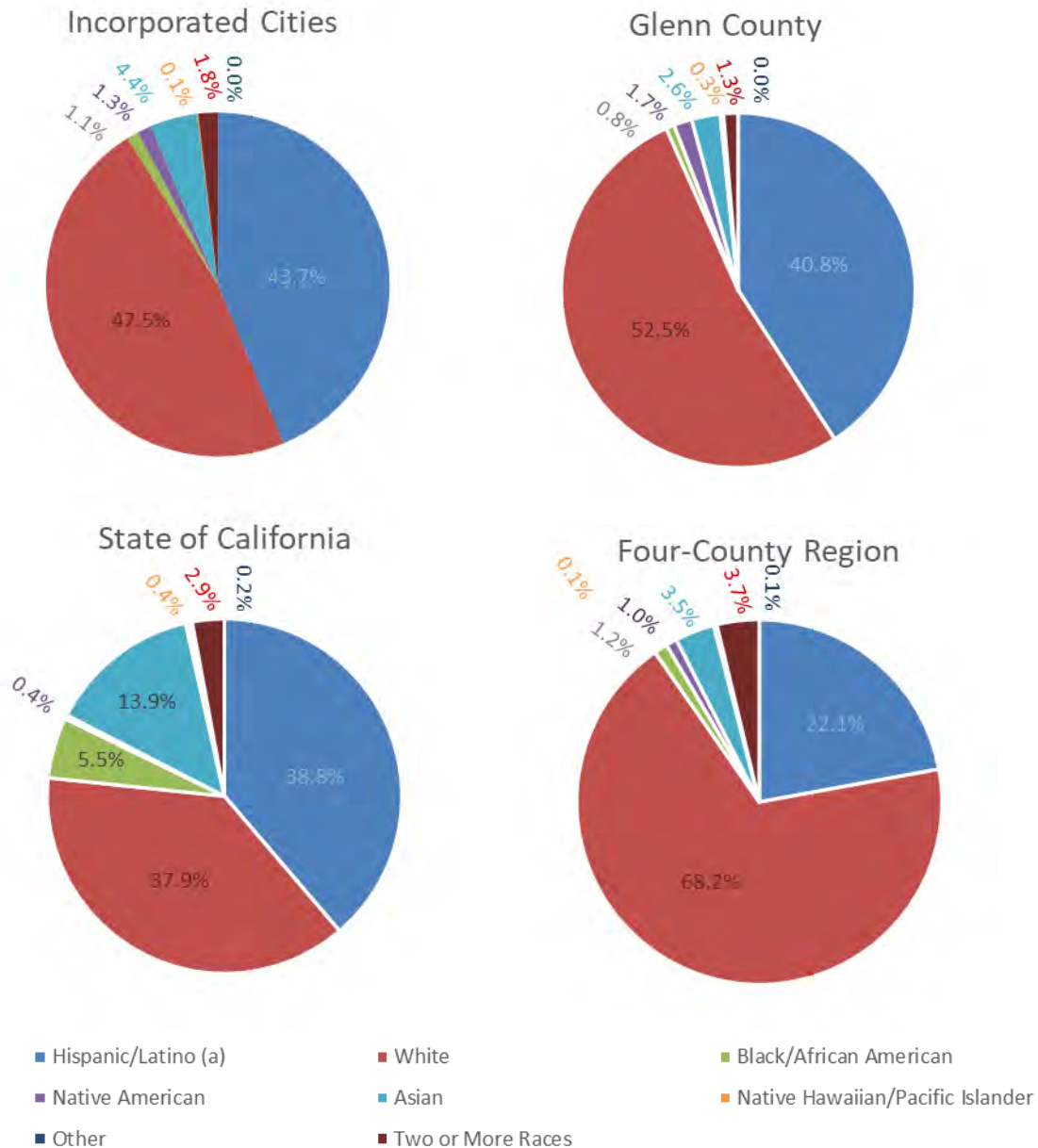


SOURCES: U.S. CENSUS BUREAU, ACS 2013-2017 5-YEAR SAMPLING PERIOD, S0101; BAE, 2019.

### Race and Ethnicity

Both Glenn County and the four-county region are less diverse than the state as a whole; though Glenn County and its incorporated cities are also somewhat more diverse than the four-county region. The data included in Chart 1.2-3 show that while minority residents (i.e., anybody other than non-Hispanic White) account for a little over 62 percent of the statewide population, they account for around 52 percent of the population in the incorporated cities, 47 percent of the population in Glenn County as a whole, and 32 percent of the population in the four-county region. The largest minority group in all four study areas is Hispanic and Latino residents. The next largest minority groups generally include Asian, Native American, and African American residents, as well as those of who identify with two or more races.

**Chart 1.2-3: Resident Population by Race and Ethnicity, 2013-2017**

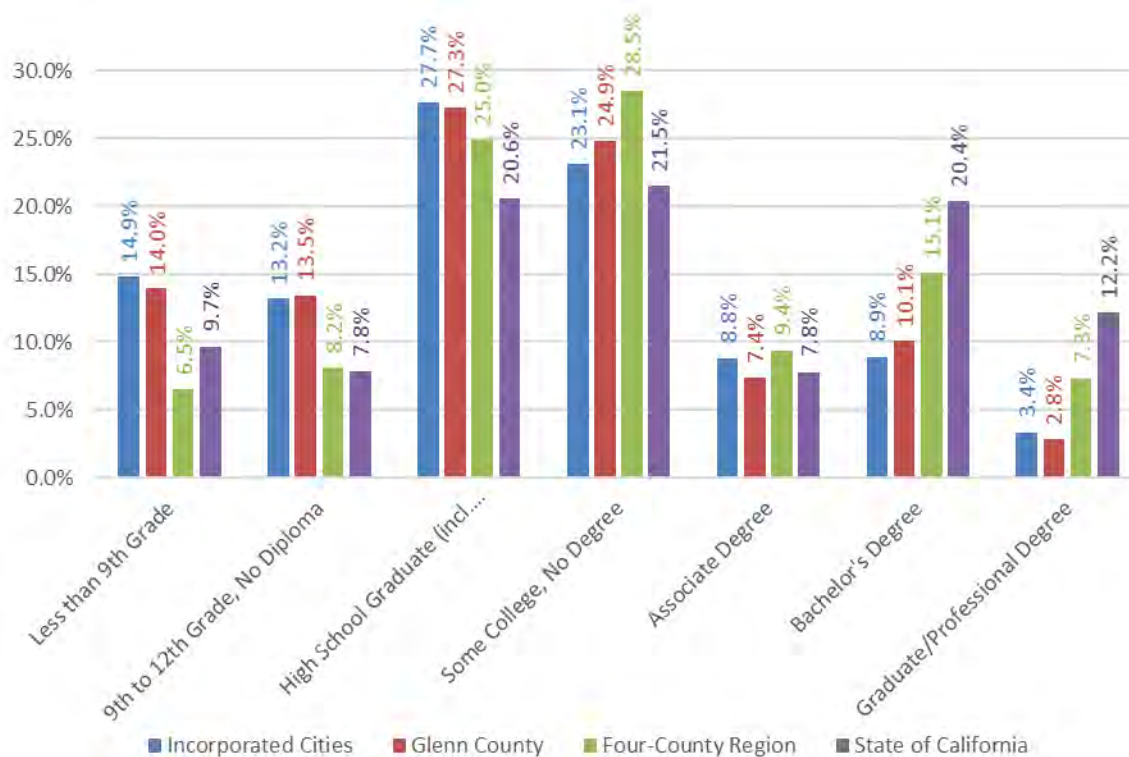


SOURCES: U.S. CENSUS BUREAU, ACS 2013-2017 5-YEAR SAMPLING PERIOD, B03002; BAE, 2019.

### Educational Attainment

As shown in Chart 1.2-4, residents of Glenn County have lower levels of educational attainment compared to the regional and statewide averages. For example, the Census Bureau estimates that just over 70 percent of residents age 25 and over in both the incorporated cities and Glenn County as a whole have earned a High School diploma or higher. This is compared to 85 percent in the four-county region and 82 percent statewide. Glenn County also has a lower share of residents with post-secondary degrees. For example, only 13 percent of Glenn County residents have earned a Bachelor’s degree or higher, compared to 22 percent in the four-county region and 33 percent statewide.

**Chart 1.2-4: Educational Attainment, Population Age 25 and Over, 2013-2017**

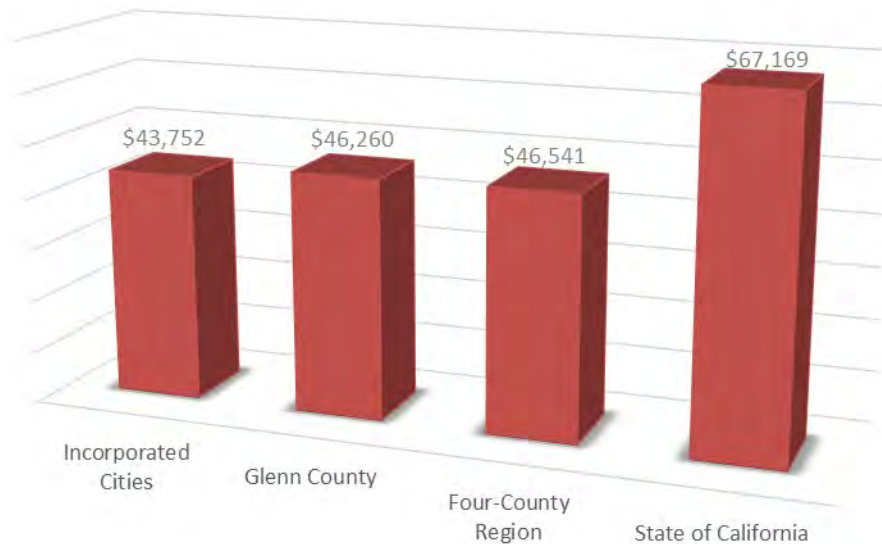


SOURCES: U.S. CENSUS BUREAU, 2013-2017 5-YEAR SAMPLING PERIOD, S1501; BAE, 2019

### Household Income Distribution

As illustrated in Chart 1.2-5, the median incomes for households living in the incorporated cities, Glenn County, and the four-county region are quite similar, at just over \$46,000 per year. This is equal to around 70 percent of the statewide median household income of \$60,883 per year. In nominal dollars, the median household income in Glenn County increased by around seven percent since 2010; however, after adjusting for inflation, the estimates indicate that the spending power associated with the median household income has decreased by approximately seven percent over the same period. Growth in the median income statewide was notably higher than in the other three study areas, at ten percent, translating to a lower real decline in spending power of around five percent. This means that not only is nominal income growth in Glenn County slower than elsewhere in California; the real spending power of Glenn County households declined more rapidly.

**Chart 1.2-5: Median Household Income, 2013-2017**



NOTE:

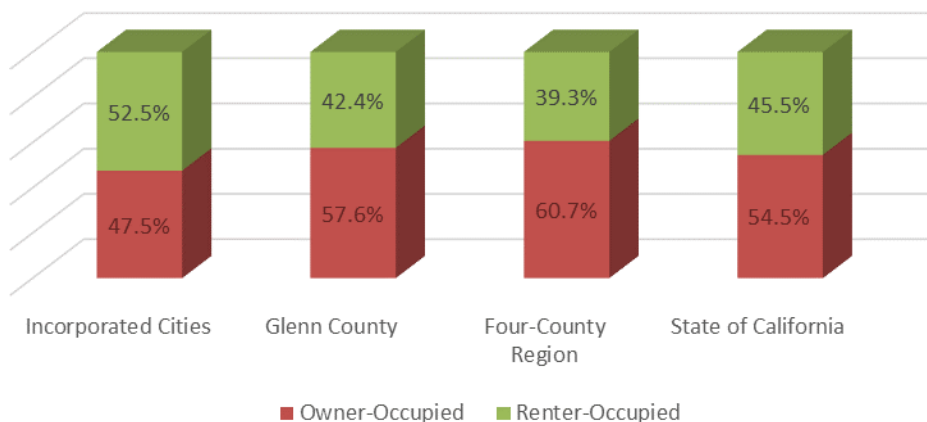
(A) MEDIAN HOUSEHOLD AND PER CAPITA INCOME WERE CALCULATED INDEPENDENTLY FOR THE TWO CUSTOM GEOGRAPHIES INCLUDING THE INCORPORATED CITIES AND THE FOUR-COUNTY REGION.

SOURCES: U.S. CENSUS BUREAU, 2013-2017 5-YEAR SAMPLING PERIOD, DP-03; BAE, 2019.

### Housing Tenure

Households in Glenn County and the four-county region are more likely to own their homes compared to the statewide counterparts, with roughly 58 percent of households in Glenn County and 61 percent of households in the four-county region owning their own home. Within the incorporated cities of Glenn County, households are more likely to rent their homes. In the unincorporated area, households are still more likely to own their homes; although the home ownership rate in the unincorporated fell by approximately two percentage points since 2010.

**Chart 1.2-6: Household Tenure, 2013-2017**



SOURCES: U.S. CENSUS BUREAU, ACS 2013-2017 5-YEAR SAMPLING PERIOD, B25003; BAE, 2019.

## Housing Unit Types

Consistent with its rural character, detached single-family homes account for a larger share of the housing stock in Glenn County, and the four-county region, compared to the State of California. Detached single-family homes account for around 78 percent of the housing stock in unincorporated Glenn County, 73 percent countywide, 68 percent in the incorporated cities and the four-county region, and 65 percent statewide. After single-family homes, mobile home units are the second most prominent housing type in unincorporated Glenn County, the County as a whole, and the four-county region, accounting for 17 percent, 10 percent, and 14 percent of the housing stock, respectively. Comparatively, these types of units only account for around four percent of all housing units statewide. Table 1.2-3 shows that multifamily housing accounts for relatively small proportions of the housing stock in Glenn County and the four-county region, at around 14 and 18 percent respectively, which is well below the four-county regional average of 27 percent and statewide average of 31 percent.

**TABLE 1.2-3: HOUSING UNIT TYPES (2013-2017 U.S. CENSUS BUREAU 5 YEAR ESTIMATES)**

Units in Structure	2013-2017 (a)							
	Incorporated Cities		Countywide (b)		Four-County Region		State of California	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Single-Family Detached	3,342	67.5%	8,030	73.3%	93,993	65.1%	8,131,716	58.1%
Single-Family Attached	161	3.3%	247	2.3%	4,432	3.1%	978,110	7.0%
Multifamily 2 Units	211	4.3%	258	2.4%	2,929	2.0%	343,548	2.5%
Multifamily 3-19 Units	984	19.9%	1,076	9.8%	17,180	11.9%	2,362,092	16.9%
Multifamily 20-49 Units	82	1.7%	137	1.2%	2,216	1.5%	684,497	4.9%
Multifamily 50+	69	1.4%	73	0.7%	3,313	2.3%	962,670	6.9%
Mobile Home/Other (c)	102	2.1%	1,141	10.4%	20,367	14.1%	533,666	3.8%
<b>Total, All Types</b>	<b>4,951</b>	<b>100%</b>	<b>10,962</b>	<b>100%</b>	<b>144,430</b>	<b>100%</b>	<b>13,996,299</b>	<b>100%</b>
<b>Single Family Housing Units</b>	<b>3,503</b>		<b>8,277</b>		<b>98,425</b>		<b>9,109,826</b>	
<i>% of Single Family</i>	<i>70.8%</i>		<i>75.5%</i>		<i>68.1%</i>		<i>65.1%</i>	
<b>Multifamily Housing Units</b>	<b>1,346</b>		<b>1,544</b>		<b>25,638</b>		<b>4,352,807</b>	
<i>% of Multifamily</i>	<i>27.2%</i>		<i>14.1%</i>		<i>17.8%</i>		<i>31.1%</i>	

NOTES: (A) DUE TO THE SMALL TOTAL POPULATION IN GLENN COUNTY, THE MOST RECENT ACS DATA ARE ONLY AVAILABLE FOR THE FIVE-YEAR STUDY PERIOD BETWEEN 2013 AND 2017.1 PLEASE NOTE THAT THE CONDITIONS REPORTED ARE BASED ON SAMPLE DATA COLLECTED OVER A FIVE-YEAR PERIOD AND THEREFORE REPRESENT MULTIYEAR AVERAGES.

(B) COUNTYWIDE INCLUDE INCORPORATED AND UNINCORPORATED AREAS WITH THE COUNTY BOUNDARY (C) INCLUDES BOATS, RVs, VANS, OR ANY OTHER NON-TRADITIONAL RESIDENCES.

SOURCES: U.S. CENSUS BUREAU, 2013-2017 5-YEAR SAMPLING PERIOD, B25024; BAE, 2019.

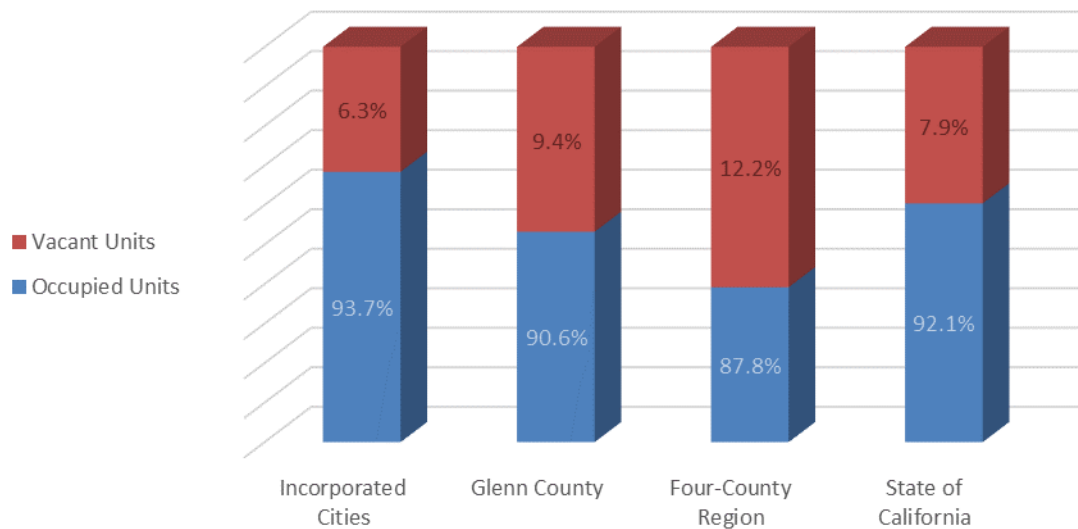
## Housing Occupancy and Vacancy

Chart 1.2-7 illustrates the average residential vacancy between 2013 and 2017 for the four comparison geographies. According to the ACS, the residential vacancy rate in the incorporated cities is comparable to the statewide rate, while the vacancy rates for Glenn County as a whole and the four-county region are somewhat higher. For example, the residential vacancy rate in the incorporated cities is estimated at an average of 6.3 percent between 2013 and 2017. This is compared to 9.4 percent countywide. This indicates that residential vacancy in the unincorporated area is likely to be quite high (i.e., upwards of 10 percent). The majority of the vacant units in both unincorporated Glenn County and the incorporated cities fall into the categories of seasonal vacancy and “other vacant.” Seasonal vacancy includes

<sup>1</sup> The minimum population required by the U.S. Census Bureau for inclusion in the one-year ACS is 65,000 people.

vacation homes and other similar units, but can also often include informal tourist units, such as those rented out using AirBnB. The largest concentration of vacant units is in the “other vacant” category, which includes units that would normally be occupied year-round, but which are vacant for other reasons, such as being vacant for repairs, they are being held for settlement of an estate, etc. When considering only those categories of vacancy that represent units that are available for occupancy (i.e., units being actively listed for rent or sale), the functional vacancy rates in unincorporated Glenn County and the incorporated cities are less than one percent. Please note that these estimates do not capture the increased housing demand experienced in the region due to the displacement of households impacted by the Camp Fire in November of 2018.

**Chart 1.2-7: Residential Vacancy Rate, 2013-2017**



SOURCES: U.S. CENSUS BUREAU, 2013-2017 5-YEAR SAMPLING PERIOD, B25004; BAE, 2019.

### Age of Housing Stock

Housing built using traditional wood framing is generally considered to be at risk for deteriorating condition after approximately 30 years from the date of construction. Around 63 percent of housing in countywide and 65 percent of housing in the incorporated cities was built prior to 1980, which is a slightly larger proportion than the average in the four-county region and the state. As the County's oldest settlements, the incorporated cities have a higher concentration of older homes compared to unincorporated Glenn County. However, the incorporated cities also have more newly built units, with around six percent of the housing stock having been built after 2010, compared to only 0.5 percent in the unincorporated County, three percent countywide, and two percent in the four-county region and the state as a whole. Table 1.2-4 below shows housing units by year built.



**TABLE 1.2-4: HOUSING UNITS BY YEAR BUILT (2013-2017 U.S. CENSUS BUREAU 5 YEAR ESTIMATES)**

Year Built	Incorporated Cities		Countywide <sup>A</sup>		Four-County Region		State of California	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1939 or Earlier	406	8.2%	1,063	9.7%	11,605	8.0%	1,296,670	9.3%
1940-1949	417	8.4%	884	8.1%	7,559	5.2%	852,988	6.1%
1950-1959	977	19.7%	1,872	17.1%	14,669	10.2%	1,906,691	13.6%
1960-1969	498	10.1%	1,264	11.5%	16,223	11.2%	1,876,273	13.4%
1970-1979	941	19.0%	1,830	16.7%	29,667	20.5%	2,496,506	17.8%
1980-1989	723	14.6%	1,426	13.0%	24,451	16.9%	2,137,731	15.3%
1990-1999	373	7.5%	1,241	11.3%	18,524	12.8%	1,527,242	10.9%
2000-2009	319	6.4%	1,054	9.6%	18,543	12.8%	1,615,173	11.5%
2010-2013	267	5.4%	287	2.6%	2,380	1.6%	203,659	1.5%
2014 or Later	30	0.6%	41	0.4%	809	0.6%	83,366	0.6%
<b>Total, Housing Units</b>	<b>4,951</b>	<b>100%</b>	<b>10,962</b>	<b>100%</b>	<b>144,430</b>	<b>100%</b>	<b>13,996,299</b>	<b>100%</b>
<b>Built before 1980</b>	<b>3,239</b>	<b>65.4%</b>	<b>6,913</b>	<b>63.1%</b>	<b>79,723</b>	<b>55.2%</b>	<b>8,429,128</b>	<b>60.2%</b>
<b>Built after 2010</b>	<b>297</b>	<b>6.0%</b>	<b>328</b>	<b>3.0%</b>	<b>3,189</b>	<b>2.2%</b>	<b>287,025</b>	<b>2.1%</b>
<b>Median Year Built</b>	<b>1972</b>		<b>1972</b>		<b>1977</b>		<b>1974</b>	

(A) COUNTYWIDE INCLUDE INCORPORATED AND UNINCORPORATED AREAS WITH THE COUNTY BOUNDARY.

SOURCES: U.S. CENSUS BUREAU, ACS 2013-2017 5-YEAR SAMPLING PERIOD, B25034; BAE, 2019.

## Housing Costs as Percent of Income

Table 1.2-5 and Chart 1.2-8 present information on the number and percent of households that overpay for housing in the four comparison geographies by tenure. The data were collected from the 2011-2015 CHAS data set, which is a special tabulation of the 2011-2015 ACS Five-Year estimates prepared by the U.S. Census Bureau for on behalf of the Department of Housing and Urban Development (HUD). The data should be interpreted with caution, as the data are based on Five-Year ACS estimates covering the 2011-2015 time-period, while other data presented in this report reflect data from the 2013-2017 time-period. Also, since the data are based on multi-year surveys, individual estimates may not sum to totals due to rounding.

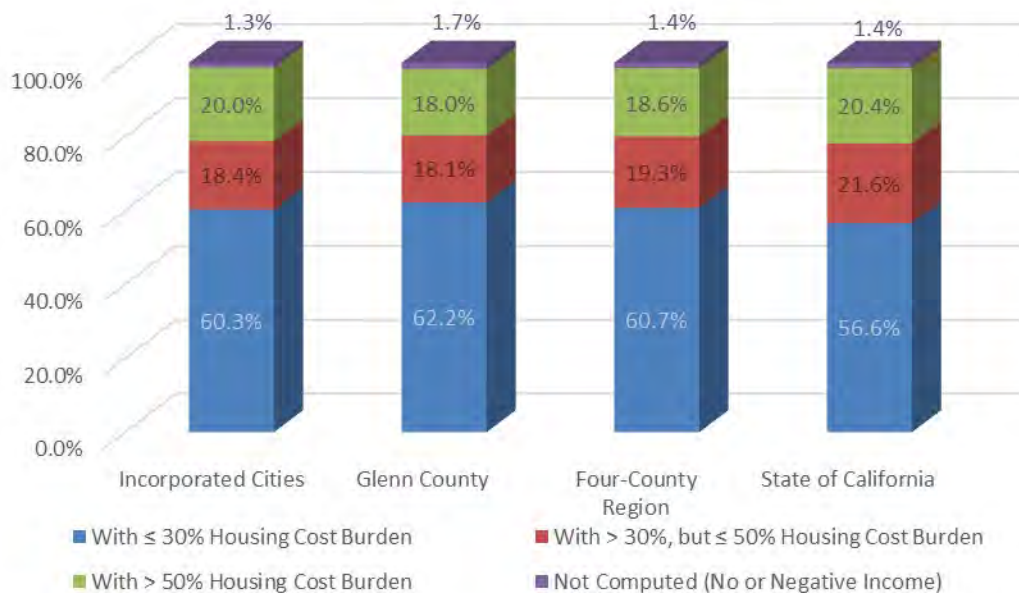
HUD estimates monthly housing cost burdens as a share of the HUD Adjusted Median Family Income (HMFI). Households are considered to have an excessive housing cost burden when housing costs exceeds 30 percent of HMFI. Households are considered to have a severe housing cost burden when monthly housing costs exceed 50 percent of HMFI. For owner households, housing costs are assumed to include mortgage, principal, interest, property taxes, and insurance (PITI), but do not include utility charges. For renter households, housing costs include monthly rent, plus a utility allowance.

The data provided in Table 1.2-5 indicate that households in Glenn County and the four-county region have a lower prevalence of excessive cost burdens than the statewide average. For example, an average of approximately 42 percent of all households in statewide experienced excessive or severe housing cost burdens between 2011 and 2015, the most recent period for which data are available. Households throughout all of Glenn County, by comparison, experienced excessive housing cost burdens at a rate of around 36 percent. Although the prevalence of high housing cost burdens is notably higher in the incorporated cities at around 38 percent, households living in the unincorporated area are notably less likely to experience high housing cost burdens, with an average rate of only around 34 percent. This is

likely due to the above average rates of home ownership in the unincorporated County, as well as the above average prevalence of older households, which often have access to larger amounts of accumulated wealth.

Across all geographies, excessive housing costs are more prevalent among renter households than owner households. An expanded version of this table, presented in Appendix A, also shows that households at lower income levels are more likely to experience excessive or severe housing cost burdens, regardless of geography or tenure. For example, approximately 68 percent of extremely low- and very low-income households in Glenn County, had excessive housing cost burdens, compared to the overall average of 38 percent.<sup>2</sup>

**Chart 1.2-8: Households Experiencing an Excessive Cost Burden, 2011-2015**



SOURCES: U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, CHAS, 2011-2015; BAE, 2019.

<sup>2</sup> The HUD defined extremely low- income category includes households with income less than, or equal to, 30 percent of the HAMFI, while the very low-income category includes households with incomes greater than 30 percent, and up to 50 percent, of the HAMFI.

**TABLE 1.2-5: HOUSING COST BURDEN BY TENURE, HUD 2011-2015**

Total Households, All Income Levels	Renter-Occupied Units		Owner-Occupied Units		All Occupied Units	
	Number	Percent	Number	Percent	Number	Percent
<b>Incorporated Cities</b>	<b>2,205</b>	<b>100%</b>	<b>2,555</b>	<b>100%</b>	<b>4,760</b>	<b>100%</b>
With ≤ 30% Housing Cost Burden	1,075	48.4%	1,805	70.6%	2,880	60.3%
With > 30%, but ≤ 50% Housing Cost Burden	435	19.6%	445	17.4%	880	18.4%
With > 50% Housing Cost Burden	665	30.0%	290	11.4%	955	20.0%
Not Computed (No or Negative Income)	45	2.0%	15	0.6%	60	1.3%
<b>Countywide</b>	<b>3,640</b>	<b>100%</b>	<b>5,855</b>	<b>100%</b>	<b>9,495</b>	<b>100%</b>
With ≤ 30% Housing Cost Burden	1,935	53.2%	3,970	67.7%	5,905	62.2%
With > 30%, but ≤ 50% Housing Cost Burden	752	20.7%	970	16.5%	1,722	18.1%
With > 50% Housing Cost Burden	850	23.4%	863	14.7%	1,713	18.0%
Not Computed (No or Negative Income)	100	2.7%	60	1.0%	160	1.7%
<b>Four-County Region</b>	<b>49,255</b>	<b>100%</b>	<b>76,225</b>	<b>100%</b>	<b>125,480</b>	<b>100%</b>
With ≤ 30% Housing Cost Burden	22,415	45.5%	53,770	70.5%	76,185	60.7%
With > 30%, but ≤ 50% Housing Cost Burden	11,719	23.8%	12,555	16.5%	24,274	19.3%
With > 50% Housing Cost Burden	14,054	28.5%	9,257	12.1%	23,311	18.6%
Not Computed (No or Negative Income)	1,094	2.2%	679	0.9%	1,773	1.4%
<b>State of California</b>	<b>5,808,625</b>	<b>100%</b>	<b>6,909,175</b>	<b>100%</b>	<b>12,717,800</b>	<b>100%</b>
With ≤ 30% Housing Cost Burden	2,665,090	45.9%	4,528,970	65.6%	7,194,060	56.6%
With > 30%, but ≤ 50% Housing Cost Burden	1,421,190	24.5%	1,320,305	19.1%	2,741,495	21.6%
With > 50% Housing Cost Burden	1,596,080	27.5%	1,002,640	14.5%	2,598,720	20.4%
Not Computed (No or Negative Income)	126,260	2.2%	57,250	0.8%	183,510	1.4%

SOURCES: U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, CHAS, 2011-2015; BAE, 2019.

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U.S. Census Bureau, ACS 2013-2017 5-year sampling period, table S1101.

U.S. Census Bureau, ACS 2013-2017 5-year sampling period, table B03002.

Sources: U.S. Census Bureau, 2013-2017 5-year sampling period, table S1501.

Sources: U.S. Census Bureau, 2013-2017 5-year sampling period, table DP-03.

Sources: U.S. Census Bureau, ACS 2013-2017 5-year sampling period, table B25003.

Sources: U.S. Census Bureau, ACS 2006-2010 and 2013-2017 5-year sampling period, table B25024.

Sources: U.S. Census Bureau, 2013-2017 5-year sampling period, table B25004.

Sources: U.S. Census Bureau, ACS 2013-2017 5-year sampling period, table B25034.

Sources: U.S. Department of Housing and Urban Development, CHAS, 2011-2015.

## **1.3 ECONOMIC CONDITIONS**

This section summarizes current economic conditions and trends in Glenn County, the incorporated cities, the four-county region, and the State of California. The analysis draws on a variety of sources, including data published by the California Employment Development Department (EDD), the California Department of Tax and Fee Administration (CDTFA), the ACS administered by the U.S. Census Bureau, as well as the Census Transportation Planning Package (CTPP). As discussed previously, ACS data should be interpreted with caution due to issues related to sample size and data reliability.

### **EXISTING SETTING**

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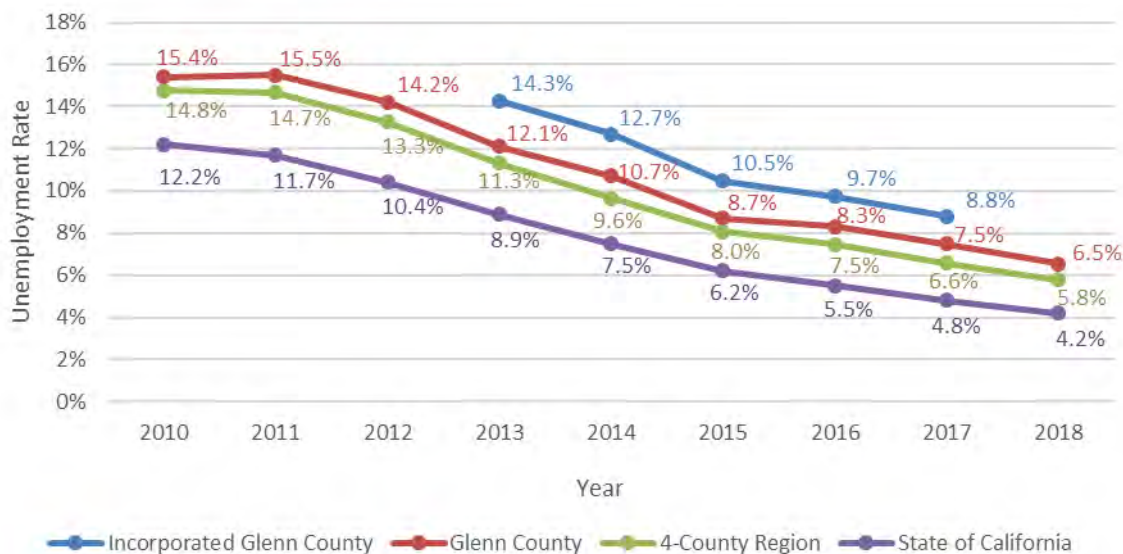
#### **Resident Employment Status**

Current estimates from the EDD indicate that there are approximately 5,910 employed residents in the incorporated cities, and 11,900 employed residents in Glenn County as a whole. The data indicate that the total labor force in Glenn County contracted by a total of 420 people, or around three percent, between 2010 and 2018. According to similar information provided by the EDD, the labor force in the incorporated cities increased during the period, indicating a concentration of the labor force into the incorporated cities and a decrease in the labor force residing in the unincorporated area.

Corresponding with the broad economic expansion that has followed the end of the Great Recession, the number of employed residents in both the County as a whole and the incorporated cities grew. The data indicate that Glenn County added approximately 530 new employed residents between 2013 and 2017, with the bulk of this growth occurring in the incorporated cities, again emphasizing the concentration of employment opportunities within the County's established urban centers.

As illustrated in Chart 1.3-1, the unemployment rate in Glenn County decreased dramatically from a high of around 15.4 percent in 2010, to about 6.5 percent in 2018. This generally corresponds with the regional and statewide trend; though unemployment in the County remains elevated compared to the state as a whole. Unemployment in the County is also somewhat elevated compared to the four-county region. Despite the fact that the majority of the County's new employed residents are concentrated in the incorporated cities, the cities also feature an average unemployment rate that is somewhat higher than the countywide average. This may likely be due to the higher concentration of workers in these areas.

**Chart 1.3-1: Unemployment Rate, 2010 to 2017**



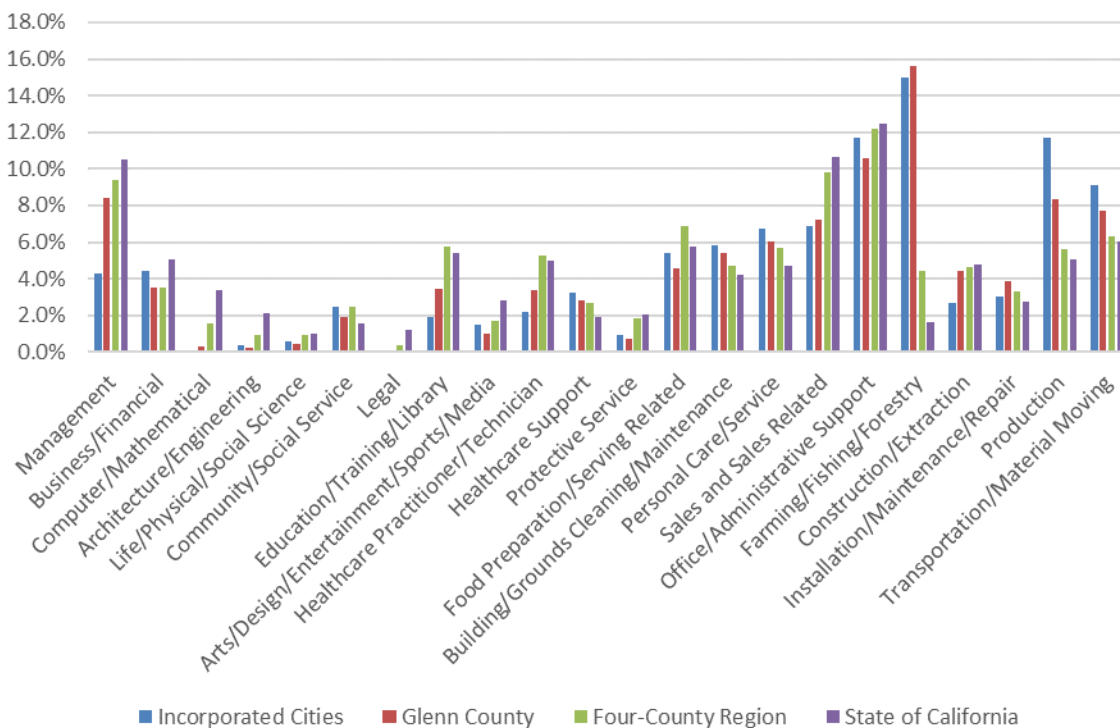
NOTE: (A) THE EDD DID NOT REPORT LABOR FORCE STATISTICS FOR INCORPORATED CITIES PRIOR TO 2013.

SOURCES: CALIFORNIA EMPLOYMENT DEVELOPMENT DEPARTMENT, LOCAL AREA UNEMPLOYMENT STATISTICS (LAUS), 2019; BAE, 2019.

### Resident Employment by Occupation

As illustrated in Chart 1.3-2, employed Glenn County residents are most likely to be employed in Farming, Fishing, and Forestry occupations. The share of the county’s workforce employed in this one sector is more than 11 percentage points higher than in the four-county region and 14 percentage points higher than for the state as a whole. Glenn County also has above average concentrations of employed residents working in Production occupations; Transportation and Material Moving occupations; and Installation, Maintenance, and Repair occupations. These tend to be relatively higher skill, moderately high paying occupational categories. Although the incorporated cities generally show the same overall occupational concentrations, the cities also have above average concentrations of employed residents working in Personal Care and Service occupations; Building, Grounds Cleaning, and Maintenance occupations, Healthcare Support occupations; and Community and Social Service occupations. These additional occupational categories tend to be low to intermediately skilled, with low to moderate wage levels.

**Chart 1.3-2: Employed Residents by Occupation, 2013-2017**



SOURCES: U.S. CENSUS BUREAU, ACS 2006-2010 AND 2013-2017 5-YEAR SAMPLING PERIOD, S2401; BAE, 2019.

### Jobs by Industry

Table 1.3-1 reports data from the EDD regarding the number of jobs by industry in each of the four geographies in 2010 and 2017. According to the data, there were approximately 84,600 jobs in Glenn County as of 2017, indicating that County’s employment base grew by nearly 11 percent between 2010 and 2017. This is around three and five percentage points less than the employment growth that occurred within the four-county region and the state as a whole over the same period. In absolute terms, Glenn County added around 900 net new jobs.

As of 2017, nearly half of all jobs within Glenn County were in Agriculture or Government, which accounted for 24 percent and 23 percent of jobs in Glenn County, respectively. Although these two sectors each account for roughly the same share of total employment in the County, a comparison with both the regional and statewide employment distributions indicates that the County is significantly overrepresented in the Agriculture sector, while the County’s share of employment in Government is roughly similar to that shown for the four-county region and the state as a whole. For example, in the four-county region, approximately 21 percent of all jobs are in Government, compared to 15 percent statewide. By comparison, only eight percent of the regional employment base is concentrated in Agriculture, compared to just over two percent statewide.

Among those industry sectors that gained jobs in Glenn County between 2010 and 2017, the largest absolute gain was in Agriculture with a net increase of 280 jobs. This is followed by Retail Trade (220 net new jobs), Manufacturing (100 net new jobs), Transportation, Warehousing, and Utilities (90 net new jobs).

jobs), Wholesale Trade (60 net new jobs), and Transportation, Warehousing, and Utilities (60 net new jobs).

**TABLE 1.3-1: JOBS BY INDUSTRY**

<b>Countywide</b>	<b>2010</b>		<b>2017</b>		<b>Absolute Change</b>	<b>Percent Change</b>
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>		
Agriculture	1,930	23.5%	2,210	24.3%	280	14.5%
Mining, Logging, and Construction	260	3.2%	310	3.4%	50	19.2%
Manufacturing	570	7.0%	670	7.4%	100	17.5%
Wholesale Trade	260	3.2%	320	3.5%	60	23.1%
Retail Trade	580	7.1%	800	8.8%	220	37.9%
Transportation, Warehousing & Utilities	450	5.5%	540	5.9%	90	20.0%
Information	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Financial Activities	170	2.1%	160	1.8%	-10	-5.9%
Professional & Business Services	170	2.1%	230	2.5%	60	35.3%
Educational & Health Services	840	10.2%	890	9.8%	50	6.0%
Leisure & Hospitality	680	8.3%	690	7.6%	10	1.5%
Other Services	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Government	2,210	27.0%	2,090	23.0%	-120	-5.4%
<b>Total, All Industries (a)</b>	<b>8,200</b>	<b>100%</b>	<b>9,100</b>	<b>100%</b>	<b>900</b>	<b>11.0%</b>
<b>Four-County Region</b>	<b>2010</b>		<b>2017</b>		<b>Absolute Change</b>	<b>Percent Change</b>
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>		
Agriculture	8,590	8.0%	10,100	8.3%	1,510	17.6%
Mining, Logging, and Construction	3,760	3.5%	4,970	4.1%	1,210	32.2%
Manufacturing	6,580	6.2%	8,040	6.6%	1,460	22.2%
Wholesale Trade	2,790	2.6%	3,190	2.6%	400	14.3%
Retail Trade	12,270	11.5%	14,560	12.0%	2,290	18.7%
Transportation, Warehousing & Utilities	3,340	3.1%	4,020	3.3%	680	20.4%
Information	1,070	1.0%	1,010	0.8%	-60	-5.6%
Financial Activities	3,810	3.6%	4,040	3.3%	230	6.0%
Professional & Business Services	5,950	5.6%	6,910	5.7%	960	16.1%
Educational & Health Services	19,490	18.2%	23,640	19.4%	4,150	21.3%
Leisure & Hospitality	9,500	8.9%	11,590	9.5%	2,090	22.0%
Other Services	3,950	3.7%	4,120	3.4%	170	4.3%
Government	25,460	23.8%	25,010	20.6%	-450	-1.8%
<b>Total, All Industries (a)</b>	<b>106,920</b>	<b>100%</b>	<b>121,660</b>	<b>100%</b>	<b>14,740</b>	<b>13.8%</b>
<b>State of California</b>	<b>2010</b>		<b>2017</b>		<b>Absolute Change</b>	<b>Percent Change</b>
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>		
Agriculture	382,800	2.6%	422,500	2.4%	39,700	10.4%
Mining, Logging, and Construction	584,600	4.0%	832,400	4.8%	247,800	42.4%
Manufacturing	1,247,900	8.5%	1,311,400	7.6%	63,500	5.1%
Wholesale Trade	629,700	4.3%	696,200	4.0%	66,500	10.6%
Retail Trade	1,516,500	10.3%	1,688,900	9.8%	172,400	11.4%
Transportation, Warehousing & Utilities	466,900	3.2%	632,300	3.7%	165,400	35.4%
Information	428,400	2.9%	529,900	3.1%	101,500	23.7%
Financial Activities	758,800	5.2%	830,900	4.8%	72,100	9.5%
Professional & Business Services	2,085,700	14.2%	2,584,400	15.0%	498,700	23.9%
Educational & Health Services	2,132,200	14.5%	2,650,800	15.4%	518,600	24.3%
Leisure & Hospitality	1,500,800	10.2%	1,951,700	11.3%	450,900	30.0%
Other Services	483,600	3.3%	564,100	3.3%	80,500	16.6%
Government	2,448,400	16.7%	2,563,900	14.9%	115,500	4.7%



<b>Total, All Industries (a)</b>	<b>14,666,100</b>	<b>100%</b>	<b>17,259,200</b>	<b>100%</b>	<b>2,593,100</b>	<b>17.7%</b>
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NOTE: (A) TOTALS MAY NOT EQUAL THE SUM OF PARTS DUE TO DATA CONFIDENTIALITY ISSUES.

SOURCES: EMPLOYMENT DEVELOPMENT DEPARTMENT (EDD), EMPLOYMENT BY INDUSTRY DATA, 2019; BAE, 2019.

## Agricultural Industry

The agriculture industry not only represents Glenn County's largest employment sector, but also represents the County's primary export industry. Otherwise known as a "basic sector," industries such as agriculture generate economic growth through the export of goods outside of the area, which in turn results in a net injection of dollars into the community which are then circulated in what is known as the "multiplier effect." Anecdotal evidence also indicates that agriculture has also been the basis for much of the County's industrial development, which has primarily been oriented toward the processing of agricultural commodities and by-products into various value-added products.

As shown in Table 1.3-2, Glenn County's total agricultural and forest production value was \$834.7 million in 2017, which is a 27 percent increase over the estimated 2010 farmgate value. Valued at nearly \$484.2 million, fruit and nut crops account for more than half of Glenn County's total agricultural production, followed by field crops at \$165.2 million. Since 2010, the value of fruit and nut crops has increased around 78 percent. Though they account for a much smaller proportion of the County's overall production value, the value of livestock, poultry, and apiary products increased around 90 percent since 2010. The value of the County's vegetable production also increased dramatically between 2010 and 2017. This is primarily explained by the introduction of processing tomato cultivation and a significant increase in cultivated acreage from only 29 acres in 2010 to 1,785 acres in 2017.

**TABLE 1.3-2: TOTAL VALUE OF AGRICULTURAL AND FOREST PRODUCTION, GLENN COUNTY, 2010 AND 2017**

Agricultural Products	2010 (a)	2017	Absolute	Percent
	Total Value (\$2017)	Total Value	Change	Change
Field Crops	\$245,743,884	\$165,221,000	-\$80,522,884	-33%
Fruit and Nut Crops	\$271,991,772	\$484,205,000	\$212,213,228	78%
Livestock and Poultry Products	\$67,219,100	\$59,835,000	-\$7,384,100	-11%
Livestock and Poultry	\$21,440,485	\$40,557,000	\$19,116,515	89%
Seed Crops	\$27,781,254	\$41,177,000	\$13,395,746	48%
Apiary Products	\$16,128,137	\$30,605,000	\$14,476,863	90%
Nursery Products	\$5,182,638	\$7,006,000	\$1,823,362	35%
Vegetable Crops	\$213,096	\$6,026,000	\$5,812,904	2728%
<b>Subtotal, Ag Production</b>	<b>\$655,700,365</b>	<b>\$834,632,000</b>	<b>\$178,931,635</b>	<b>27%</b>
Forest Products	2010 (a)	2017	Absolute	Percent
	Total Value (\$2017)	Total Value	Change	Change
Timber	\$0	\$11,000	\$11,000	n.a.
Firewood	\$118,129	\$39,000	-\$79,129	-67%
Christmas Trees	\$39,956	n.a.	n.a.	n.a.
<b>Subtotal, Forest Production</b>	<b>\$158,664</b>	<b>\$50,000</b>	<b>-\$108,664</b>	<b>-68%</b>
<b>Total, All Crop Types</b>	<b>\$655,859,029</b>	<b>\$834,682,000</b>	<b>\$178,822,971</b>	<b>27%</b>

NOTE: (A) INFLATION ADJUSTED USING CPI-ALL URBAN CONSUMERS AND ALL ITEMS, NOT SEASONALLY ADJUSTED, IN CALIFORNIA WITH AN ADJUSTMENT FACTOR OF 1.16.

SOURCES: GLENN COUNTY, ANNUAL CROP & LIVESTOCK REPORT, 2010, 2017; BAE, 2019.

Glenn County's top ten leading agricultural commodities as shown in Table 1.3-3 include almonds, rice, walnuts, dairy milk, and table olives. Almonds account for 26 percent of the county's total production value, followed by walnuts at 22 percent, and rice at 15 percent.

**TABLE 1.3-3: TOP TEN LEADING COMMODITIES, GLENN COUNTY, 2010 AND 2017**

<i>Leading Commodities</i>	<i>2010</i>	<i>Leading Commodities</i>	<i>2017</i>
Rice, Paddy	\$165,762,000	Almond	\$217,120,000
Almonds	\$104,397,000	Walnut	\$184,737,000
Walnuts	\$70,224,000	Rice	\$125,507,000
Dairy, Total Milk	\$57,398,000	Dairy, Total Milk	\$59,692,000
Olives, Table and Oil	\$24,705,000	Olives, Table	\$32,872,000
Prunes	\$21,580,000	Vine Seeds	\$31,532,000
Cattle and Calves	\$17,617,000	Apiary Products	\$30,605,000
Corn	\$14,325,000	Dairy Cattle	\$21,700,000
Apiary	\$13,926,000	Prune	\$20,224,000
Hay, Alfalfa	\$9,702,000	Beef Cattle	\$14,452,000

SOURCES: GLENN COUNTY, ANNUAL CROP & LIVESTOCK REPORT, 2010, 2017; BAE, 2019.

## Major Employers

Table 1.3-4 lists the largest employers in Glenn County, as well as in the four-county region as reported by the EDD. The County of Glenn is one of the largest employers, with nine County offices making the list. Reinforcing Glenn County's role as an agricultural hub, many of the county's largest employers are either directly or indirectly related to agriculture. For example, two of the county's largest employers, Erik Nielsen Enterprises Inc., and Lassen Land Co., are agriculture consultants or farm management companies, while another five employers are agricultural processors and/or manufacturers, such as Land O'Lakes, Rumiano Cheese Factory, Sierra Nevada Cheese Factory, Olson Meat Company, and Sunsweet Dryers. The Glenn-Colusa Irrigation District, which is the largest irrigation district in the Sacramento Valley, also makes the list. Another three of the largest employers are in the education and early childhood development field, including two schools and Head Start, while three more companies are in the medical field, including Glenn Medical Center and Sun Bridge Center of Willows. The Walmart Supercenter in Willows is also a major employer. Johns Manville which manufactures insulation and commercial roofing materials, is the County's largest employer and is also the only Glenn County employer to make the list of the region's largest employers.

**TABLE 1.3-4: MAJOR EMPLOYERS, GLENN COUNTY AND THE FOUR-COUNTY REGION, 2019**

<i>Glenn County</i>			
<i>Employer Name</i>	<i>Location</i>	<i># of Employees</i>	<i>Industry</i>
Child Protective Svc	Willows	100-249	County Government-Social/Human Resources
Department of Child Family Svc	Orland	50-99	Government-Individual/Family Social Svcs
Erick Nielsen Enterprises Inc	Orland	100-249	Agricultural Consultants
Glen County Mental Health	Willows	50-99	Government Offices-County
Glenn County Emergency Svc	Willows	100-249	County Government-Public Order & Safety
Glenn County Health & Welfare	Willows	100-249	County Government-Public Health Programs
Glenn County Human Resource	Willows	100-249	Government Offices-County
Glenn County Office-Emergency	Willows	50-99	Government Offices-County
Glenn County Planning & Pubc	Willows	50-99	Government Offices-County
Glenn County Sheriffs Civil Dv	Willows	100-249	Sheriff
Glenn Medical Ctr	Willows	100-249	Physicians & Surgeons

<b>Glenn County</b>			
<i>Employer Name</i>	<i>Location</i>	<i># of Employees</i>	<i>Industry</i>
Glenn Medical Ctr	Willows	100-249	Hospitals
Glenn-Colusa Irrigation Dist	Willows	50-99	Irrigation Companies
Head Start	Orland	50-99	Child Care Service
Johns Manville	Willows	250-499	Building Materials-Manufacturers
Land O'Lakes Inc <sup>3</sup>	Orland	50-99	Cheese Processors
Lassen Land Co	Orland	50-99	Farm Management Service
Mill Street School	Orland	50-99	Schools
Murdock Elementary School	Willows	50-99	Schools
Olson Meat Co	Orland	50-99	Meat-Retail
Rumiano Cheese Factory	Willows	100-249	Cheese Processors
Sierra Nevada Cheese Co	Willows	100-249	Cheese
Sun Bridge Ctr of Willows	Willows	50-99	Nursing & Convalescent Homes
Sunsweet Dryers	Orland	100-249	Fruits-Dried (wholesalers)
Walmart Supercenter	Willows	100-249	Department Stores
<b>Four-County Region</b>			
<i>Employer Name</i>	<i>Location</i>	<i># of Employees</i>	<i>Industry</i>
Bell-Carter Olive Co	Corning	250-499	Olives (wholesalers)
Butte Community Insurance Agcy	Chico	250-499	Insurance
Butte County Sheriff	Oroville	250-499	Sheriff
Butte County Comm Employment	Oroville	250-499	Employment Agencies & Opportunities
Butte County Sheriff	Oroville	250-499	Government Offices-County
Butte County Social Welfare	Oroville	250-499	Government Offices-County
California State Univ Chico	Chico	500-999	Schools-Universities & Colleges Academic
Chico High School	Chico	250-499	Schools
Enloe Homecare	Chico	250-499	Hospices
Enloe Medical Ctr	Chico	500-999	Hospitals
Enloe Medical Ctr	Chico	500-999	Hospitals
Enloe Medical Ctr	Chico	250-499	Physical Therapists
Enloe Medical Ctr Chico-VIntr	Chico	1,000-4,999	Social Service & Welfare Organizations
Feather River Hospital	Paradise	500-999	Hospitals
I-5 RV Park At Rolling Hls Csn	Corning	500-999	Casinos
Johns Manville	Willows	250-499	Building Materials-Manufacturers
Knife River Corp	Chico	250-499	Asphalt & Asphalt Products
Lifetouch National Schl Studio	Chico	500-999	Photographers-Portrait
Northern California Homes	Paradise	250-499	Real Estate
Oroville Hospital	Oroville	1,000-4,999	Hospitals
Pacific Coast Producers	Oroville	1,000-4,999	Cooperative Organizations
Sierra Pacific Industries	Corning	500-999	Lumber-Manufacturers
Sierra Pacific Industries	Red Bluff	250-499	Lumber-Manufacturers
Sierra Pacific Windows	Red Bluff	250-499	Windows
St Elizabeth Community Hosp	Red Bluff	250-499	Hospitals
Tehama County Dept of Edu	Red Bluff	250-499	Government Offices-County
United Healthcare	Chico	250-499	Medical Insurance Plans
Walmart	Chico	250-499	Department Stores
Walmart Distribution Ctr	Red Bluff	1,000-4,999	Distribution Centers (wholesalers)
Walmart Supercenter	Red Bluff	250-499	Department Stores
Wehah Farm Inc	Richvale	250-499	Rice Mills
Wil-Ker-Son Ranch & Packing Co	Gridley	250-499	Fruits & Vegetables-Growers & Shippers

<sup>3</sup> Land O'Lakes will be leaving Glenn County due to closure of a dairy farm.

SOURCES: EDD, 2019; BAE, 2019.

## Regional Commute Patterns

**Jobs/Worker Balance.** As shown in Table 1.3-5, Glenn County experiences a net cross commute involving approximately 2,516 workers commuting in from homes outside of the County and 3,600 employed residents that commute out of the County to jobs located elsewhere. This equals a net out-commute of 1,084 persons. This is relatively consistent with the net out-commute estimates reported by the ACS between 2006 and 2010.

**TABLE 1.3-5: WORKPLACE COMMUTE CHARACTERISTICS, 2006-2010 AND 2013-2017**

Glenn County	2006-2010		2013-2017	
	Number	Percent	Number	Percent
Work in County	10,332	100%	9,253	100%
Live Outside County	2,216	21%	2,516	27%
Live Within County	8,116	79%	6,737	73%
Live in County	11,271	100%	10,337	100%
Work Outside County	3,155	28%	3,600	35%
Work Within County	8,116	72%	6,737	65%
Net In-Commute	-939		-1,084	

SOURCES: U.S. CENSUS BUREAU, ACS 2006-2010 AND 2013-2017, 5-YEAR SAMPLING PERIOD, S0804, B08007; BAE, 2019.

**Workers by Place of Residence.** According to the ACS, approximately 73 percent of people who work in Glenn County also live in Glenn County, with the remaining 27 percent of workers commuting in to Glenn County from elsewhere (See Table 1.3-5). Supplemental data published by the U.S. Census Bureau as part of the CTPP, reported in Table 1.3-6, show that the large majority of workers commute in from Butte and Tehama Counties.

**TABLE 1.3-6: COMMUTE FLOW BY COUNTY OF RESIDENCE, GLENN COUNTY, 2012-2016**

Worker Residence (County)	2012-2016	
	Number	Percent
Glenn County	6,565	73.0%
Butte County	1,040	11.6%
Tehama County	745	8.3%
Colusa County	255	2.8%
Sacramento County	130	1.4%
Shasta County	60	0.7%
Yolo County	60	0.7%
Sutter County	55	0.6%
Santa Clara County	35	0.4%
Fresno County	15	0.2%
Nevada County	15	0.2%
San Bernardino County	10	0.1%
Placer County	4	0.0%
Siskiyou County	4	0.0%
Outside California	0	0.0%

SOURCE: U.S. CENSUS BUREAU, CENSUS TRANSPORTATION PLANNING PRODUCTS PROGRAM (CTPP) 2012-2016 5-YEAR SAMPLING PERIOD; BAE, 2019.

**Residents by Place of Work.** Approximately 65 percent of employed Glenn County residents work within the County, while the remaining 35 percent commute to workplaces outside of the County. Table 1.3-7 shows that of the Glenn County residents who work outside the County, most commute to Butte County, followed by Tehama and Colusa Counties.

**TABLE 1.3-7: COMMUTE FLOW BY COUNTY OF WORKPLACE, GLENN COUNTY, 2012-2016**

Resident Workplace (County)	2012-2016	
	Number	Percent
Glenn County	6,565	64.6%
Butte County	1,880	18.5%
Tehama County	760	7.5%
Colusa County	555	5.5%
Yolo County	95	0.9%
Shasta County	60	0.6%
Sutter County	55	0.5%
Kern County	30	0.3%
Santa Clara County	30	0.3%
Solano County	30	0.3%
Mendocino County	15	0.1%
Amador County	10	0.1%
Contra Costa County	10	0.1%
Alameda County	10	0.1%
Humboldt County	4	0.0%
Los Angeles County	4	0.0%
Plumas County	4	0.0%
Sacramento County	4	0.0%
San Francisco County	4	0.0%
Stanislaus County	4	0.0%
Tulare County	4	0.0%
Outside California	26	0.3%

SOURCE: U.S. CENSUS BUREAU, CENSUS TRANSPORTATION PLANNING PRODUCTS PROGRAM (CTPP) 2012-2016 5-YEAR SAMPLING PERIOD; BAE, 2019.

## Taxable Sales

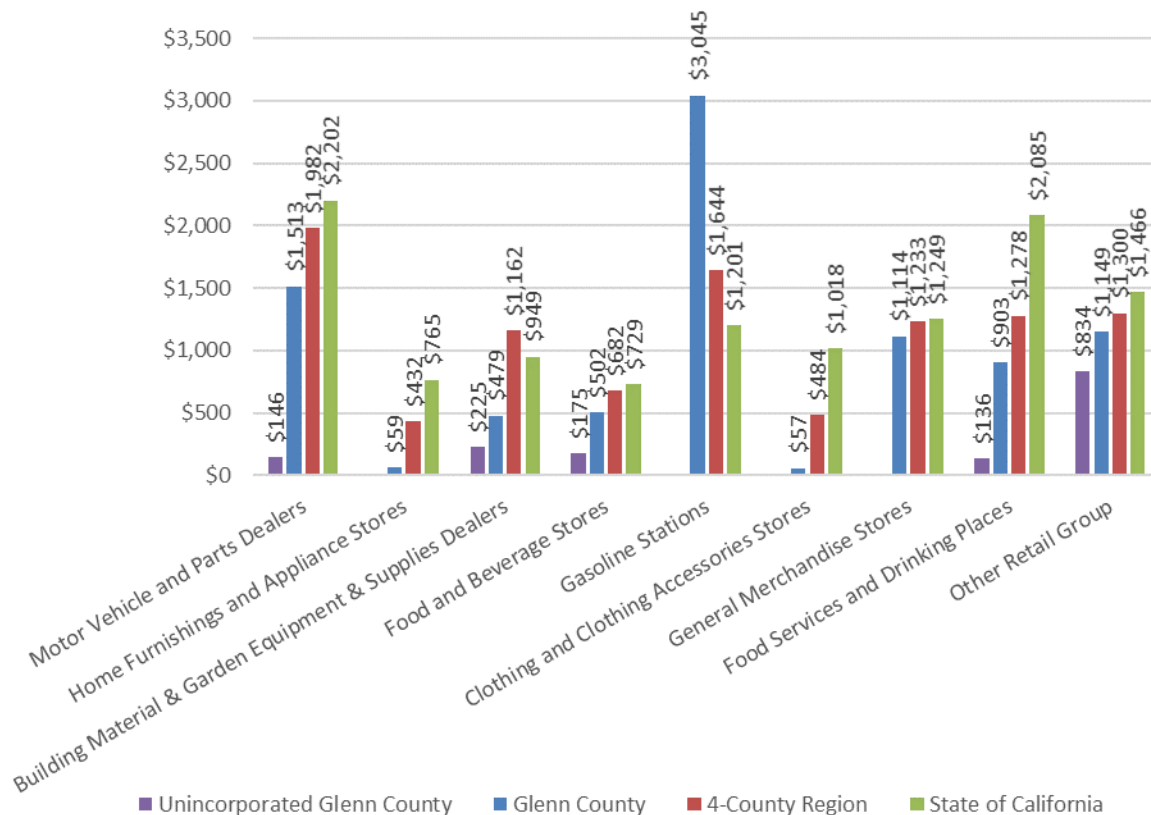
Based on taxable sales data published by the CDTFB, taxable retail and food service sales in Glenn County totaled \$425 million in 2017, the most recent data for which taxable sales data are available. This includes sales that occurred at brick and mortar establishments, as well as among non-store retailers (e.g., online and catalogue sales).<sup>4</sup> Taxable sales in the unincorporated county accounted for 22 percent (\$93.8 million) of the countywide total, indicating the majority of retail activity occurs in the incorporated cities.

Glenn County only accounts for around 8.5 percent of regional taxable sales receipts, indicating the county is not a major regional retail destination. However, despite lacking much in the way of destination retail, total per capita taxable retail spending figures indicate that Glenn County still generally captures its fair share of regional retail spending. However, the data illustrated in Chart 1.3-3

<sup>4</sup> Figures for online taxable sales are grouped in the Other Retail category along with sales from other brick and mortar stores not captured in other retail categories, such as Health and Personal Care Stores, Sporting Goods Stores, and Miscellaneous Retailers.

indicate that per capita taxable sales in Glenn County are lower than in the four-county region in all but one category: Gasoline Stations.

**Chart 1.3-3: Per Capita Taxable Retail Sales by Category, 2017**



SOURCES: CDTFA, 2019; DOF, 2019; BAE, 2019.

As shown in Table 1.3-8 and Table 1.3-9, since 2010, total taxable sales in Glenn County grew by \$103 million, or 32 percent, after adjusting for inflation. The data indicate that certain retail sectors are growing more quickly in Glenn County than elsewhere in the four-county region and state a whole. Taxable sales at gasoline stations accounted for the largest absolute gain in Glenn County, increasing by nearly \$33 million. This is likely attributable to construction of the nine-acre Flying J Travel Center alongside Newville Road west of Orland, which opened in 2016 and refuels an estimated 400 trucks and 400 cars per day in addition to featuring recreational vehicle services, and a drive through restaurant and convenience store.<sup>5</sup> Comparatively, sales at gasoline stations declined in the four-county region and statewide during the same time-period. Sales at motor vehicle and parts dealers also increased significantly in Glenn County over this period, compared to the four-county region and state as whole.

<sup>5</sup> Johnson, Julie R. (March 22, 2019). Pilot Flying J Travel Center to Open Soon. *Glenn County Transcript*. Available at: [https://www.appeal-democrat.com/glenn\\_county\\_transcript/pilot-flying-j-travel-center-to-open-soon/article\\_63095c96-f09b-11e5-9af9-bbc3c0cfe10a.html](https://www.appeal-democrat.com/glenn_county_transcript/pilot-flying-j-travel-center-to-open-soon/article_63095c96-f09b-11e5-9af9-bbc3c0cfe10a.html)

**TABLE 1.3-8: TAXABLE SALES BY CATEGORY, 2010 AND 2017 - GLENN COUNTY**

<b>Unincorporated County</b>			
<b>Sales Category</b>	<b>BY \$000S</b>		<b>PERCENT Change</b>
	<b>2010 (A)</b>	<b>2017</b>	
Motor Vehicle and Parts Dealers	(b)	\$2,157	n.a.
Home Furnishings and Appliance Stores	(b)	(c)	n.a.
Building Material & Garden Equipment & Supplies Dealers	(b)	\$3,342	n.a.
Food and Beverage Stores	(b)	\$2,591	n.a.
Gasoline Stations	(b)	(c)	n.a.
Clothing and Clothing Accessories Stores	(b)	(c)	n.a.
General Merchandise Stores	(b)	(c)	n.a.
Food Services and Drinking Places	(b)	\$2,020	n.a.
Other Retail Group	(b)	\$12,366	n.a.
<b>Subtotal - Retail and Food Services</b>	(b)	<b>\$22,475</b>	<b>n.a.</b>
<b>All Other Outlets</b>	(b)	<b>\$71,405</b>	<b>n.a.</b>
<b>Total, All Outlets</b>	(b)	<b>\$93,881</b>	<b>n.a.</b>
<i>Total, All Outlets per Capita (d)</i>	(b)	\$6,335	<b>n.a.</b>
<b>Glenn County (Countywide)</b>			
<b>Sales Category</b>	<b>By \$000s</b>		<b>Percent Change</b>
	<b>2010 (a)</b>	<b>2017</b>	
Motor Vehicle and Parts Dealers	\$22,806	\$43,468	90.6%
Home Furnishings and Appliance Stores	\$935	\$1,698	81.7%
Building Material & Garden Equipment & Supplies Dealers	\$12,117	\$13,759	13.6%
Food and Beverage Stores	\$16,636	\$14,426	-13.3%
Gasoline Stations	\$54,490	\$87,470	60.5%
Clothing and Clothing Accessories Stores	\$756	\$1,636	116.6%
General Merchandise Stores	(c)	\$32,006	n.a.
Food Services and Drinking Places	\$21,662	\$25,952	19.8%
Other Retail Group	\$44,472	\$33,014	-25.8%
<b>Subtotal - Retail and Food Services</b>	<b>\$173,873</b>	<b>\$253,429</b>	<b>45.8%</b>
<b>All Other Outlets</b>	<b>\$147,721</b>	<b>\$171,512</b>	<b>16.1%</b>
<b>Total, All Outlets</b>	<b>\$321,594</b>	<b>\$424,940</b>	<b>32.1%</b>
<i>Total, All Outlets per Capita (d)</i>	<i>\$11,436</i>	<i>\$14,791</i>	<i>29.3%</i>

NOTES: (A) INFLATION ADJUSTED USING CPI-ALL URBAN CONSUMERS AND ALL ITEMS, NOT SEASONALLY ADJUSTED, IN CALIFORNIA WITH AN ADJUSTMENT FACTOR OF 1.16. (B) UNINCORPORATED COUNTY NUMBERS WERE NOT PUBLISHED IN 2010, SO CALCULATION OF CHANGE OR PROPORTION OF COUNTY COULD NOT BE CALCULATED. (C) SALES OMITTED BECAUSE OF CONFIDENTIALITY ISSUES. (D) PER CAPITA NUMBERS CALCULATED USING DOF POPULATION ESTIMATES.

SOURCES: CALIFORNIA DEPARTMENT OF TAX AND FEE ADMINISTRATION (CDTFA), 2019; DEPARTMENT OF FINANCE (DOF), TABLE E-5, 2018; BAE, 2019.

**TABLE 1.3-9: TAXABLE SALES BY CATEGORY, 2010 AND 2017 - REGIONAL AND STATE**

<b>Four-County Region</b>			
<i>Sales Category</i>	<i>By \$000s</i>		<i>Percent Change</i>
	<i>2010 (a)</i>	<i>2017</i>	
Motor Vehicle and Parts Dealers	\$429,707	\$676,282	57.4%
Home Furnishings and Appliance Stores	\$122,249	\$147,199	20.4%
Building Material & Garden Equipment & Supplies Dealers	\$298,257	\$396,324	32.9%
Food and Beverage Stores	\$241,738	\$232,757	-3.7%
Gasoline Stations	\$581,021	\$560,687	-3.5%
Clothing and Clothing Accessories Stores	\$105,514	\$165,278	56.6%
General Merchandise Stores	(c)	\$420,677	n.a.
Food Services and Drinking Places	\$353,573	\$435,922	23.3%
Other Retail Group	\$409,689	\$443,534	8.3%
<b>Subtotal - Retail and Food Services</b>	<b>\$2,922,698</b>	<b>\$3,478,660</b>	<b>19.0%</b>
<b>All Other Outlets</b>	<b>\$1,322,364</b>	<b>\$1,516,095</b>	<b>14.7%</b>
<b>Total, All Outlets</b>	<b>\$4,245,061</b>	<b>\$4,994,755</b>	<b>17.7%</b>
<i>Total, All Outlets per Capita (d)</i>	<i>\$12,748</i>	<i>\$14,642</i>	<i>14.9%</i>
<b>State of California</b>			
<i>Sales Category</i>	<i>By \$000s</i>		<i>Percent Change</i>
	<i>2010 (a)</i>	<i>2017</i>	
Motor Vehicle and Parts Dealers	\$54,843,966	\$86,983,283	58.6%
Home Furnishings and Appliance Stores	\$26,048,694	\$30,206,241	16.0%
Building Material & Garden Equipment & Supplies Dealers	\$28,664,752	\$37,504,338	30.8%
Food and Beverage Stores	\$26,390,810	\$28,799,204	9.1%
Gasoline Stations	\$52,378,216	\$47,435,052	-9.4%
Clothing and Clothing Accessories Stores	\$31,579,265	\$40,206,357	27.3%
General Merchandise Stores	\$53,649,048	\$49,352,728	-8.0%
Food Services and Drinking Places	\$59,391,815	\$82,354,453	38.7%
Other Retail Group	\$45,504,942	\$57,889,882	27.2%
<b>Subtotal - Retail and Food Services</b>	<b>\$378,451,507</b>	<b>\$460,731,538</b>	<b>21.7%</b>
<b>All Other Outlets</b>	<b>\$174,380,144</b>	<b>\$211,755,043</b>	<b>21.4%</b>
<b>Total, All Outlets</b>	<b>\$552,831,651</b>	<b>\$672,486,581</b>	<b>21.6%</b>
<i>Total, All Outlets per Capita (d)</i>	<i>\$14,840</i>	<i>\$17,025</i>	<i>14.7%</i>

NOTES: (A) INFLATION ADJUSTED USING CPI-ALL URBAN CONSUMERS AND ALL ITEMS, NOT SEASONALLY ADJUSTED, IN CALIFORNIA WITH AN ADJUSTMENT FACTOR OF 1.16. (B) UNINCORPORATED COUNTY NUMBERS WERE NOT PUBLISHED IN 2010, SO CALCULATION OF CHANGE OR PROPORTION OF COUNTY COULD NOT BE CALCULATED. (C) SALES OMITTED BECAUSE OF CONFIDENTIALITY ISSUES. (D) PER CAPITA NUMBERS CALCULATED USING DOF POPULATION ESTIMATES.

SOURCES: CALIFORNIA DEPARTMENT OF TAX AND FEE ADMINISTRATION (CDTFA), 2019; DEPARTMENT OF FINANCE (DOF), TABLE E-5, 2018; BAE, 2019.



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Bay Area Economics. Glenn County General Plan Update Existing Conditions Background Report: Economic and Demographic Conditions and Trends –May 20, 2019.

California Employment Development Department, Local Area Unemployment Statistics (LAUS), 2019.

U.S. Census Bureau, ACS 2006-2010 and 2013-2017 5-year sampling period, Table S2401.

Employment Development Department (EDD), Employment by Industry Data, 2019

Glenn County, Annual Crop & Livestock Report, 2010, 2017.

U.S. Census Bureau, ACS 2006-2010 and 2013-2017, 5-year sampling period, tables S0804, B08007

U.S. Census Bureau, Census Transportation Planning Products Program (CTPP) 2012-2016 5-year sampling period.

California Department of Tax and Fee Administration (CDTFA), 2019; Department of Finance (DOF), Table E-5, 2018

## 1.4 REAL ESTATE MARKET CONDITIONS

This section summarizes the current real estate market conditions and trends in Glenn County. This analysis draws from several sources, including home sales records provided by ListSource and commercial and industrial market data provided by CoStar. Recognizing that many available commercial properties in Glenn County are not included in online listing services, data from these sources are supplemented through interviews with locally active real estate brokers and property managers. BAE also conducted an in-person field survey focused on key population nodes and commercial areas throughout Glenn County. BAE also coordinated with staff from Glenn County, the City of Willows, and the City of Orland to collect information regarding planned and proposed residential and non-residential development projects.

### EXISTING SETTING

**Impacts of the Camp Fire.** On November 8, 2018, a downed power line near Camp Creek in Butte County ignited the most destructive fire in California history, known today as the Camp Fire. The fire destroyed much of the community of Concow and the City of Paradise, burning more than 150,000 acres, destroying more than 18,800 structures, and displacing nearly 50,000 people. The impacts of this displacement have been significant, both for the evacuees themselves, as well as for the communities that host them. Interviews with local real estate brokers indicate that hotels in Orland and Willows have been at or near full capacity since the fire, roughly six months ago. Glenn County home prices and rental rates have also been directly impacted. However, local officials and economists anticipate that the social and economic impacts associated with the influx of Camp Fire evacuees into Glenn County will be temporary. Cleanup is underway in Paradise and some residents have begun to return home. Other evacuees have sought permanent resettlement, some in Butte County, some in Glenn County, some outside of the region altogether. It is unclear exactly what the near-term impacts of this influx of population will be, or how long those impacts will be sustained. To the extent possible, the remainder of this analysis acknowledges that the current real estate market conditions observed in Glenn County reflect not only the underlying fundamentals of the Glenn County economy, but also the near-term impacts associated with hosting a large number of displaced persons.

### Residential Real Estate Market - For-Sale Residential Market Conditions

Table 1.4-1 summarizes home sales characteristics for 270 homes sold in Glenn County between March 2018 and March 2019, as reported by ListSource, a private data vendor. Of those sales, 181 were located in the incorporated cities, while 89 were located in the unincorporated county. Single-family units accounted for 250 sales throughout the county, with 175 single-family sales in the incorporated cities and 75 sales in the unincorporated county. At \$285,000, the median sale price for a single-family unit in the unincorporated county was higher than in the incorporated cities, where the median single-family sale price was \$208,345. This is unsurprising given that units sold in the unincorporated county were generally larger than those in the incorporated cities and were located on larger lots. Mobile homes accounted for the second most common unit type, with the majority of the units being located in the unincorporated county. The median sale price for mobile home units was consistent across the County, ranging from \$126,000 in the incorporated cities to \$137,500 in the unincorporated county. Duplex units accounted for just three sales, all of which were located in the incorporated cities. The median sale price for a duplex building in the incorporated cities was \$332,500 (i.e., both units).

While not directly comparable to the data discussed above, the median sale price data reported by the California Association of Realtors (CAR) indicate that housing in Glenn County is relatively affordable

compared to other counties within the region. For example, CAR reports a median sale price (all units) of \$250,000 in Glenn County in March 2019, compared to \$369,000 in Butte County and \$315,000 in Tehama County.<sup>6</sup>

Local real estate brokers report that Glenn County's for-sale residential real estate market is driven by local residents, and others from nearby areas who are drawn to the county by the relative affordability, rural character, and the incorporated cities' small-town charm. According to *The Glenn County Housing Study*, completed in October 2018, sales volumes fluctuated between 15 and 20 units per month between June 2013 and June 2018. Since the Camp fire in November 2018, brokers report that the for-sale residential real estate market has been primarily driven by displaced households, with the majority of the County's available stock having been absorbed in the weeks following the evacuations. While displaced campfire victims still account for most home sales in Glenn County, brokers report that the market is beginning to return to pre-fire conditions, with around 13 to 15 home sales per month. Recognizing that demand from Butte County residents displaced by the Camp fire will continue to taper as victims move forward with long-term housing solutions, the Glenn County for-sale housing market will likely continue to return to pre-fire conditions over the long-term.<sup>7</sup>

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<sup>6</sup> The CAR did not report residential sales metrics for Colusa County in March 2019.

<sup>7</sup> Assuming that the region is not impacted by another similar incidence of fire in the near future.

**TABLE 1.4-1: CHARACTERISTICS OF HOUSING SALES BY TYPE, MARCH 2018 TO MARCH 2019**

<b>Unincorporated County</b>				
	<i>Property Type (c)</i>			
	<i>Single Family (a)</i>	<i>Mobile Home (b)</i>	<i>Duplex (d)</i>	<i>All Units</i>
<b>Number of Sales</b>	75	12	2	89
<b>Living Area</b>				
Median Living Area (Sq. Ft.)	1,472	1,152	1,111	1,440
Average Living Area (Sq. Ft.)	1,708	1,180	1,111	1,591
<b>Lot Area</b>				
Median Lot Area (Sq. Ft.)	50,965	25,746	10,172	46,173
Average Lot Area (Sq. Ft.)	97,299	72,834	10,172	92,042
<b>Sale Price</b>				
Minimum	\$60,000	\$60,000	\$155,000	\$60,000
Maximum	\$525,000	\$260,000	\$160,000	\$525,000
Median	\$285,000	\$137,500	\$157,500	\$240,500
Average	\$284,878	\$137,083	\$157,500	\$262,089
<b>Sale Price Per Sq. Ft.</b>				
Median \$/Sq. Ft. Living Area	\$194	\$119	\$142	\$167
Average \$/Sq. Ft. Living Area	\$167	\$116	\$142	\$165
<b>Incorporated Cities</b>				
	<i>Property Type (c)</i>			
	<i>Single Family (a)</i>	<i>Mobile Home (b)</i>	<i>Duplex</i>	<i>All Units</i>
<b>Number of Sales</b>	175	2	4	184
<b>Living Area</b>				
Median Living Area (Sq. Ft.)	1,310	1,307	1,820	1,361
Average Living Area (Sq. Ft.)	1,399	1,307	1,916	1,467
<b>Lot Area</b>				
Median Lot Area (Sq. Ft.)	7,949	(e)	12,500	8,004
Average Lot Area (Sq. Ft.)	9,040	(e)	12,818	17,793
<b>Sale Price</b>				
Minimum	\$65,000	\$107,000	\$152,000	\$65,000
Maximum	\$405,000	\$145,000	\$415,000	\$415,000
Median	\$208,345	\$126,000	\$332,500	\$210,500
Average	\$212,945	\$126,000	\$308,000	\$216,002
<b>Sale Price Per Sq. Ft.</b>				
Median \$/Sq. Ft. Living Area	\$159	\$96	\$183	\$155
Average \$/Sq. Ft. Living Area	\$152	\$96	\$161	\$147

NOTES: (A) SALES IN WHICH CERTAIN VARIABLES WERE NOT INCLUDED IN THE DATA (E.G., BUILDING SQUARE FOOTAGE) WERE DISCARDED WHEN ANALYZING THOSE VARIABLES, THOUGH THEY MAY BE INCLUDED IN OTHER DATA POINTS IN WHICH DATA WAS PROVIDED. (B) THE MOBILE HOME PROPERTY TYPE INCLUDES PROPERTIES THAT MAY OR MAY NOT INCLUDE PERMANENT RESIDENTIAL STRUCTURES IN ADDITION TO A MOBILE HOME. THE REPORTED MOBILE HOME SALES EXCLUDE PROPERTIES WHERE REVENUE-GENERATING AGRICULTURAL LAND WAS ASSESSED WITH THE PROPERTY. (C) PROPERTY TYPES CLASSIFIED BY THE GLENN COUNTY ASSESSOR, MISCELLANEOUS, AND RESIDENTIAL (NEC) PROPERTY TYPES ARE NOT INCLUDED DUE TO LACK OF CLASSIFICATION AND DATA AVAILABLE. (D) REPRESENTS SALES OF DUPLEX BUILDINGS AND NOT SALES OF THE INDIVIDUAL UNITS. (E) DUE TO ANOMALOUS SALES DATA, THE LOT AREA MEDIAN AND AVERAGE ARE NOT REPORTED. SOURCES: LISTSOURCE, 2019; BAE, 2019.

### **Rental Residential Market Conditions**

Table 1.4-2 summarizes the breakdown of apartment units by size and current asking lease rates, for the larger multifamily apartment properties in Glenn County. The data were collected through interviews with property managers, as well as from online listings published on Apartments.com. In total, BAE surveyed eight apartment complexes totaling 499 units, which represents approximately 41 percent of Glenn County's multifamily rental market. Three of the complexes interviewed for this research are located in the City of Orland. These properties include a total of 162 units. Another four complexes are located in the City of Willows and total 321 units. One complex totaling 16 units is in the unincorporated community of Hamilton City. Five of the complexes are rent restricted, meaning that rental rates are set based on renters' household income. Rental rates shown in the table for these complexes reflect the market rate rents the complexes would charge if the units were not rent restricted.

As shown in the table, the weighted average rental rate for all market rate multifamily units in Glenn County is \$894 per month. Differences in rental rates for the same unit type are typically attributed to particular unit features, with refurbished units collecting a premium. One-bedroom units rent for an average of \$718 per month, while two-bedroom units rent for around \$919 per month, and three-bedroom units rent for around \$1,126 per month. The available data are insufficient to calculate the average rental rate for four-bedroom units.

None of the apartment complex managers interviewed for this research reported having any vacant units available for lease, or expected to have any vacant units in the near future. This is consistent with findings from the Glenn County Housing Report, which reported a 1.4 percent rental vacancy rate in October 2018, prior to the Camp Fire. Apartment complex managers indicate that the influx of displaced Butte County residents and workers temporarily moving to Glenn County as part of the rebuilding effort (i.e., contractors, plumbers, hazardous waste removal workers, etc.) have exacerbated what was already a tight rental market. For example, one apartment complex reported that while they typically maintained a waitlist of between 20 and 30 people prior to the fire, they now maintain a waitlist of 50 people following the fire. According to the complex managers, subsidized rental housing is most in demand, particularly for one- and two-bedroom units.

Unlike brokers in the for-sale residential market, apartment complex managers do not anticipate a tempering of the rental market once displaced fire victims find long-term housing solutions and the rebuilding efforts are complete. With only 35 multifamily units currently entitled for development throughout the county, the current and anticipated future demand is expected to continue to outstrip supply for the foreseeable future.

**TABLE 1.4-2: MULTIFAMILY RENTALS, GLENN COUNTY, 2019**

Complex Name (a)	Address/ Year Built	Number of Units	Bedroom s/ Bathroom s	Square Feet	Monthly Rent (c)			Rent/ Sq. Ft.	User Restricted
					Low	High	Mid		
Paigew ood Village (b)	745 Paigew ood Dr	73	2BD/ 1BA	915	\$333	\$647	\$490	\$0.71	Data not available
	Orland		3BD/ 2BA	1,215	\$351	\$716	\$534	\$0.59	
	Built 2010		4BD/ 2BA	1,283	\$366	\$746	\$556	\$0.58	
Willow s Apartments	175 N Villa	16	1BD/ 1BA	680	n.a.	n.a.	\$623	\$0.92	31 Rent- Restrict ed Units
	Willow s	16	2BD/ 1BA	1,060	n.a.	n.a.	\$826	\$0.78	
	Built 1978	4	3BD/ 2BA	1,300	n.a.	n.a.	\$1,170	\$0.90	
Shasta Garden Apartments	226 E Shasta St	20	1BD/ 1BA	598	n.a.	n.a.	\$698	\$1.17	All Rent- Restrict ed Units
	Orland	21	2BD/ 1BA	780	n.a.	n.a.	\$919	\$1.18	
	Built 1979	8	3BD/ 1BA	1000	n.a.	n.a.	\$1,069	\$1.07	
Willow Oaks Apartments	1201 W Wood St	20	1BD/ 1BA	750	n.a.	n.a.	\$736	\$0.98	All Rent- Restrict ed Units
	Willow s	32	2BD/ 1BA	900	n.a.	n.a.	\$941	\$1.05	
	Built 1981	7	3BD/ 1BA	1000	n.a.	n.a.	\$1,317	\$1.32	
New port Village	1011 New port Ave Orland Built 1991	39	1BD/ 1BA	614	n.a.	n.a.	30%	n.a.	All Restrict ed Units (Seniors/ Disabled)
Sycamore West Apartments	1333 W Sycamore St	10	1BD/ 1BA	600	600	775	\$688	\$1.15	Market- Rate
	Willow s	24	2BD/ 1BA	700	700	875	\$788	\$1.13	
	Built 1975	12	2BD/ 1.5BA	800	750	975	\$863	\$1.08	
Ashland Apartments	206-208 Main St Hamilton City Built 1983	15	2BD/ 1BA	750	Data not available				
Cedar Hills Manor	600 N Humboldt Ave	14	1BD/ 1BA	766	n.a.	n.a.	\$850	\$1.11	Market- Rate
	Willow s	152	2BD/ 1BA	969	n.a.	n.a.	\$950	\$0.98	
	Built 1985	14	3BD/ 1BA	1,081	n.a.	n.a.	\$1,050	\$0.97	
<b>Average Weighted Rental Rate (d)</b>							<b>\$894</b>		
1 Bedroom							\$718		
2 Bedroom							\$919		
3 Bedroom							\$1,126		

NOTES: (A) THE APARTMENT COMPLEXES SURVEYED REPRESENT ABOUT 40 PERCENT OF THE TOTAL MULTIFAMILY RENTAL HOUSING STOCK BASED ON THE ACS 2013-2017 5-YEAR SAMPLING PERIOD DATA. (B) INFORMATION ON PAIGEWOOD VILLAGE IS FROM APARTMENTS.COM AND MAY NOT ACCURATELY REFLECT CURRENT MARKET RATE RENTS. RENT PER SQUARE FOOT FOR PAIGEWOOD VILLAGE IS BASED ON THE "HIGH" MONTHLY RENT RATHER THAN "MID", AS THE "LOW" RENT SEEMS TO REFLECT THE SUBSIDIZED RENTAL RATE. (C) REPORTED RENTS REFLECT MARKET RATE RENTS, INCLUDING THOSE AT RENT-RESTRICTED COMPLEXES. (D) WEIGHTED AVERAGE RENT EXCLUDES UNITS THAT DO NOT HAVE SUFFICIENT DATA AVAILABLE AND IS BASED ON THE REPORTED MARKET RATE RENTS.

SOURCES: APARTMENTS.COM, 2019; INTERVIEWS WITH APARTMENT COMPLEX MANAGERS, 2019; BAE, 2019.

## Retail Real Estate Market

Glenn County's retail real estate market is predominately characterized by smaller stand-alone community serving businesses that meet the everyday needs of residents (e.g., grocers, pharmacies, convenience stores, etc.) or highway-oriented retailers, such as truck stops, gasoline stations, and fast food restaurants, which serve travelers on the Interstate 5 (I-5) corridor. Like many rural communities with relatively small populations and historically limited population growth, Glenn County does not meet the location requirements for most chain or big-box retailers, with the exception of the Walmart Super Center located in Willows. Consequently, the County's residents must travel to larger nearby cities, like Chico, Red Bluff, or Redding, to purchase many items, such as clothing, shoes, sporting goods, home furnishings, etc. Some brokers note that residents are increasingly inclined to purchase many of these items online, from sites such as Amazon.

Brokers indicate there is limited demand for new or existing community serving retail space throughout the county, with retail constituting most of the current vacant commercial inventory. Data from CoStar, provided in Table 1.4-3, indicate that the County's retail vacancy rate could be around seven percent; though brokers indicate the actual retail vacancy rate may in fact be higher. Brokers report that large retail spaces over 1,000 square feet, and properties priced beyond what local businesses can afford, account for the majority of the County's vacant retail space. Local brokers consistently report that most local retail tenants can afford to pay rents of up to \$1,200 to \$1,300 per month, which translates to around \$0.50 to \$0.75 per square foot per month; though some businesses may be able to afford up to \$1.00 per square foot for smaller spaces. In many cases, when an available space is priced too high, it is because the property owner is basing the price on the prevailing rates in nearby markets, like Chico, Redding, or Red Bluff where there are greater volumes of demand to support retail businesses. CoStar reports that the average rental rate for retail space ranges from \$0.95 per square foot in Redding to \$1.83 per square foot per month on a triple net basis in Chico. Brokers report that, usually, property owners who base their lease rates on the lease rates in nearby areas do not live within Glenn County and are unfamiliar with the local real estate market.

Data available through CoStar support the brokers' narrative that there is limited demand for larger, less affordably priced retail space. As of the fourth quarter of 2018, the sizes of available retail spaces were larger than what brokers indicate is most in demand. These spaces ranged in size from 1,500 to 45,000 square feet, with an average size of 9,200 square feet. At \$0.90 per square foot per month, the average asking rent was also above what brokers reported most local business can afford. The top portion of Table 1.4-4 provides a sampling of some of the commercial properties that were available for lease as of April 2019. Both office and retail listings are presented, as the spaces are often used interchangeably, with limited tenant improvements. Applying the \$1,200 to \$1,300 per month range as the affordability threshold cited by brokers, roughly half of the 14 currently available properties could be affordable to most prospective tenants in this market.

Table 1.4-5 reports retail properties that were for-sale as of mid-April 2019. Asking prices range from \$29 per square foot for a 12,000 square foot commercial building on a prime intersection in Willows, to \$287 per square foot for a former insurance company office that could be used by retail or office tenants in Orland. As with the commercial properties available for lease, most of these properties are larger than what is currently in demand by the market, and priced higher than what most local business can afford. Brokers noted that due to the relatively low household incomes of Glenn County residents,

most business owners do not qualify for the financing necessary to purchase available commercial properties.

Since 2010, a little more than 100,000 square feet of new retail space has been built in Glenn County. This included Dollar Tree, Tractor Supply, and O'Reilly Auto Parts stores in Willows, as well as a Starbucks, a Walgreens, and a roughly 40,000 square foot strip center in Orland. This does not include the nine-acre Flying J Travel Center, which, while not a traditional retail user, generates a significant amount of retail activity in terms of motor vehicle fuel sales, as discussed previously. Given that the affordable retail rental rates in Glenn County are relatively low and likely do not support the cost of new construction, it is not surprising that most of the County's newly developed retail developments have been owner-occupied projects.

### Future Retail Demand Driven by Freeway-Oriented Commercial

Based on Glenn County's historically limited population growth, demand for retail space will likely be driven by freeway-oriented uses, such as fast food restaurants, gasoline stations, and hotels, which are able to capture a larger customer base due to visibility on I-5. Brokers indicate that new federal regulations that went into effect in 2017, which limit the number of hours truck drivers are permitted to drive consecutively to eleven hours in a fourteen hour window followed by a ten hour break,<sup>8</sup> makes Glenn County an attractive rest stop for truck drivers traveling between Portland and Los Angeles. Keeping in mind these regulations are subject to change,<sup>9</sup> this could provide a competitive advantage for future highway-oriented development in Glenn county. However, it should also be noted that the anticipated shift towards autonomous trucks at some point in the future could fundamentally shift the types of goods and services that would be in demand along truck routes such as I-5 over the long-term.

Additionally, brokers indicate that the County may have an opportunity to capture spending from visitors to the Thunderhill Raceway, located east of Willows on Highway 162. Thunderhill raceway offers two-, three-, and five-mile tracks, as well as skid pad space, for events and private use. The facility hosts around 750 events per year and attracts around 200,000 people to Glenn County annually. Although the track facilities are relatively self-contained, with a restaurant to serve patrons, as well as automobile storage and shop facilities, brokers indicate that newer quality hotel developments could help serve the track's clientele, capture more overnight stays within the County, and stimulate additional spending in local stores.

**TABLE 1.4-3: RETAIL REAL ESTATE MARKET SUMMARY, GLENN COUNTY, Q4 2018**

<b>Total Inventory (sq. ft.), Q4 2018</b>	<b>960,425</b>
Vacant Stock (sq. ft.)	68,875
Vacancy Rate	7.2%
<b>Average Vacant Size (sq. ft.)</b>	<b>9,211</b>
Minimum Vacant Size (sq. ft.)	1,401
Maximum Vacant Size (sq. ft.)	45,000
<b>Avg. Asking NNN Rents</b>	
Avg. Asking NNN Rent per sq. ft., Q4 2018	\$0.90
Avg. Asking NNN Rent per sq. ft., Q4 2017	\$1.19
% Change, Q1 2018 - Q1 2019	-24.4%

<sup>8</sup> Federal Motor Carrier Safety Administration. (March 9, 2017). Summary of Hours of Service Regulations. Accessed May 13, 2019. Available at: <https://www.fmcsa.dot.gov/regulations/hours-service/summary-hours-service-regulations>

<sup>9</sup> Premack, Rachel. (October 31, 2018). Truck Drivers Detest a New Law that Forces Them to Take a 10-Hour Break-and They are Getting Support from an Unlikely Source. *Business Insider*. Available at: <https://www.businessinsider.com/eld-mandate-hos-changes-truck-drivers-rest-break-2018-10>



<b>Net Absorption</b>	
Net Absorption (sq. ft.), Q1 2010 - Q4 2018	62,468
Net Absorption (sq. ft.), Q4 2017 - Q4 2018	43,680
<b>New Deliveries (sq. ft.), Q1 2010 - Q4 2018</b>	<b>100,197</b>

SOURCES: CoSTAR, 2019; BAE, 2019.

**TABLE 1.4-4: AVAILABLE COMMERCIAL SPACES, GLENN COUNTY, MAY 2019 (FOR LEASE)**

<i>Address</i>	<i>SF Available</i>	<i>Listed Asking Rent/SF/Month</i>	<i>Additional Notes</i>
151 S Tehama St Willows	1,600	\$0.50 Modified Gross	Class C retail building for relet. Also available for sale. Has been on the market since 2011.
Frances Ln Orland	2,200	Upon Request	Currently proposed retail project in Orland that has I-5 visibility; next to Starbucks.
3058 State Hwy 45 Glenn County	1,892	\$0.65	Same property that is listed in industrial; only one out of the four spaces for lease is office.
130 N. Butte St Willows	1,625 1,725 987 950 530 2,314 550 1,771	\$1.33 \$0.75 \$0.74 \$1.00 \$1.12 \$1.00 \$0.91 \$0.75	Retail located in a strip mall shopping center with 10 units. Located next to Umpqua Bank and Bank of America in downtown Willows.
1237 & 1239 W. Wood St Willows	1,467	\$0.90	Retail. Former Metro PCS. Round Table Pizza.
126 and 130 W. Sycamore St. Willows	1,500 2,000	\$0.50 \$0.45	Planned Retail.
827 W. Sycamore St. Willows	3,000 2,000	\$0.50 \$0.50	Will rent together or separate.

SOURCES: BROKER LISTINGS, 2019; LOOPNET, 2019; BAE, 2019.

**TABLE 1.4-5: AVAILABLE COMMERCIAL SPACES, GLENN COUNTY, MAY 2019 (FOR SALE)**

<i>Address/ Year Built</i>	<i>SF Available</i>	<i>Listed Asking Sale Price</i>	<i>Additional Notes</i>
725 4th St Orland	6,300	\$300,000	Class C retail storefront on a .19 acre lot. Possibility to split into two separate spaces of about 3,500 sf each.
718 4th St Orland	3,000	\$350,000	Class C building and business being sold (florist), along with its inventory, vendor lists, computers, phone system, and delivery van.
210 5th St Orland	1,710	\$169,999	Commercial property that can be used for auto repair, collision center, or body shop.
728 5th St Orland	2,800	\$119,000	Block away from Hwy 32 (Walker St). Zoned Community Commercial.
535 Tehama St Orland	4,500	\$189,000	Large commercial building for retail. Previously a Western store.
157 E Walker St Orland	656	\$270,000	Corner lot with Hwy 32 frontage. Buildings are 400 sq. ft. and 256 sq. ft.
221 Walker St Orland	1,322	\$379,500	Commercial building in a corner lot with expansion opportunity to build additional 1,900 sq. ft. Can be used for office, retail, or restaurant.
32-61 E Walker St Orland	36,527	\$5,000,000	Palm Plaza Shopping Center anchored by Sav-Mor Grocery. Fully leased.
318 6th St Orland	11,760	\$749,000	Commercial investment building with Hwy 99 frontage. 3 units. Has 2,800 sq. ft. warehouse component attached to retail as well.
4082 Co Road 99 Orland	2,400	\$365,000	Commercial/office first floor with residential on second floor. Currently used as a tow business.
1351 Cortina Dr Orland	9,050	\$650,000	Fully leased medical office building that was built-to-suit for sale. Built in 2008.
1361 Cortina Dr Orland	5,550	\$1,000,000	Fully leased medical office building that was built-to-suit for sale. Built in 2008.
SEC of Hwy 99 & Hwy 162 Willows	12,000	\$350,000	Owned by Don Rogers of Westside Carpet. 5 units, but not much parking.
151 S Tehama St Willows	1,600	\$105,000	Class C retail building. Building can be purchased for \$80,000 without the second lot beside it. On a 0.17 acre lot. Located on old 99 near downtown Willows.

SOURCES: BROKER LISTINGS, 2019; LOOPNET, 2019; BAE, 2019.

## Office Real Estate Market

Glenn County's commercial office market shares many similarities with the retail market. Overall demand for office space is relatively limited. Most prospective tenants are looking for smaller more affordable spaces, or flexible spaces that can easily be subdivided and leased separately. Brokers indicate the maximum space requirement for most prospective office users is around 1,000 square feet, with most looking for anywhere between 500 and 700 square feet. Current asking rental rates are

between \$0.50 and \$0.75 per square foot per month, with some smaller properties able to command up to \$1.00 per square foot. Once again, this narrative is generally supported by data available through CoStar, which reports vacant office spaces as of the fourth quarter of 2018 ranged from 1,000 square feet to 11,600 square feet, for an average size of 4,646 square feet. The average gross asking rent was at the upper end of what is generally considered affordable for the market, at \$0.76 per square foot. As discussed in the retail section, brokers indicate most vacant office properties sit on the market because they are priced in line with the Chico, Redding, and Red Bluff markets, where CoStar reports office rents ranging from around \$1.00 per square foot in Redding and Red Bluff, to \$1.32 per square foot in Chico (gross rent). Of the commercial properties available for rent or for-sale, as presented in Table 1.4-5 and Table 1.4-5, most are too large and/or too expensive for most prospective local users.

According to local brokers, government users account for most Glenn County's office tenants, followed by agricultural users, small medical office users, insurance companies, real estate agents, or service providers, such as hair salons or tattoo parlors. Brokers generally indicated the County's existing office supply is sufficient to meet future demand, which will likely continue to be driven by government users or owner/operators, since the majority of Glenn County users are likely unable to afford the rental rates necessary to justify new construction or even renovations to existing buildings. While one broker indicated there may be some demand for newer, higher quality office space, this was based on the recent lease of a newer 4,500 square foot office building to a single tenant, which the broker attributed to the overall quality of the space compared to the rest of Glenn County's office inventory. Brokers also indicate that the lack of new development, and the negative net absorption experienced since 2010, makes it difficult to gauge the depth of this demand in this market. This is likely why there are no dedicated office projects currently in the development pipeline in the incorporated cities or the County, though some of the entitled industrial projects discussed in the next section could serve at least some office users.

**TABLE 1.4-6: OFFICE REAL ESTATE MARKET SUMMARY, GLENN COUNTY, Q4 2018**

<b>Total Inventory (sq. ft.), Q4 2018</b>	<b>154,225</b>
Vacant Stock (sq. ft.)	11,689
Vacancy Rate	7.6%
<b>Average Vacant Size (sq. ft.)</b>	<b>4,646</b>
Minimum Vacant Size (sq. ft.)	1,000
Maximum Vacant Size (sq. ft.)	11,639
<b>Avg. Asking NNN Rents</b>	
Avg. Asking Gross Rent per sq. ft., Q4 2018	\$0.76
Avg. Asking Gross Rent per sq. ft., Q4 2017	\$0.88
% Change, Q4 2017 - Q4 2018	-13.6%
<b>Net Absorption</b>	
Net Absorption (sq. ft.), Q1 2010 - Q4 2018	(12,989)
Net Absorption (sq. ft.), Q4 2017 - Q4 2018	(2,588)
<b>New Deliveries (sq. ft.), Q1 2010 - Q4 2018</b>	<b>0</b>

SOURCES: CoSTAR, 2019; BAE, 2019.

### Industrial Real Estate Market

While likely not a comprehensive accounting, CoStar estimates Glenn County has an industrial inventory of around 765,500 square feet. With the exception of a few larger users such as Johns Manville, Glenn County's existing industrial inventory is predominately located on the periphery of the incorporated cities and along the California Northern Railway line which runs parallel to Highway 99 West, and within

the unincorporated community of Hamilton City, along the Wyo Loop spur of the California Northern Railway line.

CoStar reports an industrial vacancy rate of 12 percent in the fourth quarter of 2018 and negative net absorption for the year, though brokers indicate this may not actually portray the level of demand for industrial space. According to brokers, even before the Camp Fire recovery effort increased demand for construction and materials storage space, Glenn County's industrial market was already relatively strong. With CoStar reporting industrial vacancy rates around four percent in Red Bluff, two percent in Redding, and less than one percent in Chico, brokers indicate that Glenn County is one of the few places in the northern Sacramento Valley with available industrial space. This is causing prospective tenants to take a greater interest in Glenn County compared to the more recent past.

Brokers indicate existing demand is primarily driven by building material suppliers and storage, and small suppliers, manufacturers and distributors of agricultural goods (e.g., raspberries, olives, etc.), and processed agricultural goods (e.g., cheese, olive oil, etc.). These users typically require small spaces between 4,000 and 5,000 square feet with additional small office spaces that can be used for administrative purposes. As shown in Table 1.4-7, the smallest vacant industrial space in Glenn County as of the fourth quarter of 2018 was 8,700 square feet, while the average size available was 31,701 square feet.

While a calculation of the average industrial asking rent is not available for Glenn County through CoStar, Table 1.4-7, which lists available industrial properties offered by local brokers, shows that there were four industrial spaces totaling 64,392 square feet available for rent on the same property on State Highway 45 at Ord Ferry Road in unincorporated Glenn County north of Jacinto. Rental rates for these spaces ranged from \$0.16 to \$0.28 per square foot per month on a modified gross basis. Acknowledging these rates represent just one property, the rates generally confirm brokers' narratives that Glenn County's industrial market is significantly cheaper compared to other areas in the region. For example, CoStar reported asking rents for industrial properties ranging from \$0.44 per month in Chico and Red Bluff to \$1.14 per month in Redding on a triple net basis, as of the fourth quarter of 2018. As with the retail and office market, brokers report most local industrial companies can afford to pay anywhere between \$0.50 and \$0.75 per square foot, and that many of the industrial properties that remain on the market are of lower quality and/or are priced too high for Glenn County's market.

In addition to existing industrial properties for lease, Glenn County also has a number of existing industrial properties for sale. As shown in Table 1.4-7, according to LoopNet, there are four existing industrial properties for sale which range from around \$149 per building square foot for a fully operational olive processing plant with 12 acres of income producing olive orchards, to \$70 per building square foot for a concrete industrial building in Hamilton City with railroad spur access which the selling agents indicates will likely sell for less than the listed price. At least two of these properties (310 and 250 Walsh Ave. in Hamilton City) are also available for lease, with the property owners interested in whichever option fills the space.

As with retail and office, industrial development in Glenn County is generally driven by user specific needs, rather than speculative development. For example, the 275-acre CalAg CalPlant I, which produces commercial-scale rice straw-based medium density fiberboard (MDF) and is expected to be complete in the fall of 2019, and the expansion of the J.R. Simplot Company fertilizer storage, shipping, and blending facility south of Orland, are two of the county's only recent new industrial developments, both of which are driven by user specific needs. Neither of these projects are reflected in CoStar's inventory and, as a result, CoStar reports there has been no new industrial square footage delivered to Glenn County's market since 2010. Brokers indicate that some speculative industrial development could be absorbed, but the spaces would need to be flexible enough to accommodate different user needs and priced within the range that would be affordable to prospective local users.

**TABLE 1.4-7: INDUSTRIAL REAL ESTATE MARKET SUMMARY, GLENN COUNTY, Q4 2018**

<b>Total Inventory (sq. ft.), Q4 2018</b>	765,552
Vacant Stock (sq. ft.)	95,122
Vacancy Rate	12.4%
<b>Average Vacant Size (sq. ft.)</b>	<b>31,707</b>
Minimum Vacant Size (sq. ft.)	8,700
Maximum Vacant Size (sq. ft.)	64,392
<b>Avg. Asking NNN Rents</b>	
Avg. Asking Gross Rent per sq. ft., Q4 2018	n.a.
Avg. Asking Gross Rent per sq. ft., Q4 2017	n.a.
% Change, Q4 2017 - Q4 2018	n.a.
<b>Net Absorption</b>	
Net Absorption (sq. ft.), Q1 2010 - Q4 2018	(95,122)
Net Absorption (sq. ft.), Q4 2017 - Q4 2018	(74,622)
<b>New Deliveries (sq. ft.), Q1 2010 - Q4 2018</b>	<b>0</b>

SOURCES: CoSTAR, 2019; BAE, 2019.

**TABLE 1.4-8: AVAILABLE INDUSTRIAL SPACE, GLENN COUNTY, MAY 2019**

<b>For Lease</b>			
<i>Address</i>	<i>SF Available</i>	<i>Listed Asking</i>	
		<i>Rent/SF/Month</i>	<i>Additional Notes</i>
3058 State Highway 45 Glenn County	64,392	\$0.16 \$0.28 Modified Gross	Relet warehouse property with four spaces available. Located on CA State Hwy 45 and Co Rd 32 between I-5 and Hwy 99. 70' truck scale, bag house, outside storage available, easy air permits, and 480 v 1,200 amp service.
<b>For Sale</b>			
<i>Address</i>	<i>SF Available</i>	<i>Listed Asking</i>	
		<i>Sale Price</i>	<i>Additional Notes</i>
703 Colusa St. Orland	8,040	\$345,000	Metal warehouse 134' x 60' with 3-phase power. Includes 2 parcels totaling 0.82 acres. City water and sewer. 15-ft. clear height. Zoned C-2.
3986 County Rd. NN Orland	35,000	\$5,200,000	Fully operational olive processing plant on 19.84 acre lot. 12 acres of olives, with 7.84 acres with 2 homes, production, office, warehouse, shop, and shipping area. Clear ceiling height 12'.
310 Walsh Ave. Hamilton City	22,030	\$2,094,540	Commercial building zoned M-Industrial in Hamilton City. On a .98 acre lot, located two blocks off Hwy 32. Southern Pacific railroad spur line runs along the back length of the property.
250 Walsh Ave. Hamilton City	49,852	\$3,489,640	Commercial building zoned M-industrial in Hamilton City. On a 1.62 acre lot and located three blocks off Hwy 32. Southern Pacific railroad spur runs along the back length of the property.

SOURCES: LOOPNET, 2019; BAE, 2019.

## Agriculture-Related Industries

With agriculture as the county's main economic driver, Glenn County is well positioned to continue to attract value-added agriculture-related industries which utilize local crops and inputs. These types of industries typically provide important benefits to the local economy in terms of wages and the number of direct and indirect jobs created. Recently Glenn County attracted several notable and innovative businesses, such as Nutrien Ag Solutions in Hamilton City and CalAg to the west of Willows. Notably, Nutrien Ag Solutions, an agricultural fertilizer producer, revitalized the former vacant Holly Sugar Facility in Hamilton City, upgraded the Wyo Loop rail spur, and began distributing fertilizer products to multiple counties throughout northern California.<sup>10</sup> Local brokers indicate that Nutrien Ag's investment in the former Holly sugar facility and Wyo Loop rail spur has generated new interest in Hamilton City as an industrial area with restored rail access. CalAg, was able to capitalize on the abundance of Sacramento

<sup>10</sup> No author listed. (January 8, 2019). Rail Service Revived After Nearly 12 Years. *Glenn County Transcript*. Available at: [https://www.appeal-democrat.com/glenn\\_county\\_transcript/rail-service-revived/article\\_6c60b830-13bf-11e9-948f-1bd1ff0fdeb8.html](https://www.appeal-democrat.com/glenn_county_transcript/rail-service-revived/article_6c60b830-13bf-11e9-948f-1bd1ff0fdeb8.html)

Valley rice growers within a 15- to 25-mile radius to establish the world's first commercial-scale producer of rice straw-based medium density fiber board (MDF).<sup>11</sup>

**Logistics and Distribution:** Glenn County's location as a mid-point between Portland and Los Angeles, in concert with the county's relatively low industrial land costs, and the federal government's newly enacted limits for commercial driving could work as a locational advantage for certain types of logistics users. While other locations in and around the Bay Area, such as Tracy and Stockton, are generally more attractive in terms of warehousing and last-mile distribution<sup>12</sup> due to their deep labor pools and proximity to major port facilities, one industrial broker interviewed for this analysis reported growing interest in Glenn County for cross-dock facilities. These include short-term warehousing facilities, where incoming cargo is unloaded from semi-trucks or railroad cars and redistributed to other transport vehicles with little or no long-term storage space required.

### **Vacant Commercial Land Market**

There are around 493 acres of agricultural or vacant commercial land for sale around Glenn County, as of May 2019. Vacant commercial properties account for ten of these properties, totaling 360 acres, while agricultural land accounts for two properties, totaling 133 acres. As shown in Table 1.4-9, the average asking price per acre for commercial land ranges from \$50,000 per acre to \$625,000 per acre, depending on a number of factors including the location of the site and access to utilities and transportation. Generally, sites within the incorporated cities and/or those with I-5 visibility have higher asking prices. Asking prices for agricultural properties were more consistent, ranging from around \$24,662 per acre to \$33,633 per acre.

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<sup>11</sup> CalPlant I. (2018). This Fall, CalPlan I Will Introduce the Long-Awaited CalAg MDF, the Composite Panel of the 21<sup>st</sup> Century. Accessed May 13, 2019. Available at: <https://calplant1.com/>

<sup>12</sup> Last mile distribution is defined as the movement of goods from a transportation hub to the final delivery destination.

**TABLE 1.4-9: AGRICULTURAL OR VACANT COMMERCIAL LAND FOR-SALE, GLENN COUNTY, MAY 2019**

<b>Commercial</b>				
<i>Address</i>	<i>Acres Available</i>	<i>Listed Asking Sale Price</i>	<i>Average Asking Price/Acre</i>	<i>Additional Details</i>
1240 W. Wood St. Willows	3	\$1,500,000	\$467,290	Site in Willows that is zoned Highway Commercial. Adjacent to I-5 with excellent visibility. Access to CA-162.
I-5 Willows Commercial Willows	314	\$15,700,000	\$50,000	2 of the parcels are within the city and have access to railroad and utilities and are priced at \$40,000 per acre. The remaining 2 parcels can be brought into the city or left as ag, and they are priced at \$20,000 per acre. Advertised as a great place for a rice mill
375 Tehama St. Willows	0.31	\$65,000	\$209,677	Corner vacant commercial lot with sewer available.
0 Walsh Ave. Hamilton City	1.06	\$250,000	\$235,849	Commercial lot zoned M-industrial in Hamilton City. One block off Hwy 32. Southern Pacific railroad spur line runs along back length of the lot.
0 South St. Orland	11.25	\$2,158,000	\$191,822	9 parcels on 11.25 lot. Zoned Planned Development-Commercial. Excellent logistical location. Parcels may be sold together or separately. Aggregate asking price is \$4.40 psf for entire portfolio. Prices for smaller corner parcels starting at \$10 psf. Located in Orland.
0 Ninth St. Orland	2.42	\$843,313	\$348,476	2 commercial lots behind the CVS and Dollar Tree. I-5 Highway exposure.
1158 Hoff Wy.	1.68	\$1,050,000	\$625,000	Off of I-5 exit to Orland/Chico (Hwy 32). Zoned highway commercial.
3854 Co. Rd. J Orland	5.78	\$450,000	\$77,855	Adjacent to I-5. Build to suit redevelopment project in Orland.
4426 Co. Rd. HH Orland	7.82	\$2,043,000	\$261,253	Located across from Pilot Travel Center and next to the proposed Commerce Center project.
Hwy. 99 Orland	12.9	\$179,000	\$13,875.97	Ideal home site for home-based business. Zoned Service Commercial. Property located east of Hwy 99 and south of Co Rd 20. Located in Orland.
<b>Subtotal, Commercial</b>	<b>360</b>		<b>\$67,248</b>	
<b>Agricultural</b>				
<i>Address</i>	<i>Acres Available</i>	<i>Listed Asking Sale Price</i>	<i>Average Asking Price per sq. ft.</i>	<i>Additional Details</i>
3089 Co. Rd. S Orland	123.67	\$3,050,000	\$24,662	Zoned AG-Orchard. Located west of I-5 on Co Rd 33 and Road D. In Orland.
4532 Co. Rd. G Orland	8.89	\$299,000	\$33,633	Agricultural land with residential possibility in Orland.
<b>Subtotal, Agricultural</b>	<b>133</b>		<b>\$25,264</b>	
<b>Total, All Types</b>	<b>493</b>		<b>\$55,959</b>	

SOURCES: LOOPNET, 2019; BAE, 2019.



## Planned and Proposed Development Projects

As of April 2019, there were seven residential projects and another seven commercial projects entitled for development, but not yet built, in the incorporated cities of Orland and Willows.

**Residential:** As shown in Table 1.4-10, there are 585 residential units entitled for development across seven projects in the development pipeline throughout Glenn county. Single-family housing units account for 550 of the total planned or proposed residential units. The largest single-family residential project is the residential component of the North Valley Commercial Center, located on Highway 99 in Willows south of the Glenn-Colusa Irrigation District canal. As approved, the residential portion of the project is being developed by Basin Street Properties and would include 448 single-family homes on lots ranging from 6,500 to 7,500 square feet. There are also a total of 102 new single-family units entitled for development as part of various other development projects around the City of Orland.

There are only two multifamily residential development projects currently planned within the County, which if developed, would build up to 35 residential units. These include the Quezada project in Orland, with 11 new market rate multifamily units, and a project on West Sycamore Street in Willows, which is entitled for 25 units that will serve households within incomes between 30 and 50 percent of the Area Median Income (AMI). Although not included in the table, Basin Street Properties plans to seek entitlements for the development of a multifamily and assisting living project as part of the North Valley Commercial Center, in addition to the single-family residential project that is already approved; though specific details regarding the multifamily portion of the project are unknown at this time.<sup>13</sup>

**Commercial:** There are currently around 28,800 square feet of new commercial development planned throughout the County, including a new McDonalds in Willows and, a new restaurant and carwash, and the expansion of an existing Chevron fueling station convenience store in Orland.

Two larger freeway oriented commercial development projects in the Cities of Orland and Willows are currently on hold as the developers address various project issues. City staff expect both projects to move forward during the General Plan planning period. As approved, the 8.7-acre Gateway Center in Willows, located on the northwest corner of Highway 99 West (S. Tehama Street) and County Road 57 would include around 6,500 square feet of fast food and full-service restaurant space, a 1.98-acre auto service station, and a 120-room hotel. In November of 2018, the City of Willows granted the developer, FA Investments, a one-year extension of the Tentative Map approved in 2017, so the developer can complete additional environmental surveying required for Final Map submission. The City and FA Investments are also working towards the establishment of a Mello-Roos Community Facilities District (CFD) that would facilitate land-secured funding and grants to fund the necessary infrastructure improvements.

The 7.8-acre Commerce Plaza development in Orland, located on the northwest corner of Ide Street and Commerce Lane to the west of the newly built Flying J Travel Center, is entitled to include an 84-room La Quinta branded hotel and conference facilities with standalone pad space for restaurant development. According to local brokers, Wyndham Worldwide's purchase of La Quinta Holdings in 2018 put the project on hold, as the Commerce Plaza project was not included in the recent sale of the property. City staff indicate that while the project's entitlements will expire soon, the applicant is currently in the process of applying for an extension. This leads City staff to believe the project will move forwards with

<sup>13</sup> Basin Street Properties. North Valley Commercial Center. Residential. Accessed My 10, 2019. Available at: <http://northvalleycc.com/residential/>

development during the General Plan planning period, though the details of the future project are unknown.

Two other commercial and industrial projects are also in the planned and proposed pipeline, though specifics are not available. The first is the aforementioned expansion of the J.R. Simplot Company fertilizer plant in Orland. The second is the 38-acre commercial portion of the North Valley Commercial Center in southern Willows, directly north of the Gateway Center development, which is entitled to include 26 lease or build-to-suit commercial and/or industrial lots. Rumanio Cheese is expected to be the first business included in the commercial portion of the project, which will be an expansion of their current operations elsewhere in Willows.<sup>14</sup> Work has already begun on the required roadway and infrastructure improvements necessary to accommodate this project.

**TABLE 1.4-10: PLANNED AND PROPOSED PROJECTS, ORLAND AND WILLOWS, 2019**

<b>Non-Residential</b>				
Project Name	Location	Project Description	Location Description	Notes
North Valley Commercial Center	Willows	38 acre site	South of Glenn-Colusa Irrigation District Canal; on Hwy 99W	26 commercial/industrial lots.
Gateway Center	Willows	120 room hotel 2,500 sq. ft. restaurant 4,000 sq. ft. restaurant 1.98 acre auto service station	S. Tehama and County RD. 57	4 parcels for commercial uses. 8.72 acre lot size.
McDonald's	Willows	4,600 sq. ft.	Data not available	Expected to start development late 2019/2020.
Chevron Fueling Station Remodel	Orland	1,200 sq. ft.	NEC of Walker St. (SR32) and Tehama St. intersection.	Expanding existing C-store by ~1,200 sq. ft. Also adding new car wash and fueling stations.
Sunny Truck Wash	Orland	4,500 sq. ft. restaurant	SWC of Ide St. and Commerce LN.	Includes ~11,800 sq. ft. car wash/tire/lube bays.
Commerce Plaza	Orland	6,000 sq. ft. commercial 84 room hotel	NWC of Ide St. and Commerce Ln.	Hotel, Commercial space and food service space.
J.R. Simplot Company Expansion	Orland	Expansion of ag fertilizer storage, blending, shipping facility, and addition of trailer	NWC of Railroad Ave. and Co. Rd. 18	
<b>Residential</b>				
Project Name	Location	Size	Location Description	Project Description
North Valley Commercial Center	Willows	448-lot SFR	South of Glenn-Colusa Irrigation District Canal; on Hwy 99W	144 acre residential.
24-unit multi-family apartment	Willows	24 units	West Sycamore St.	30-50% AMI housing on 1.65 acre vacant parcel.
Penbrook Subdivision	Orland	23-lot SFR	SWC of Papst Ave. and South Ave.	Approved; 2019-unknown
Benson Estates Subdivision	Orland	33-lot SFR	Watts Ave., North of Newport Ave.	Approved; 2019-unknown
Linwood Subdivision Phase II	Orland	39-lot SFR	South of SR32/E. Walker St.; east of Papst Ave.	Approved; 2019-unknown
"Arbuckle" Lots	Orland	7-lot SFR	NEC of Almond Wy. and N. 8th St.	Approved; 2019-unknown
Quezada Apartments	Orland	11 units	919 5th St.	Approved; 2019-2020
<b>Totals</b>				
Single-Family	550	lots		
Multifamily	35	units		
Hotel Rooms	204	rooms		
Restaurants/Retail	22,800	sq. ft.		

SOURCES: INTERVIEWS WITH CITY OF WILLOWS AND CITY OF ORLAND STAFF, 2019; BAE, 2019.

As described on the Glenn County Planning Divisions *In Process Project and Status Report* (October 2019)<sup>15</sup>, within the unincorporated county there are currently five development project applications including 3 site plan reviews that include a barn structure, mini storage & rv/boat storage, and a fabrication shop, and two Tentative Parcel Maps. One would split one lot into 3 residential lots, and a second zone change with Tentative Parcel Map request to split one 80 acre parcel into two 40 acre parcels.

<sup>14</sup> Larson, Ruby. (March 12, 2019). Breaking Ground In Willows. Glenn County Transcript. Available at: [https://www.appeal-democrat.com/glenn\\_county\\_transcript/breaking-ground-in-willows/article\\_cd61fe78-4524-11e9-8075-e353d790ef9c.html](https://www.appeal-democrat.com/glenn_county_transcript/breaking-ground-in-willows/article_cd61fe78-4524-11e9-8075-e353d790ef9c.html)

<sup>15</sup> Glenn County Planning Division In Process Project and Status Report – October 2019  
[https://www.countyofglenn.net/sites/default/files/Planning/Project\\_List/Planning%20Projects%20October%202019.pdf](https://www.countyofglenn.net/sites/default/files/Planning/Project_List/Planning%20Projects%20October%202019.pdf)

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# Chapter 2

## Transportation and Circulation



This chapter describes the regulatory framework and existing transportation conditions in the Glenn County. A discussion of pertinent federal, state, regional, and local regulations and plans is presented first. This is followed by a discussion of transportation facilities in Glenn County that accommodate pedestrians, bicycles, transit, freight, and automobiles, plus an assessment of commute trip patterns, roadway operations, and collisions.

This Chapter includes the following topics:

- **Regulatory Framework: Federal, State, and local regulations and plans.**
- **Existing Setting: Transportation Facilities and Roadway Operations**



## 2.0 TRANSPORTATION AND CIRCULATION

The following section describes the existing physical and operational characteristics affecting the County of Glenn’s transportation system. A review of the regulatory setting is followed by an overview of travel behavior in the County; descriptions of the roadway network, pedestrian, bicycle, and transit facilities; collision analysis; vehicle operations on the roadway network; and rail, goods movement, aviation, and waterways in the County. Full-page figures are located at the end of the chapter.

### REGULATORY FRAMEWORK

This section describes transportation policies, laws, and regulations that would apply to the Circulation Element of the proposed General Plan Update. This information provides a context for the impact discussion related to the proposed General Plan Update’s consistency with applicable regulatory conditions.

#### *FEDERAL*

There are thousands of Federal laws and regulations related to goods movement, homeland security, street maintenance, traffic safety, and transportation funding. The following legislation established the framework for transportation planning at the federal level: Fixing America’s Surface Transportation (FAST) Act approved in 2015.

Federal regulations relating to the Americans with Disabilities Act (ADA), Title VI, and Environmental Justice also relate to transit service.

#### *STATE*

Caltrans is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways in Glenn County. Federal highway standards are implemented in California by Caltrans. Any improvements or modifications to the state highway system in Glenn County must be approved by Caltrans.

#### **State of California Transportation Concept Reports**

Caltrans prepares a Transportation Concept Report (TCR) for each of its facilities. 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. The concept LOS for I-5, SR 32, SR 45, and SR 162 are outlined below.

#### INTERSTATE 5 (I-5)

I-5 in Glenn County has a route concept level of LOS D. The 20-year concept and ultimate facility remains a four-lane freeway.

#### STATE ROUTE 32 (SR 32)

Caltrans has identified the following four segments for SR 32 in Glenn County:

- Segment 1 (Interstate 5 to 6<sup>th</sup> Street) – has a concept level of LOS D. The 20-year concept facility is a two-lane conventional highway. The ultimate facility is a two-lane conventional highway with Class II bike lanes.
- Segment 2 (6<sup>th</sup> Street to County Road M) – has a concept level of LOS D. The 20-year concept facility is a two-lane conventional highway. The ultimate facility is a two-lane conventional highway with Class II bike lanes.
- Segment 3 (County Road M to State Route 45) – has a concept level of LOS D. The 20-year concept facility is a two-lane conventional highway. The ultimate facility is two-lane conventional highway from County Road M to the Orland city limit with Class II bike lanes and a four-lane conventional highway between the Orland city limit and SR 45 with Class II bike lanes.
- Segment 4 (State Route 45 to Glenn/Butte County line) – has a concept level of LOS D. The 20-year concept facility is a two-lane conventional highway. The ultimate facility is a four-lane conventional highway with passing lanes and Class III bike lanes.

### STATE ROUTE 45 (SR 45)

State Route 45 in Glenn County has a route concept level of LOS D. The 20-year concept remains a two-lane conventional highway with maintenance, shoulder widening, and improvements for bicycle and pedestrian facilities. The ultimate facility is a two-lane conventional highway with maintenance and intersection modifications.

### STATE ROUTE 162 (SR 162)

Caltrans has identified the following five segments for SR 162 in Glenn County:

- Segment 1 (Glenn County line to County Road 307) – is an unconstructed road and in the District System Management Plan for Caltrans District 3 as a Relinquishable Highway Segment.
- Segment 2 (County Road 307 to Interstate 5) – has a concept level of LOS D. The 20-year concept and ultimate facility remain a two-lane conventional highway.
- Segment 3 (Interstate 5 to Central Irrigation Canal) – has a concept level of LOS D. The 20-year concept and ultimate facility is a four-lane conventional highway.
- Segment 4 (Central Irrigation Canal to State Route 45) – has a concept level of LOS D. The 20-year concept and ultimate facility remain a two-lane conventional highway.
- Segment 5 (State Route 45 to Glenn County line) – has a concept level of LOS D. The 20-year concept and ultimate facility remain a two-lane conventional highway.

Since 2005, the State of California has adopted the following pieces of legislation with major implications for transportation planning, in addition to an executive order issued by the Office of the Governor:



- Executive Order S-03-05 (2005): Establishes state agency climate action team, and directs GHG emission reductions as priority.
- AB 32 (2006): Required California Air Resources Board (CARB) to identify sector-specific measures to reduce GHG emissions.
- SB 97 (2007): Required Office of Planning & Research (OPR) to adopt CEQA greenhouse gas (GHG)/climate change guidelines.
- AB 1358 (2008): Required the legislative body of a city or county, upon revision of the circulation element of their general plan (after January 1, 2011), to identify how the jurisdiction will provide for the routine accommodation of all users of the roadway (i.e., complete streets) including motorists, pedestrians, bicyclists, individuals with disabilities, seniors, and users of public transportation.
- SB 226 (2011): Required Office of Planning & Research (OPR) to modify the CEQA Guidelines to set forth a streamlined review process for infill projects.
- SB 743 (2013): Requires the California Governor’s Office of Planning and Research (OPR) to develop new CEQA guidelines that address traffic metrics under CEQA. As stated in the legislation, upon adoption of the new guidelines, “automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to this division, except in locations specifically identified in the guidelines, if any.” OPR submitted updated CEQA Guidelines to the State Natural Resources Agency for formal rulemaking to implement SB 743, and the proposed changes were certified by the State Natural Resources Agency in December 2018. The guidelines indicate that vehicle miles traveled (VMT) be the primary metric used to identify transportation impacts and local agencies will have an adoption grace period until July 1, 2020. Caltrans issued interim guidance on incorporating SB 743 into its policies and procedures in Local Development – Intergovernmental Review Program. The high-level interim guidance document for District staff refocuses Caltrans’ attention on local development project’s VMT, appropriate transportation demand measures (TDM), and determining how to address multimodal operational issues.

### *LOCAL*

#### **Glenn County General Plan Circulation Element**

The Circulation Element of the 1993 Glenn County General Plan contains goals and policies related to the County’s roadway network.

#### **Glenn County Transportation Commission Regional Transportation Plan**

The 2015 Glenn County Regional Transportation Plan (RTP) (2015) is a long-range planning document for identifying and programming roadway improvements throughout Glenn County. The RTP guides transportation investments in the County involving local, state, and federal funding with a twenty-year horizon. Transportation projects are categorized as Tier 1 and Tier 2. Tier 1 improvements represent short-range projects that are fully fundable from anticipated revenue sources and will normally be programmed during the first 10 years of the RTP. Tier 2 improvements presents long-range projects that

are included on the “unfunded” list of projects and are planned for programming in the 11-20 year time frame.

### **Glenn County Active Transportation Plan – April 2019 Draft**

Walking and bicycling are most common for short trips. Because of the rural nature of Glenn County, the Glenn County Active Transportation Plan (ATP, 2019 Draft) focuses on improving walking and bicycling within the three largest communities of Orland, Willows, and Hamilton City, as they represent the highest concentrations of people and destinations. The ATP is an important tool guiding the development of a balanced transportation system that is pedestrian and bicycle friendly and encourages residents to use these modes of transportation. It provides a set of recommended infrastructure improvements and studies paired with education, encouragement, enforcement, and evaluation programs.

## **EXISTING SETTING**

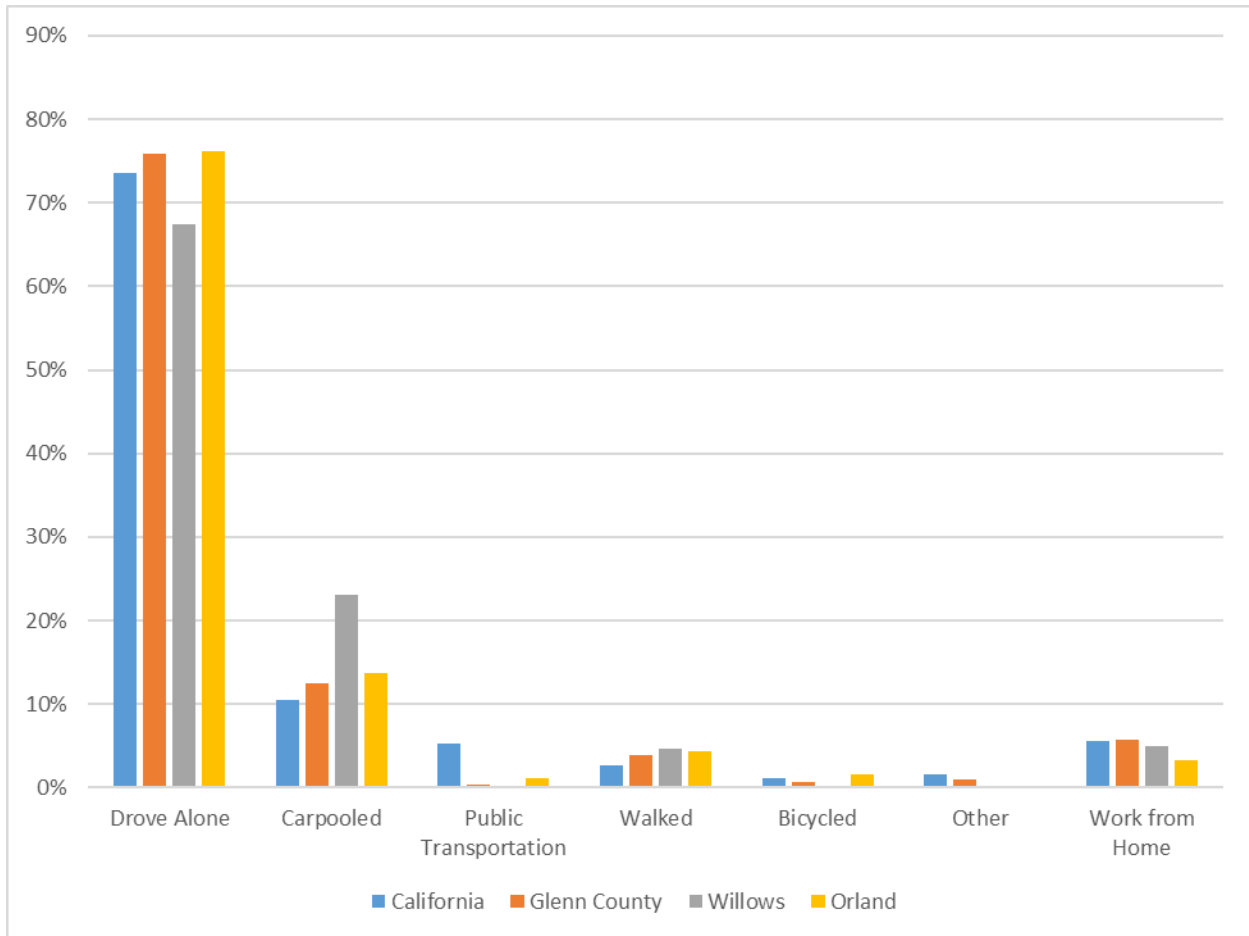
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The purpose of this section is to present the existing transportation conditions in the County of Glenn.

### **Glenn County Resident and Worker Travel Behavior**

According to the US Census Bureau, 2013-2017 American Community Survey, most residents of Glenn County commute by automobile (drive alone or in carpool) to get to work, including 76 percent who drove alone and 12 percent who carpooled. Chart 2.0-1 compares the mode shares of residents and workers for the five years ending in 2017. The share of commuters driving to work is higher in Glenn County (about 88 percent), the City of Willows (91 percent), and the City of Orland (90 percent) compared to California as a whole (about 84 percent). However, more Glenn County, Willows, and Orland commuters carpool. In Glenn County, few residents use public transportation to get to work (0.4 percent), but they are more likely to use active transportation, including walking (4 percent) and bicycling (1 percent), to get to work than commuters in the state as a whole (3 percent and 1 percent, respectively). Residents of Willows and Orland are slightly more likely to walk to work, which accounts for four and almost five percent of commutes in those cities, respectively. Trips to school, shopping trips, and social and recreational trips tend to be shorter than trips to work, and are more likely to be made by walking or bicycling. It is therefore likely that Glenn County residents make more walking and bicycling trips than Census data indicates. This is especially true for residents of Willows and Orland that live near commercial, recreational, and other destinations. Almost six percent of Glenn County residents work at home, about the same percentage as the state.

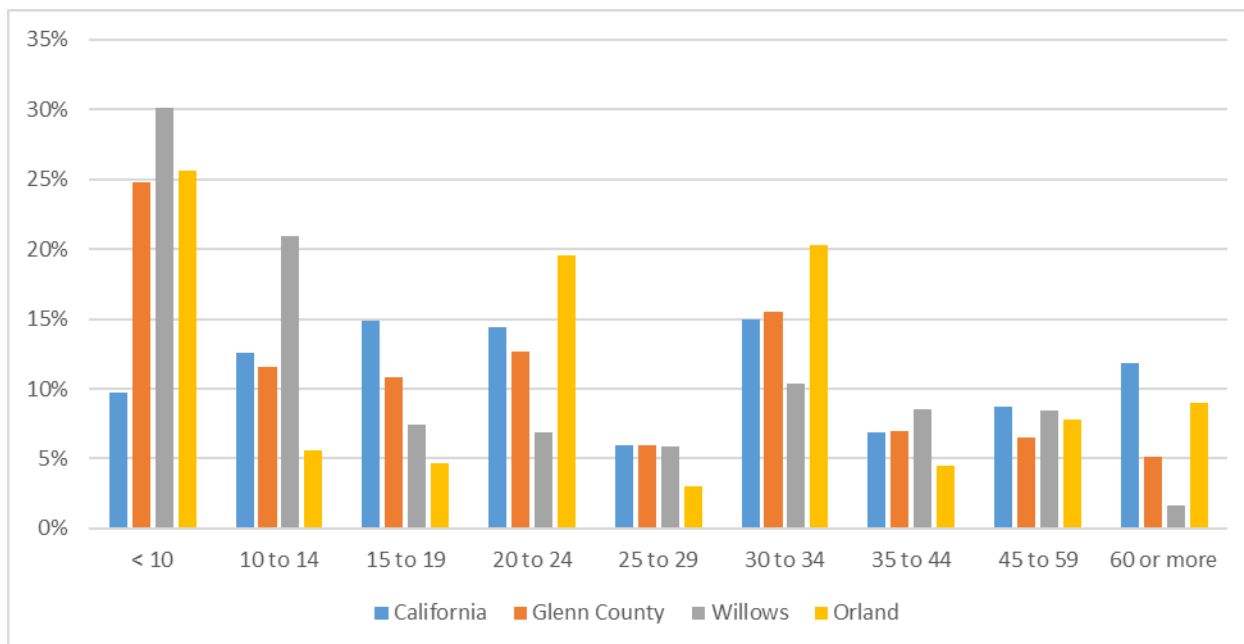
**CHART 2.0-1: METHOD OF TRANSPORTATION TO WORK**



SOURCE: AMERICAN COMMUNITY SURVEY, CENSUS BUREAU, 2013-2017.

According to the US Census Bureau, 2013-2017 American Community Survey, about 60 percent of Glenn County residents traveled less than 25 minutes to work, with a median travel time of 24 minutes. Residents of Willows had even shorter commutes, with over 65 percent traveling less than 25 minutes to work and a median travel time of 19 minutes. Residents of Orland had slightly longer commutes, with about 56% traveling less than 25 minutes to work and a median travel time of 29 minutes. By comparison, across California as a whole, only 52 percent of commuters travel less than 25 minutes to work, with a median travel time of about 29 minutes.

**CHART 2.0-2: TRAVEL TIME TO WORK (IN MINUTES)**



SOURCE: AMERICAN COMMUNITY SURVEY, CENSUS BUREAU, 2013-2017.

### Vehicle Miles Traveled

A common indicator used to quantify the amount of motor vehicle use in a specified area is Vehicle Miles Traveled (VMT). One VMT is defined as any type of motor vehicle being driven one mile. VMT is typically reported for an average weekday. Many factors affect VMT, including the average distance residents commute to work, school, and shopping, as well as the proportion of trips that are made by non-automobile modes. Areas that have a diverse land use mix and ample facilities for non-automobile modes, including transit, tend to generate lower VMT than auto-oriented rural and suburban areas where residents live at a distance from work, school, and other amenities.

The County of Glenn does not maintain a travel demand model, so VMT was estimated using a sample of travel behavior provided in the California Household Travel Survey (2012, CHTS). Table 2.0-1 shows total VMT per capita, as well as by trip purpose. Home-based other and non-home based VMT may include travel to school, medical and other facilities, as well as for shopping, entertainment, and recreation. Home-based other trips originate at the traveler’s home, while non-home based trips imply that one or more stops were made before the trip commenced; in other words, the trip did not originate at the traveler’s home.

Total VMT per capita in Glenn County is 17.8, including 6.5 VMT for home-based other trips, 6.1 for home-based work trips, and 5.3 for non-home based trips. Except for home-based work trips, these numbers are higher in unincorporated Glenn County than the Cities of Willows and Orland.

Using CHTS for VMT has its limitations. This data source may overstate some VMT by including travel by Glenn County residents that actually occurs outside of the County boundary. At the same time, it may underestimate travel by non-residents that travel within Glenn County. Finally, the data may not reflect travel behavior as it exists today, because a more recent household travel survey is not yet available.

**TABLE 2.0-1: VMT PER CAPITA**

<i>GEOGRAPHY</i>	<i>TOTAL</i>	<i>HOME-BASED OTHER</i>	<i>HOME-BASED WORK</i>	<i>NON-HOME BASED</i>
California	15.1	5.8	5.1	4.2
Glenn County	17.8	6.5	6.1	5.3
Unincorporated Glenn	22.0	10.2	4.9	6.8
City of Willows	13.4	1.6	7.7	4.5
City of Orland	15.8	6.5	6.0	3.6

SOURCE: CALIFORNIA HOUSEHOLD TRAVEL SURVEY (2010-2012).

## Roadway System

This section describes the physical characteristics of Glenn County's roadway network. Figures 2.0-1A and 2.0-1B show the functional classifications of the roadway network in Glenn County, with inset maps for the City of Orland and the City of Willows.

### STATE HIGHWAYS

**Interstate-5:** I-5 is a major 4-lane freeway that extends 29 miles through Glenn County from north to south passing through Willows and Orland. Daily traffic volumes on I-5 in Glenn County average approximately 24,000 vehicle trips per day.

**State Route 32:** SR 32 is a west-east 2-lane conventional highway (Classified as a Rural Principal Arterial and an Urban Principal Arterial for some portions near I-5) beginning at I-5 in the City of Orland and ending at SR 36 in Tehama County. SR 32 is the primary connection between the Cities of Orland, Hamilton City, and Chico and is the only transit corridor. Daily traffic volumes between County Road M and the Glenn County/Butte County line ranges from approximately 9,400 vehicles per day up to 13,600.

**State Route 45:** SR 45 is a north-south 2-lane conventional highway (Classified as a Rural Minor Arterial) beginning in Yolo County at the town of Knights Landing and ending at Hamilton City in Glenn County. SR 45 serves rural low-density communities, agricultural land use, and recreational access points, which generate intercity traffic, agricultural traffic and seasonal recreational traffic. Daily traffic volumes on SR 45 in Glenn County range from approximately 2,600 vehicles per day.

**State Route 162:** SR 162 generally runs as an east-west 2-lane conventional highway (Classified as a Rural Minor Arterial), except through the City of Willows, where it is classified as a 4-lane conventional highway. SR 162 is legislatively designated as an Interregional Road System (IRRS) Route beginning in the Mendocino National Forest and extending east into Oroville in Butte County. SR 162 connects I-5, SR 45, SR 99, and SR 70. Daily traffic volumes in Glenn County range from approximately 1,500 to 8,700 vehicles per day.

*ARTERIALS*

**County Road 200 (Newville Road):** County Road 200, also known as Newville Road, is a two-lane roadway that extends from Newville to the Orland city limit. County Road 200 is designated a Minor Arterial between County Road E and the Orland city limit.

**Swift Street:** Swift Street is a two-lane, east-west roadway in the City of Orland with a center left-turn lane and parking available on both sides of the street. Swift Street is designated a Minor Arterial between 8<sup>th</sup> Street and 6<sup>th</sup> Street.

**County Road 99W (6th Street/Tehama Street):** County Road 99W is a two-lane, north-south roadway that extends through Glenn County. It includes a center left-turn lane through much of the City of Orland, where it is known as 6<sup>th</sup> Street. From Swift Street to South Street it is designated a Principal Arterial. County Road 99W includes a center left-turn lane between Biggs-Willows Road and Sycamore Street in the City of Willows, where it is known as Tehama Street. From Eureka Street to County Road 58, it is designated a Principal Arterial. Aside from these two segments in Orland and Willows, where it is designated a Principal Arterial, County Road 99W is designated a Minor Arterial from County Road 9 to County Road 60.

**North Humboldt Avenue:** North Humboldt Avenue is a two-lane, north-south roadway in the City of Willows. It includes a center left-turn lane for part of the segment between Green Street and Biggs-Willows Road. Between Green Street and Sycamore Street it is designated a Minor Arterial.

**North Villa Avenue:** North Villa Avenue is a two-lane, north-south roadway in the City of Willows. It includes parking on both sides of the street between Wood Street and Sycamore Street, where it is designated a Minor Arterial.

**Lassen Street:** Lassen Street is a two-lane, north-south roadway in the City of Willows. It includes parking on both sides of the street between Wood Street and Elm Street, where it is designated a Minor Arterial.

**Sycamore Street:** Sycamore Street is a two-lane, east-west roadway in the City of Willows. It includes parking on both sides of the street between Villa Avenue and Tehama Street, where it is designated a Minor Arterial.

**Laurel Street:** Laurel Street is a two-lane, east-west roadway in the City of Willows. It includes parking on both sides of the street between South Villa Avenue and South Tehama Avenue, where it is designated a Minor Arterial.

### *FOREST SERVICE ROADS*

The Mendocino National Forest maintains an extensive system of roads supporting logging and recreational activities. Within Glenn County, there are approximately 759 miles of Level 1 through 5 classified forest service roads. Forest Service roads are classified by function similarly to County roads, but are also identified by access provisions and the type of vehicles that can safely operate on them. Table 2.0-2 summarizes the classification and mileage of Forest Service Roads.

**TABLE 2.0-2: FOREST SERVICE ROADS IN GLENN COUNTY**

<i>ROAD CATEGORY</i>	<i>MILEAGE</i>
Level 1	279
Level 2	421
Level 3	58
Level 4 & 5	1
<b>Total</b>	<b>759</b>

*SOURCE: MENDOCINO NATIONAL FOREST, GLENN COUNTY 2015 REGIONAL TRANSPORTATION PLAN.*

### **Pedestrian Facilities**

Sidewalks form the backbone of the pedestrian transportation network. They improve safety and comfort for people walking and support daily physical activity, improve public safety, and contribute to community character.

Many sidewalk gaps currently exist in Glenn County, notably in unincorporated Hamilton City and at the periphery of Orland and Willows.

Curb Ramps are necessary for people who use wheelchairs or other mobility devices, as they allow access to sidewalks and crosswalks. Ramps are also helpful to people pushing strollers, or who may have difficulty stepping onto a raised curb. The Americans with Disabilities Act (ADA) requires the installation of curb ramps with all sidewalk projects, whether new construction or retrofits. Curb ramps should ideally be placed at each end of the crosswalk (perpendicular to curb ramps), although in some circumstances diagonal curb ramps may be acceptable.

Curb ramps are provided at some intersections in Orland, Willows, and Hamilton City, largely in areas with more recently constructed sidewalks. Most locations lack curb ramps, including many marked crosswalks.

Crosswalks are a legal extension of the sidewalk and are not required to be marked. However, marked crosswalks alert drivers of a pedestrian crossing point and increase yielding to pedestrians, in addition to providing guidance for pedestrians and delineating their path of travel.

Marked crosswalks are present at few intersections in Glenn County. Some intersections have only one marked crosswalk, while others are marked on all legs.

The Glenn County Active Transportation Plan is currently in draft form. Developed through a series of community workshops, the draft Plan proposes sidewalk gap closures and curb ramps, curb extensions, high visibility crosswalks, and other pedestrian infrastructure improvements throughout Orland, Willows, and Hamilton City.

## **Bicycle Facilities**

There are currently two short segments of Class II bicycle lanes in Glenn County: in Willows on SR 162, west of I-5, and in Orland on SR 32, east of Papst Avenue, as shown in Figures 2.0-2A and 2.0-2B.

The Glenn County Active Transportation Plan, currently in draft form, proposes bicycle and pedestrian facility improvements in the communities of Orland, Willows, and Hamilton City.

Below are descriptions of bikeways and their classifications.

**Class I Shared Use Paths** provide a completely separated right-of-way for the exclusive use of bicycles, pedestrians, and other non-motorized modes. Cross-flows are minimal.

There are currently no Class I paths in Glenn County.

**Class II Bike Lanes** are dedicated on-street lanes for bicyclists. Some may have painted buffers on one or both sides to provide space between bicyclists and moving traffic or parking cars.

There are currently two short segments of Class II bike lanes in Glenn County.

**Class III Bike Routes** are routes where the travel lane is shared by drivers and bicyclists. They are most suited for roadways with low traffic speeds and volumes, such as quiet residential streets. Some routes, called bicycle boulevards, may be enhanced with curb extensions, neighborhood traffic circles, or other traffic calming treatments to improve comfort for bicycling.

There are currently no Class III routes in Glenn County.

**Class IV Separated Bikeways** are on-street bicycle facilities that include some kind of physical protection from vehicle traffic. This separation might include a curb, on-street parking, flexible bollards, or concrete planters. Class IV bikeways may provide for one-way or two-way travel on each side of the roadway.

There are currently no Class IV bikeways in Glenn County.

## **Transit Service and Facilities**

The primary transit service within Glenn County is Glenn Ride, which provides seven round trips every weekday and three round trips on Saturday from Willows to Chico with service to Artois, Orland, and Hamilton City. Glenn Ride buses are equipped with accessible lifts and bicycle racks. While Glenn Ride is a fixed route transit service, users may also request deviations up to  $\frac{3}{4}$  of a mile to drop them closer to their final destination.

Additional transportation assistance is provided to eligible residents through Dial-A-Ride and Volunteer Medical Transport. Seniors 60 years of age or older and those on Permanent Disability, or low income are eligible for Transit Service Cards to use these services.

The Tehama Rural Area Express (TRAX) serves the community of Orland as a connection for Tehama County residents to connect to the Glenn Ride service and vice versa. This connection allows residents of Glenn County to commute to points further north and for Tehama County residents to use Glenn Ride to commute to Chico or Willows.

## **Safety**

The most recent 5-years history of collisions in Glenn County was obtained from the Transportation Injury Mapping System (TIMS) that is drawn from the California Highway Patrol's Statewide Integrated



Traffic Records System (SWITRS). The most recent and complete information available is from January 1, 2011 to December 31, 2015. Note that TIMS data only includes collisions involving injuries. It does not include property damage-only collisions. Table 2.0-3 shows the number of collisions by severity and Figures 2.0-3A and 2.0-3B map these collisions by location.

**TABLE 2.0-3: COLLISIONS BY SEVERITY, 2011-2015**

<i>COLLISION SEVERITY</i>	<i>COUNT</i>	<i>PERCENT</i>
Fatal	20	4%
Injury (Severe)	64	12%
Injury (Other Visible)	199	38%
Injury (Complaint of Pain)	242	46%
<b>Total*</b>	<b>525</b>	<b>100%</b>

NOTES: \*DOES NOT INCLUDE PROPERTY DAMAGE ONLY COLLISIONS.

SOURCE: TRANSPORTATION INJURY MAPPING SYSTEM (TIMS), SAFE TRANSPORTATION RESEARCH AND EDUCATION CENTER, UNIVERSITY OF CALIFORNIA, BERKELEY. 2019

As shown in Table 2.0-4, the largest share of collisions during this time period involved improper turning. The second most common primary collision factor was unsafe speeds, and the third most common was driving or bicycling under the influence of alcohol. Table 2.0-4 also shows the primary collision factors involved in fatal collisions that occurred during this time period. Of these, improper turning was also the most common, accounting for 40 percent of fatal collisions. Driving or bicycling under the influence of alcohol accounted for 25 percent of fatal collisions, and unsafe speed accounted for another 20 percent.

**TABLE 2.0-4: PRIMARY COLLISION FACTORS, 2011-2015**

<i>COLLISION SEVERITY</i>	<i>TOTAL COUNT</i>	<i>PERCENT OF TOTAL</i>	<i>FATAL COUNT</i>	<i>PERCENT OF FATAL</i>
Improper Turning	190	37%	8	40%
Unsafe Speed	89	17%	4	20%
Driving or Bicycling Under the Influence of Alcohol or Drug	75	15%	5	25%
Automobile Right of Way	72	14%	1	5%
Following Too Closely	21	4%		
Other Than Driver (or Pedestrian)	20	4%		
Wrong Side of Road	11	2%		
Traffic Signals and Signs	11	2%	1	5%
Unsafe Lane Change	8	2%		
Pedestrian Right of Way	5	1%		
Pedestrian Violation	5	1%		
Other Hazardous Violation	4	1%		
Improper Passing	2	0%		
Unsafe Starting or Backing	2	0%		
Other Improper Driving	1	0%		
Not Stated	0	0%	1	5%
<b>Total</b>	<b>516</b>	<b>100%</b>	<b>20</b>	<b>100%</b>

NOTES: \*DOES NOT INCLUDE PROPERTY DAMAGE ONLY COLLISIONS.

SOURCE: *TRANSPORTATION INJURY MAPPING SYSTEM (TIMS), SAFE TRANSPORTATION RESEARCH AND EDUCATION CENTER, UNIVERSITY OF CALIFORNIA, BERKELEY. 2019*

### Roadway Segment Level of Service

Level of Service (LOS) is used to describe traffic operations on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, LOS A represents free flow conditions and LOS F represents forced flow or breakdown conditions. The various levels of service and their corresponding operating descriptions for two-lane highways are described in Table 2.0-5.

**TABLE 2.0-5: ROADWAY SEGMENT LEVEL OF SERVICE CRITERIA**

LOS	DESCRIPTION
A	Motorists experience high operating speeds and little difficulty in passing. Platoons of three or more vehicles are rare.
B	Passing demand and passing capacity are balanced. Platooning becomes noticeable.
C	Most vehicles travel in platoons. Speeds are noticeably curtailed.
D	Platooning increases significantly. Passing demand is high, but passing capacity approaches zero.
E	Demand is approaching capacity. Passing is virtually impossible, and speeds are seriously curtailed.
F	Unstable operating conditions in which demand flow in one or both directions exceeds the segment’s capacity and heavy congestion exists.

SOURCE: *HIGHWAY CAPACITY MANUAL, TRANSPORTATION RESEARCH BOARD, 2010.*

#### STUDY SEGMENTS

As shown in Figure 2.0-4, the following 29 study segments were identified to include those most critical to the County’s local circulation system, its connectivity to the regional transportation network, and those that are representative of local conditions across the County’s roadway network.

1. Road 200 (Newville Road) between Road 306 and Tehama County line
2. Road 206 between Road 200 (Newville Road) and Black Butte Lake
3. Road D between Road 48 and Road 33
4. Road D between Road 57 and Colusa County Line
5. Road 200 (Newville Road) between Road FF (Cedar Avenue) and Road G
6. Wood Street (SR-162) between Washington Street and Murdock Avenue
7. Road 99W between Orland city limit and Tehama County line
8. Road 99W between Road 39 and Road 48
9. North Tehama Street (Road 99W) between French Street and SR-162 (Wood Street/Biggs-Willows Road)
10. Road 99W between Road 60 and Colusa County line
11. Road 9 (Wyo Avenue) between Road 99W and Road KK
12. Road 39 (Bayliss Blue Gum Road) between Road 99W and Road P
13. Walker Street (SR-32) between Linwood Drive and Road N
14. SR-162 (Biggs-Willows Road) between 1<sup>st</sup> Street and Road O
15. Road P between SR-32 and Road 18

16. Road P between Road 48 and Willow Creek
17. Road 45 between Road P and Road S
18. Road S between Road 30 and Road 25
19. Road S between Road 45 and Road 44
20. Road 60 between Road P and Road S S
21. Road V between SR-162 and Road 57
22. Road 24 between SR-45 and Road V V
23. SR-32 between Sacramento Avenue and Gianella Road
24. SR-45 between Road 24 (St. John Road) and Road 29
25. SR-162 (Biggs-Willows Road) north of Road 52
26. SR-162 (Biggs-Willows Road) between McDougal Street and Road V
27. Road 48 between Road Z and Butte County line
28. Road Z between SR-162 and Road 48
29. Road Z between Road 67 and SR-162

#### LEVEL OF SERVICE METHODOLOGY

Twenty-four hour vehicle counts were collected at these 29 study locations in February, March, April, and May 2019. The study locations were classified according to function and volumes compared to the level of service thresholds shown in Table 2.0-6.

**TABLE 2.0-6: MAXIMUM DAILY VOLUME THRESHOLDS FOR HIGHWAY SEGMENTS**

CLASSIFICATION	LOS				
	A	B	C	D	E
4-Lane Major Freeway	25,400	41,600	58,400	71,000	79,200
2-Lane, Class I Highway	1,200	3,700	7,600	13,600	21,000
2-Lane, Class II Highway	1,700	4,100	8,200	16,600	21,200
Rural Principal Arterial (2 lane)	2,600	5,900	10,300	16,900	20,200
Rural Minor Arterial (2 lane)	1,200	3,300	6,400	11,000	15,500
Urban Arterial (4 lane)	18,000	21,000	24,000	27,000	30,000
Urban Arterial (2 lane)	9,000	10,500	12,000	13,500	15,000
Urban Major Collector (2 lane)	7,620	8,890	10,160	11,430	12,700
Urban Minor Collector (2 lane)	4,800	5,600	6,400	7,200	8,000
Rural Major Collector (2 lane)	1,300	3,900	7,500	12,600	16,900
Rural Minor Collector (2 lane)	1,000	3,000	5,500	8,750	11,200
Urban Local Road	2,700	3,150	3,600	4,050	4,500
Rural Local Road	600	2,000	3,500	4,900	5,500

SOURCE: GLENN COUNTY 2015 REGIONAL TRANSPORTATION PLAN.

Table 2.0-7 includes each study segment, its classification for purposes of determining current level of service, and average daily traffic (ADT) volumes. As shown, all but one of the 29 study segments currently operate at LOS C or better. State Route 32 (#23) east of Hamilton City, currently operates at LOS E.

**TABLE 2.0-7: ROADWAY SEGMENT LEVEL OF SERVICE**

ID	ROAD NAME	FROM	TO	LANES	CLASSIFICATION	ADT	LOS
1	Road 200 (Newville)	Road 306	Tehama Co (Morris and Bryant)	2	2-Lane, Class II Highway	137	A
2	Road 206	Road 200 (Newville)	Black Butte Lake	2	2-Lane, Class II Highway	108	A
3	Road D	Road 48	Road 33	2	2-Lane, Class I Highway	520	A
4	Road D	Road 57	Colusa County Line	2	2-Lane, Class I Highway	308	A
5	Road 200 (Newville)	Road FF (Cedar Ave)	Road G	2	Rural Minor Arterial (2 lane)	2,283	B
6	SR 162 (Wood Street)	Washington Street	Murdock Avenue	4	Urban Arterial (4 lane)	10,644	A
7	Road 99W	Orland City Limit	Tehama County Line	2	2-Lane, Class I Highway	2,937	B
8	Road 99W	Road 39	Road 48	2	2-Lane, Class I Highway	2,999	B
9	Road 99W (N Tehama)	French Street	SR 162 (Biggs-Willows)	2	Urban Arterial (2 lane)	5,361	A
10	Road 99W	Road 60 (Riz)	Colusa County Line	2	2-Lane, Class I Highway	910	A
11	Road 9 (Wyo)	Road 99W	Road KK	2	2-Lane, Class I Highway	1,834	B
12	Road 39 (Bayliss Blue Gum Road)	Road 99W	Road P	2	2-Lane, Class I Highway	1,435	B
13	SR 32 (Walker Street)	Linwood Drive	Road N	2	Urban Arterial (2 lane)	11,710	C
14	SR 162 (Biggs-Willows)	1st Street	Road O	2	2-Lane, Class I Highway	3,342	B
15	Road P	SR 32	Road 18	2	2-Lane, Class I Highway	1,416	B
16	Road P	Road 48	Willow Creek	2	2-Lane, Class I Highway	581	A
17	Road 45	Road P	Road S	2	2-Lane, Class I Highway	293	A
18	Road S	Road 30	Road 25	2	2-Lane, Class I Highway	308	A
19	Road S	Road 45	Road 44	2	2-Lane, Class I Highway	166	A
20	Road 60	Road P	Road SS	2	2-Lane, Class I Highway	1,014	A
21	Road V	State Highway 162	Road 57	2	2-Lane, Class I Highway	70	A

ID	ROAD NAME	FROM	TO	LANES	CLASSIFICATION	ADT	LOS
22	Road 24	State Highway 45	Road V V	2	2-Lane, Class I Highway	621	A
23	SR 32	Sacramento Ave	Gianella Road	2	2-Lane, Class I Highway	15,675	E
24	SR 45	SR 24 (St John)	Road 29	2	2-Lane, Class I Highway	2,743	B
25	SR 162 (Biggs-Willows)SR 162 (Biggs-Willows)	n/o	Road 52	2	2-Lane, Class I Highway	2,179	B
26	SR 162 (Biggs-Willows)	McDougal Street	Road V	2	2-Lane, Class I Highway	2,590	B
27	Road 48	Road Z	Butte County Line	2	2-Lane, Class I Highway	459	A
28	Road Z	State Highway 162	Road 48	2	2-Lane, Class I Highway	446	A
29	Road Z	Road 67	State Highway 162	2	2-Lane, Class I Highway	158	A

SOURCE: FEHR & PEERS, 2019.

### Heavy Rail and Goods Movement

California Northern Pacific Railroad Company (CFNR) provides freight service through Glenn County. The CFNR Mainline tracks traverse the County parallel to I-5 and just east of Old Highway 99, running through the Cities of Willows and Orland. The West Valley/Richland Spur is an east-west branch line connecting Orland to Hamilton City along County Road 9. A small east-west branch line in the City of Willows runs north of SR 162 connecting to the Johns Manville manufacturing facility on County Road 48. According to Federal Railroad Administration records, there are 74 locations where the CFNR lines cross public and private roads at-grade in the County. The majority of these crossings are unmarked, while about one-third have railroad crossing advance warning signs. Only the crossing of the John Manville branch line and I-5 is grade-separated.

Trucking is another major means of transportation for goods produced in the County. Truck traffic accounts for a considerable portion of traffic on highways in Glenn County. On Interstate-5 truck traffic may account for as much as 28 percent of Average Annual Daily Traffic (AADT). For SR 32, SR 45, and SR 162, truck traffic accounts for approximately 5-30 percent of total AADT in some segments. Maintaining safe and efficient roadways for the movement of goods is an important issue in Glenn County where agriculture and industrial services make up a large portion of the local economy.

### Aviation

Glenn County owns and operates two public use general aviation airports: the Willows-Glenn County Airport, located in the City of Willows, and the Haigh Field Airport, located in the City of Orland. Glenn County has no commercial air service to its airports.

**Haigh Field Airport:** Haigh Field Airport is located east of the City of Orland at the southwest corner of County Roads 200 and P. The Haigh Field Airport is located in a mixed development area with residential dwellings located to the northwest. Orchards are located to the east and south. The County operates a 65-acre industrial park that is located to the east of the airport.

Haigh Field Airport facilities include a single 60' x 4500' asphalt-concrete runway, parallel taxiway, 22 T hangars, and three conventional hangars. Two of the conventional hangars are leased for aerial agricultural chemical applicator uses, and the remaining hangar is used by the airport's Fixed Based Operator (FBO) as an aircraft repair facility. The airport also has 52 County-owned hangars available for rent. The airfield has medium intensity runway lights for night operations.

The FAA 5010 Master Record reports 20,000 annual operations and 48 based aircraft.

**Willows-Glenn County Airport:** The Willows-Glenn County Airport is located west of the City of Willows. The airport has two asphalt runways. The primary runway 16-34 is 100' x 4125'. It has an Airport Reference Code of B-II and pavement strength of 90,000 pounds. The secondary runway 13-31 is 100' x 3788'. It has an Airport Reference Code of A-I and a pavement strength of 38,000 pounds. A full length parallel taxiway connects the primary runway to the airport's building area. Runway 16-34 is a non-precision instrument runway with four published approaches. The lowest minimum visibility approach is one mile.

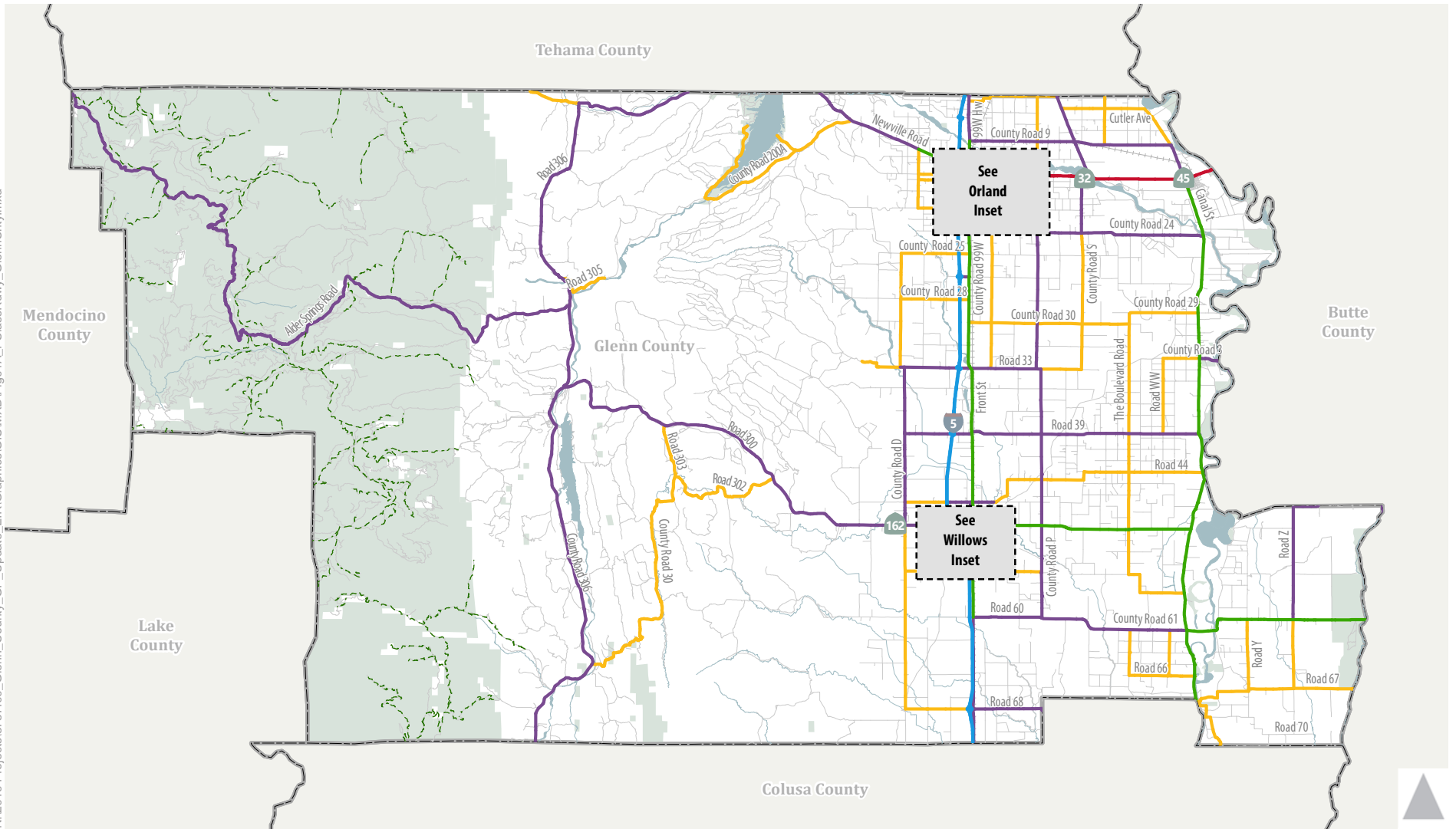
While many flight operations out of the Willows-Glenn County Airport are agricultural-related (given the County's high production of rice and other agricultural products), other flight activities also include business, recreational, emergency, flight training, and law enforcement. The FAA 5010 Master Record reports 29,500 annual operations, 39 single engine aircraft, one jet, and two helicopters. At the center of the building area are 45 hangars of various sizes and conditions. Some are proposed for construction improvements in the Aviation CIP list of projects.

### **Waterways**

No major water-borne forms of transportation are located within the County. Access to other regional services are via I-5 to the Port of Sacramento, 90 miles to the south, and the ports of Richmond, Oakland, and San Francisco 130 miles southwest.

Two County-owned and -maintained access points to the Sacramento River are provided in the communities of Ord Bend and Butte City. These access points provide recreational access to the Sacramento River. Most boating use is seasonal with the heaviest activity occurring during the summer months.

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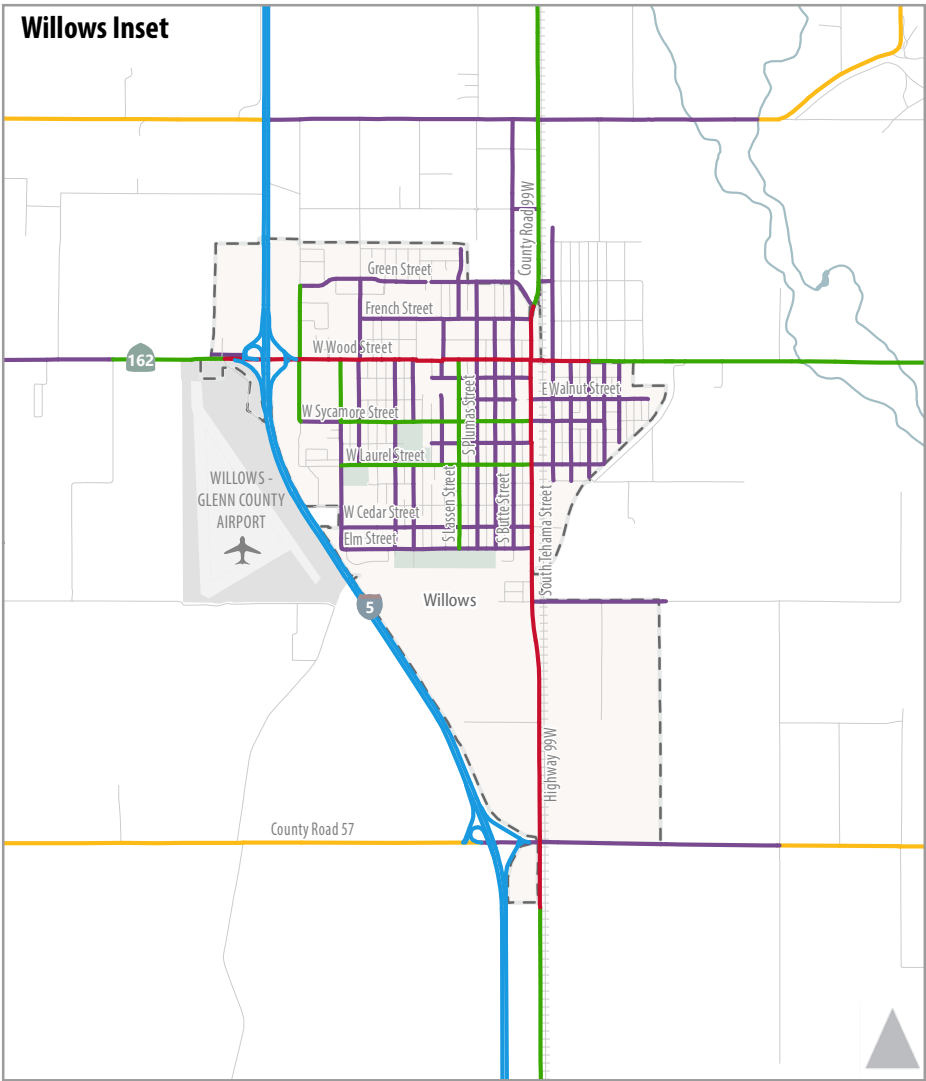
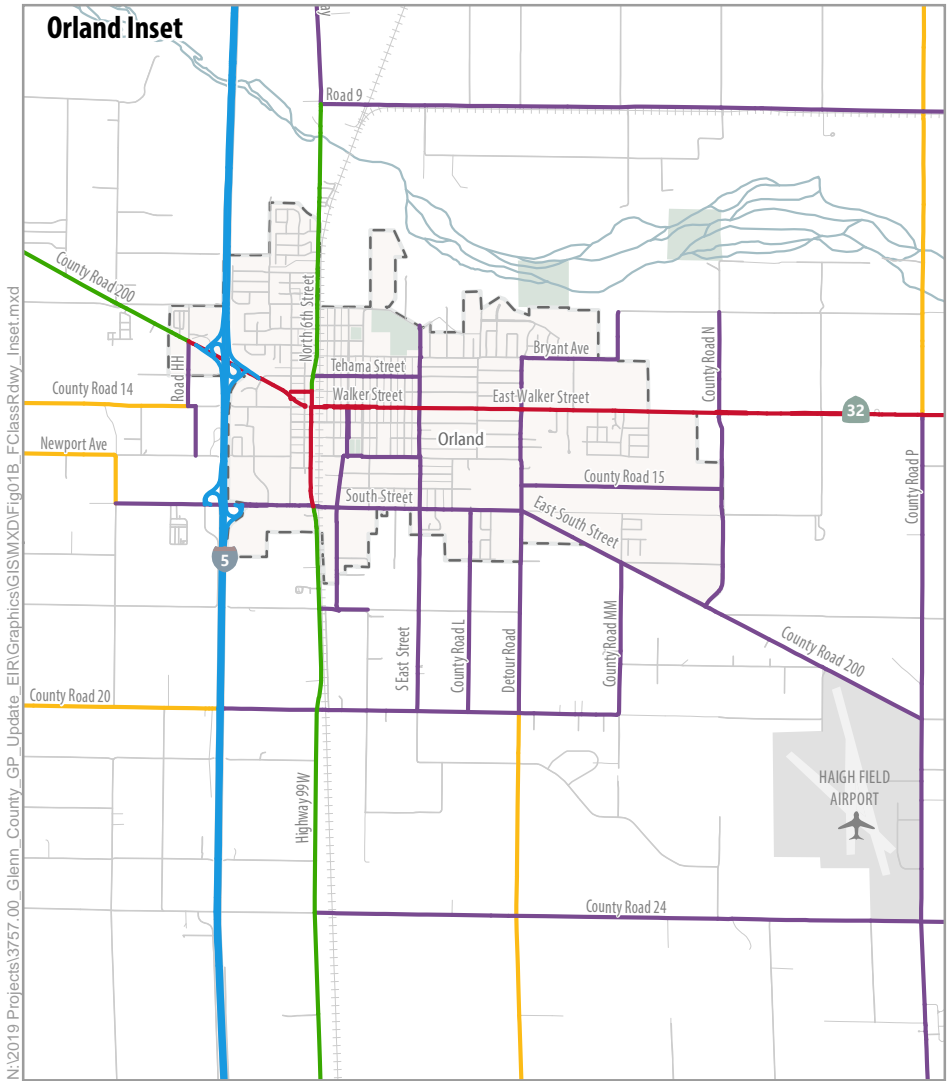
- |                               |                           |                            |                   |
|-------------------------------|---------------------------|----------------------------|-------------------|
| --- Forest Service Road       | Functional Classification | — Other Principal Arterial | — Minor Collector |
| — Interstate                  |                           | — Minor Arterial           | — Local           |
| — Other Freeway or Expressway |                           | — Major Collector          |                   |



Figure 2.0-1A  
Glenn County Roadway System and Functional Classification

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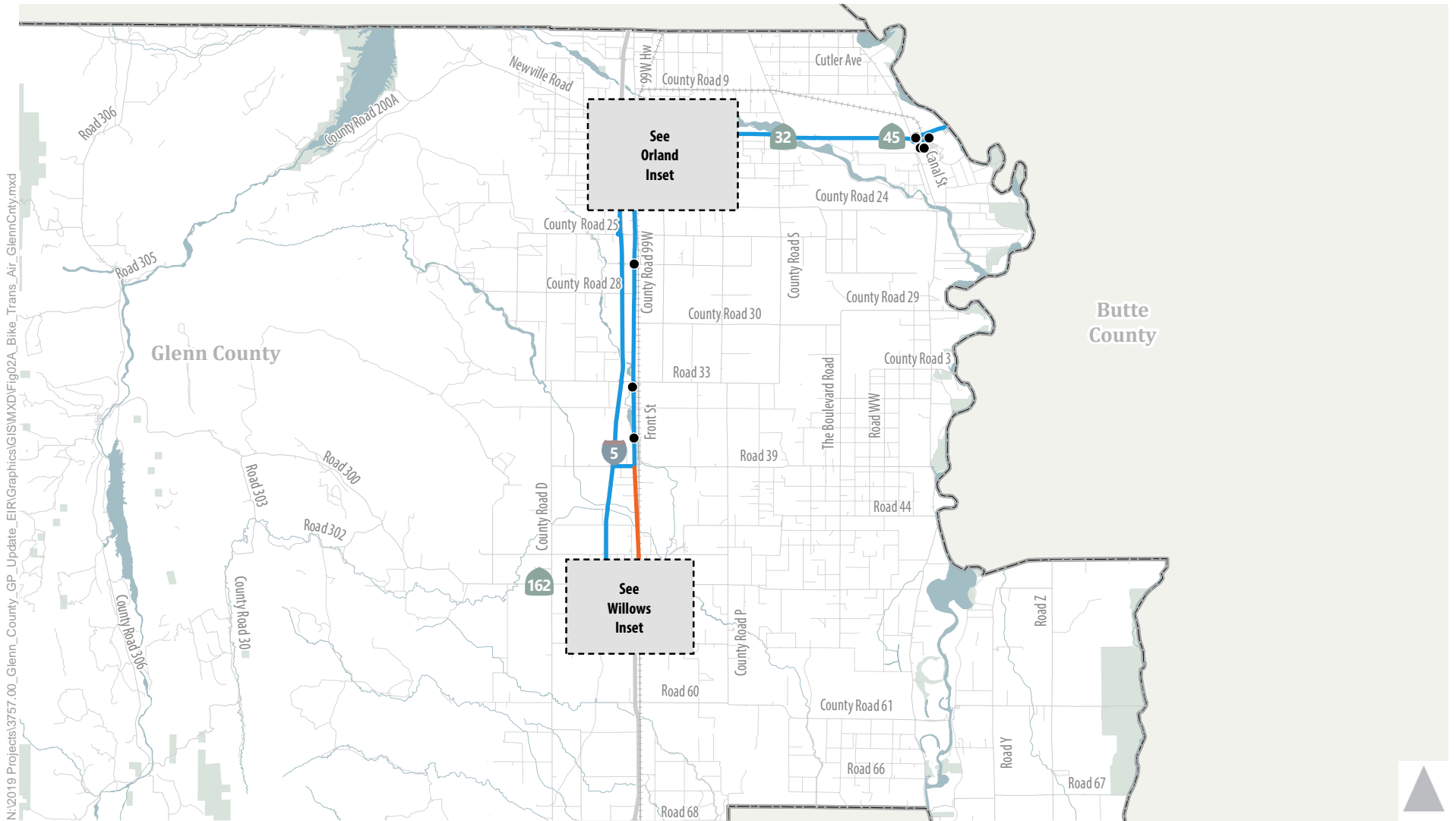
- Forest Service Road Functional Classification
- Interstate
- Other Freeway or Expressway
- Other Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local

Figure 2.0-1B

Glenn County Roadway System and Functional Classification - Orland and Willows Inset



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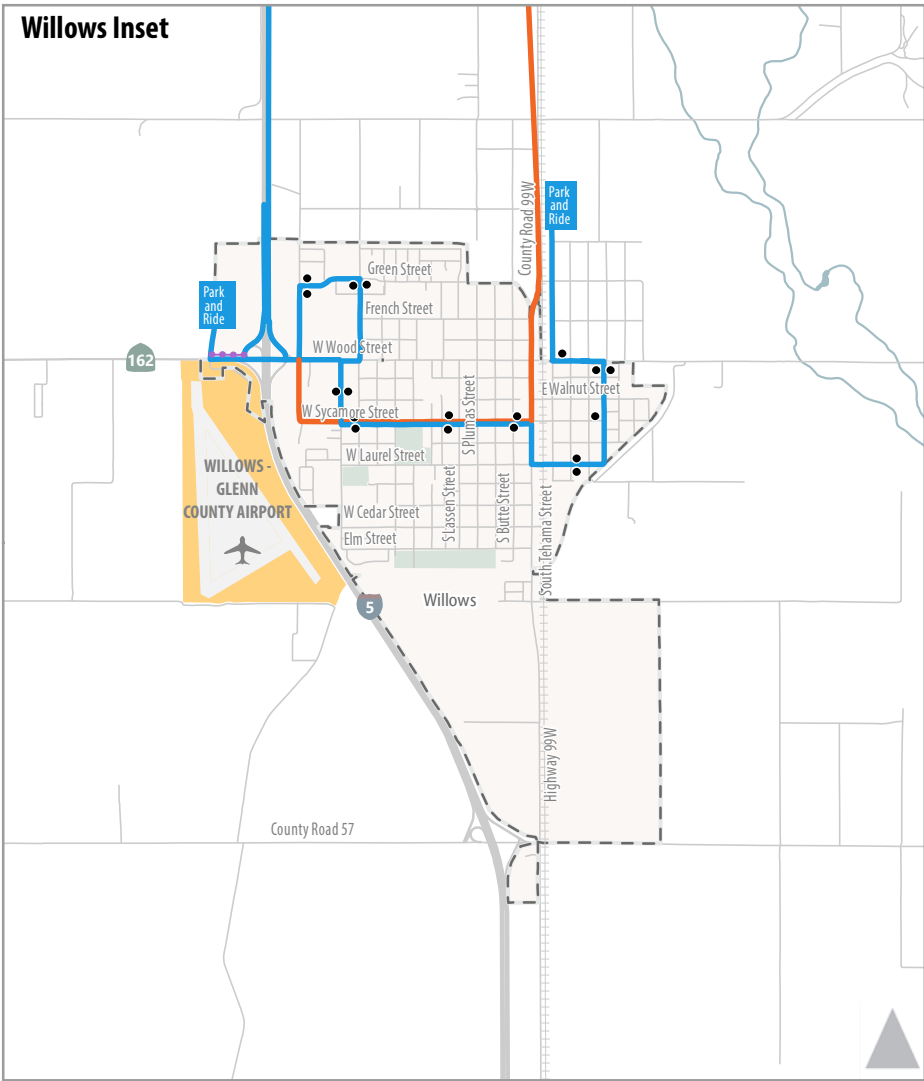
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- Bus Stop
- GlennRide
- Bus Route
- Express Route



Figure 2.0-2A  
Glenn County Bikeways, Transit Service, and Airports

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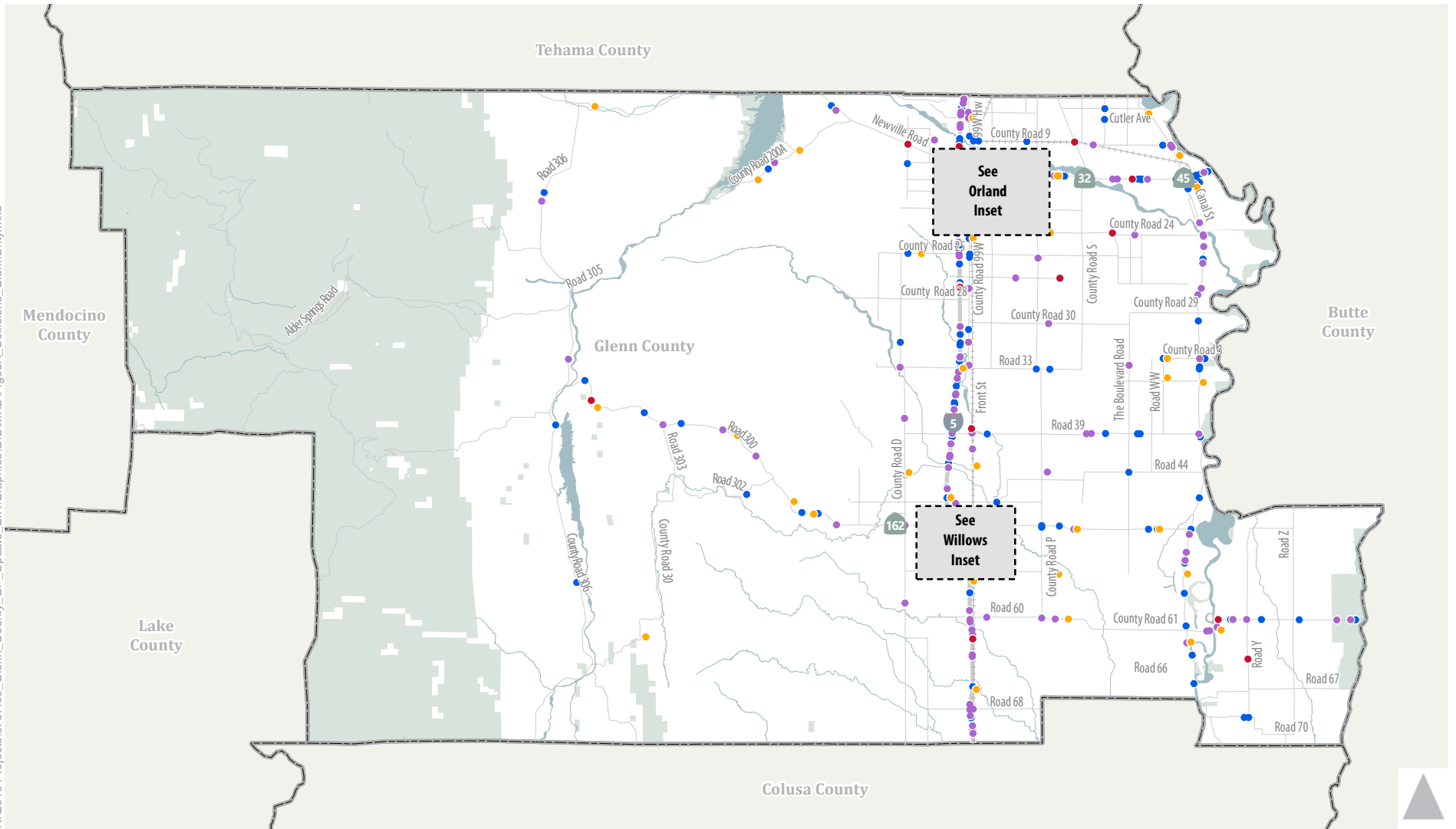
- Bus Stop
- GlennRide
- Bus Route
- Express Route
- Bicycle Facilities
- Class II Bike Lane
- Airport Runway
- Airport Boundary

Figure 2.0-2B

Bikeways, Transit Service, and Airports - Orland and Willows Inset



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Collision Severity

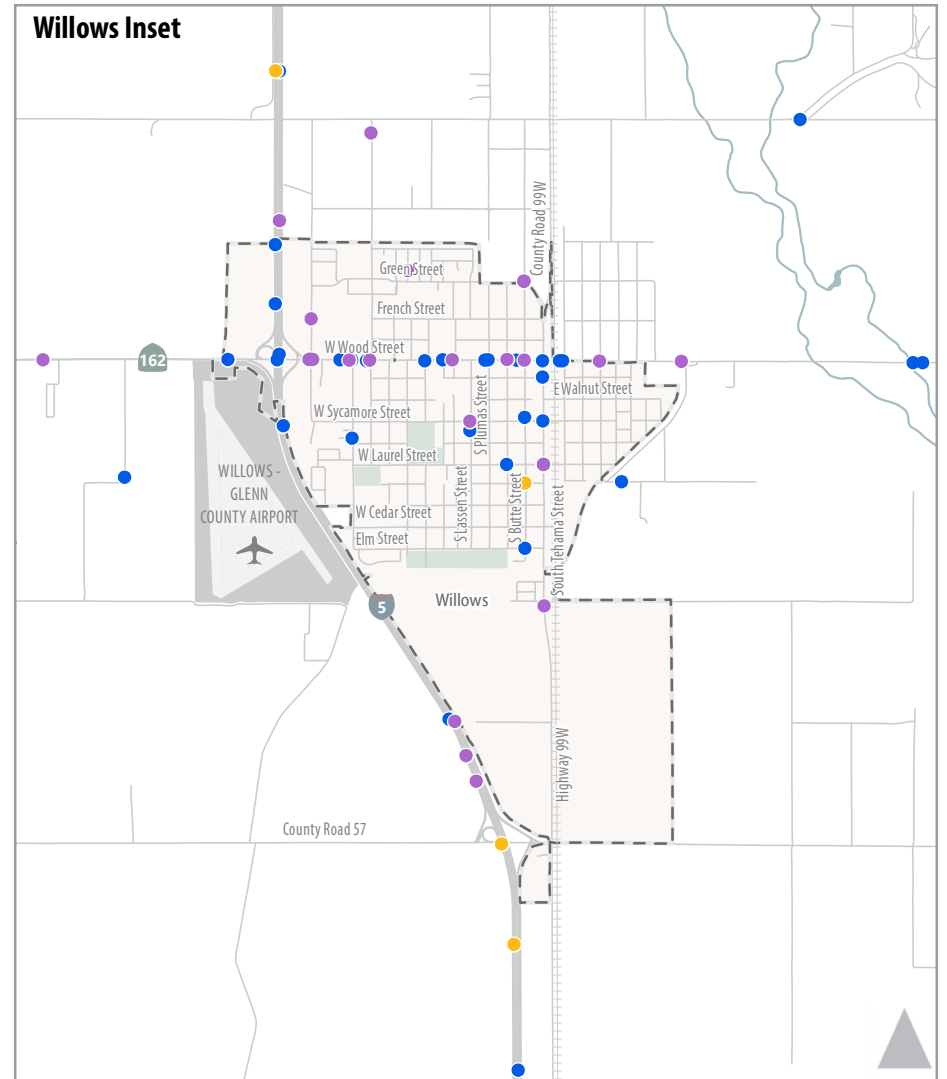
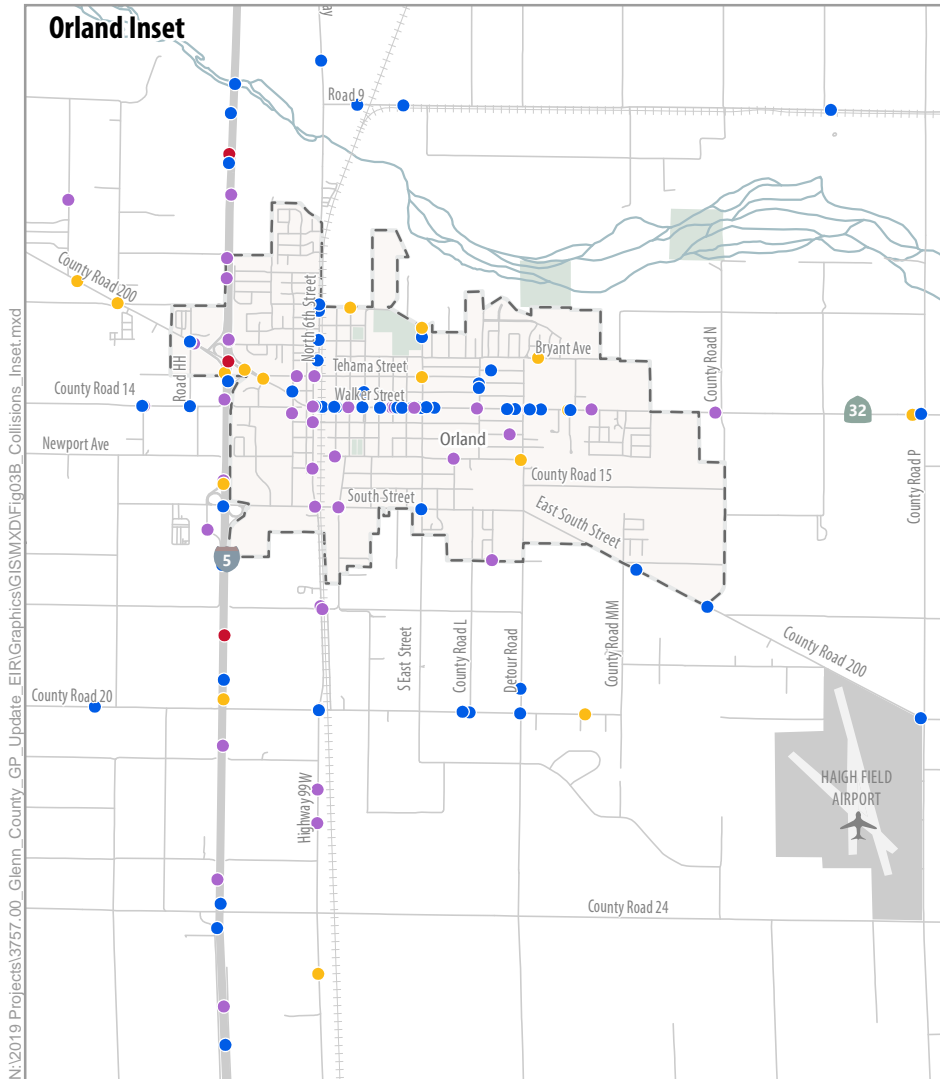
- Fatal
- Injury (Severe)
- Injury (Other Visible)
- Injury (Complaint of Pain)



Figure 2.0-3A  
Collisions in Glenn County, 2011-2015

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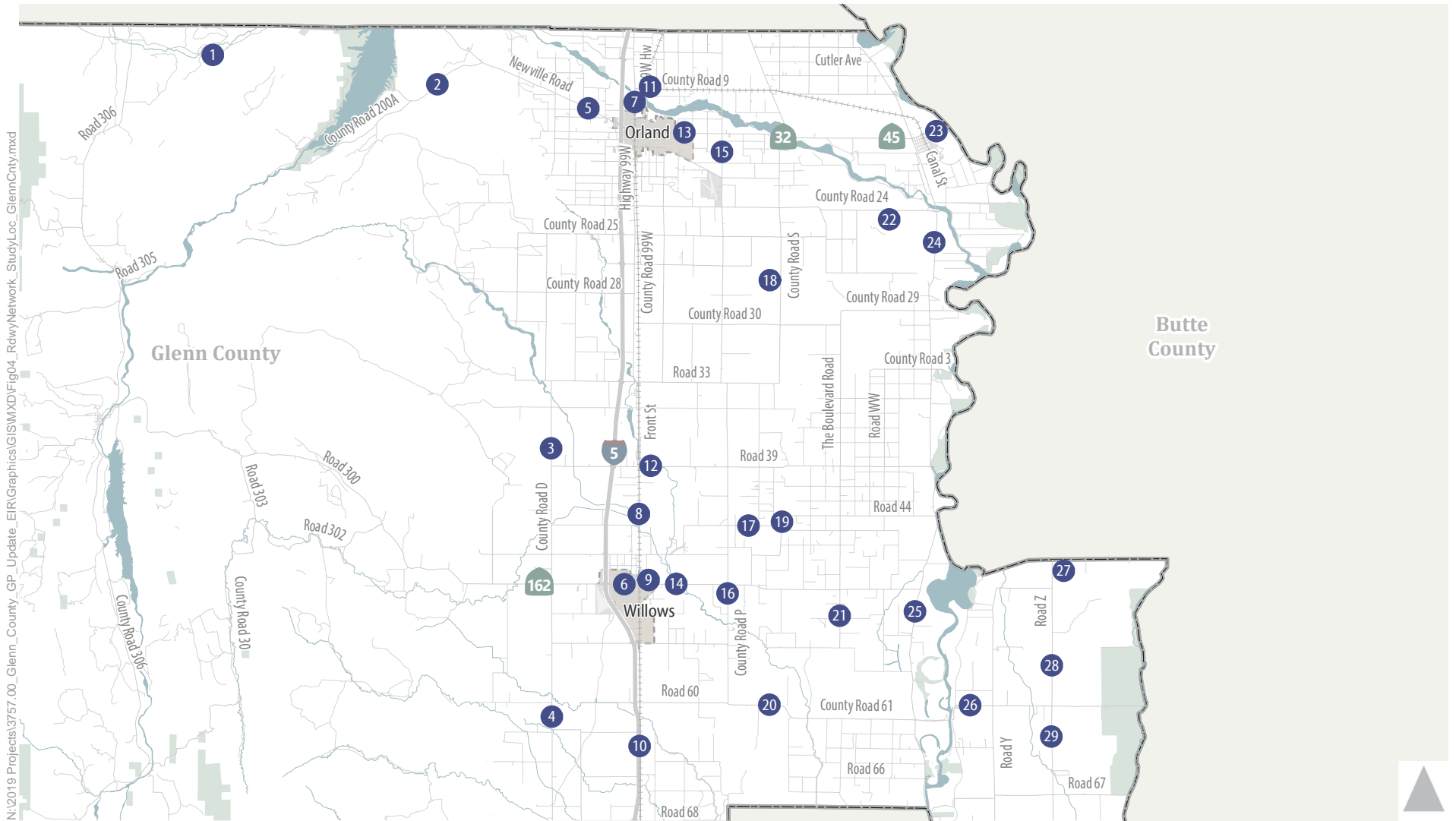


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Figure 2.0-3B  
Collisions in Glenn County, 2011-2015 -  
Orland and Willows Inset

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1 Study Location



Figure 2.0-4  
Roadway Network and Study Locations

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# Chapter 3

## Community Services & Facilities



This chapter addresses utilities and community services within the Glenn County. Utility services include the provision of water services, wastewater (sewer) services, stormwater and drainage, solid waste disposal, electricity, and natural gas. Community services include fire protection, law enforcement, parks and recreation, schools, libraries, and other public facilities.

This Chapter includes the following topics:

- 3.1 Water Services
- 3.2 Wastewater
- 3.3 Stormwater and Drainage
- 3.4 Solid Waste
- 3.5 Electricity and Natural Gas
- 3.6 Public Safety and Services
- 3.7 Park and Recreation
- 3.8 Schools
- 3.9 Libraries and Other Public Facilities



## 3.0 COMMUNITY SERVICES AND FACILITIES

The community services and facilities within the county and surrounding areas are an important part to ensuring a community's safety and quality of life. In an effort to identify and understand the key community services and facilities of the county, this chapter is divided into the following sections:

- 3.1 Water Services
- 3.2 Wastewater
- 3.3 Stormwater and Drainage
- 3.4 Solid Waste
- 3.5 Electricity and Natural Gas
- 3.6 Public Safety Services
- 3.7 Parks and Recreation
- 3.8 Schools
- 3.9 Libraries and Other Public Facilities

### 3.1 WATER SERVICES

Water supplied to Glenn County comes from two sources: groundwater and surface water. Water for agriculture is provided by many surface water districts and from groundwater. Most water for municipal, industrial and domestic purposes is obtained from groundwater.

#### REGULATORY FRAMEWORK

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##### *STATE*

##### **CALIFORNIA DEPARTMENT OF HEALTH SERVICES**

The Department of Health Services, Division of Drinking Water and Environmental Management, oversees the Drinking Water Program. The Drinking Water Program regulates public water systems and certifies drinking water treatment and distribution operators. It provides support for small water systems and for improving their technical, managerial, and financial capacity. It provides subsidized funding for water system improvements under the State Revolving Fund ("SRF") and Proposition 50 programs. The Drinking Water Program also oversees water recycling projects, permits water treatment devices, supports and promotes water system security, and oversees the Drinking Water Treatment and Research Fund for MTBE and other oxygenates.

##### **CALIFORNIA CODE OF REGULATIONS**

California Code of Regulations (CCR) Title 22, Chapter 15, Article 20 requires all public water systems to prepare a Consumer Confidence Report for distribution to its customers and to the Department of Health Services. The Consumer Confidence Report provides information regarding the quality of potable water provided by the water system. It includes information on the sources of the water, any detected contaminants in the water, the maximum contaminants levels set by regulation, violations and actions taken to correct them, and opportunities for public participation in decisions that may affect the quality of the water provided.

## **URBAN WATER MANAGEMENT PLANNING ACT**

The Urban Water Management Planning Act has as its objectives the management of urban water demands and the efficient use of urban water. Under its provisions, every urban water supplier is required to prepare and adopt an urban water management plan. An “urban water supplier” is a public or private water supplier that provides water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. The plan must identify and quantify the existing and planned sources of water available to the supplier, quantify the projected water use for a period of 20 years, and describe the supplier’s water demand management measures. The urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The Department of Water Resources must receive a copy of an adopted urban water management plan.

Urban Water Management Plans within the Glenn County Planning Area:

- California Water Service Company - Willows
- California Water Service Company Chico-Hamilton City District

## **SENATE BILL (SB) 610 AND ASSEMBLY BILL (AB) 901**

The State Legislature passed SB 610 and AB 901 in 2001. Both measures modified the Urban Water Management Planning Act.

SB 610 requires additional information in an urban water management plan if groundwater is identified as a source of water available to an urban water supplier. It also requires that the plan include a description of all water supply projects and programs that may be undertaken to meet total projected water use. SB 610 requires a city or county that determines a project is subject to CEQA to identify any public water system that may supply water to the project and to request identified public water systems to prepare a specified water supply assessment. The assessment must include, among other information, an identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and water received in prior years pursuant to these entitlements, rights and contracts.

AB 901 requires an urban water management plan to include information, to the extent practicable, relating to the quality of existing sources of water available to an urban water supplier over given time periods. AB 901 also requires information on the manner in which water quality affects water management strategies and supply reliability. The bill requires a plan to describe plans to supplement a water source that may not be available at a consistent level of use, to the extent practicable. Additional findings and declarations relating to water quality are required.

## **AGRICULTURAL WATER MANAGEMENT PLAN (AWMP)**

The Water Conservation Act of 2009 (SB X7-7) requires agricultural water suppliers serving more than 25,000 irrigated acres (excluding recycled water deliveries) to adopt and submit to DWR an Agricultural Water Management Plan (AWMP). These plans must include reports on the implementation status of specific Efficient Water Management Practices (EWMPs) that were required under SB X7-7.

Agricultural water suppliers can submit individual plans or collaborate and submit regional plans, as long as the plans meet the requirements of SB X7-7. Agricultural water suppliers that provide water to between 10,000 and up to 25,000 irrigated acres (excluding recycled water) are not required to prepare or submit AWMPs under SB X7-7, unless state funds are made available to support this.



#### New AWMP Content Requirements of AB 1668 (Friedman, Statute of 2018):

- Annual water budget for the water-year based on quantifying all inflow and outflow components for the service area, including six specific components.
- Identifying water management objectives based on the water budget to improve system efficiency or to meet other water management objectives.
- Quantifying water use efficiency using the appropriate methods from DWR’s 2012 Report to the Legislature, “A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use.” All water uses must be accounted for including: crop water use, agronomic use, environmental use, and recoverable surface flows.
- A Drought Plan for periods of limited water supplies describing actions for drought preparedness (resilience planning), as well as management and allocations of water supply during drought conditions (response planning).

#### Agricultural Water Management Plans within the Glenn County Planning Area:

- Glenn - Colusa Irrigation District
- Orland - Artois Water District
- Orland Unit Water Users’ Association
- Provident Irrigation District
- Reclamation District No 1004
- Western Canal Water District

### **SENATE BILL (SB) 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 five days of the subdivision application being accepted as complete for processing by the city or county. It also adds Government Code Section 66473.7, establishing detailed requirements for establishing 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 availability of a sufficient water supply. The applicable public water system must provide proof of availability. If there is no public water system, the city or county must undertake the analysis described in Government Code Section 66473.7. The analysis must include consideration of effects on other users of water and groundwater.

### **SUSTAINABLE GROUNDWATER MANAGEMENT ACT (SGMA)**

On September 16, 2014, the Governor of California signed into law a three-bill legislative package (Senate Bill 1168, Assembly Bill 1739 and Assembly Bill 1319) that provided a framework for statewide sustainable groundwater management. These laws are collectively known as the Sustainable Groundwater Management Act (SGMA). SGMA defines sustainable groundwater management as the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.

The law requires all groundwater well users to live under a Groundwater Sustainability Plan developed by Groundwater Sustainability Agencies that must be completed by January 31, 2022. This Plan will require all groundwater well use to be sustainable for all parts of the basins throughout California, and will potentially require meters and records on groundwater use.

Development of the Groundwater Sustainability Plans by Groundwater Sustainability Agencies is currently being developed in Colusa and Glenn Counties. Each groundwater user has the opportunity to help develop these Plans which all users must follow.

#### *LOCAL*

### **GLENN COUNTY WATER QUALITY PROGRAM**

The Glenn County Water Quality Program if implemented through the Department of Environmental Health. The Water Quality Program is responsible for the enforcement of standards and codes regarding the construction and destruction of water wells, monitoring wells, exploratory soil borings and other special use wells.

The Glenn County Department of Environmental Health reviews and approves permit applications and conducts on-site inspections to verify proper seals, well locations and site information. All new wells must have an approved permit from the Environmental Health Department prior to the start of any construction. The purpose of the program is to protect groundwater quality and to ensure an adequate and safe drinking water supply for the residents of Glenn County. Improperly constructed, altered, maintained, or destroyed wells are a potential pathway for introducing poor quality water, pollutants, and contaminants into good-quality ground water.

### **GLENN GROUNDWATER AUTHORITY**

The Glenn Groundwater Authority (GGA) is a nine-member, multi-agency Joint Powers Authority (JPA) that was formed on June 20, 2017. The GGA is the Groundwater Sustainability Agency (GSA) responsible for implementation of the Sustainable Groundwater Management Act (SGMA) in the Glenn County portion of the Colusa Subbasin (5-21.52). The Board of the GGA is composed of representatives of the following:

*County of Glenn, City of Orland, City of Willows, Glenn-Colusa Irrigation District, Glide Water District, Princeton-Codora-Glenn/Provident Irrigation District (1 seat), Orland-Artois Water District, and Kanawha Water District formed with the primary purpose to comply with and implement SGM*

The Glenn Groundwater Authority was created by forming a Joint Exercise of Powers Agreement, signed by nine local agencies, with the purposes of being a Groundwater Sustainability Agency for the Glenn County portion of the Colusa Subbasin.

### **COUNTY GROUNDWATER MANAGEMENT PLAN**

Groundwater management in Glenn County is conducted in accordance with the management objectives in the Glenn County Groundwater Management Plan. The Glenn County Groundwater Management Plan was adopted by the Board of Supervisors on February 15, 2000 (Ordinance 1115) and requires that basin management objectives (BMOs) for minimum groundwater levels, minimum water quality and maximum inelastic subsidence be established for each of the 17 subareas within the plan area which generally includes areas of the county where irrigated agriculture is conducted; primarily in the Valley portion of the county.

## GLENN COUNTY GENERAL PLAN

The existing Glenn County General Plan's Natural Resources Element includes the following goals and policies related to water resources and/or supplies:

### GOALS:

**NRG-1 Preservation of agricultural land.**

**NRG-2 Protection and management of local water resources.**

**PSG-6 Protection and enhancement of water quality.**

### POLICIES:

It shall be the policy of Glenn County to:

NRP-3 Recognize the value of ricelands for waterfowl habitat, watershed management, and for groundwater recharge in an effort to preserve such lands and to maintain necessary water supplies in Glenn County.

NRP-4 Support efforts underway to explore the potential to utilize ricelands as temporary storage reservoirs in winter months, thus increasing groundwater recharge and supplies of surface water for both agriculture and wildlife, and potentially providing an alternative to rice straw burning.

NRP-22 Support legislation which will provide for a locally controlled Glenn County groundwater management district.

NRP-23 Oppose the exportation of groundwater resources outside the county.

NRP-24 Recognize the following local priorities when dealing with questions of ground and surface water use:

- |         |                          |
|---------|--------------------------|
| Highest | 1) Household/Domestic    |
|         | 2) Agriculture           |
|         | 3) Industrial/Commercial |
|         | 4) Wildlife/Conservation |
| Lowest  | 5) Exportation           |

NRP-25 Protect groundwater recharge areas in the county from overcovering and contamination by carefully regulating the type of development which occurs within these areas.

NRP-26 Discourage onsite sewage disposal systems in areas with high groundwater recharge potential and eliminate existing concentrations of septic tanks in such areas through construction of community sewage treatment and disposal systems.

NRP-27 Prohibit uses with the potential to accidentally discharge harmful groundwater pollutants in areas of high groundwater recharge, unless appropriate mitigation measures have been incorporated into the operation of such uses.

- NRP-28 Identify and monitor potential sources of groundwater pollution, including harmful agricultural practices.
- NRP-29 Limit structural coverage and impervious surfaces within areas of high groundwater recharge through application of zoning that recognizes the importance of this feature.
- NRP-30 Protect important watershed areas from poor development practices and potential degradation.
- NRP-31 Monitor actions taken at the State and federal level which impact water resources in order to evaluate the effects of these actions on the county's resources.
- NRP-32 Support programs that will provide better information to the County and other agencies concerning reservoir siltation and aid in the formulation of an appropriate plan of action.
- NRP-33 Carefully study the potential impact that any future reservoir construction may have on groundwater recharge areas in Glenn County.
- NRP-34 Recognize the value of irrigation system infrastructure by discouraging development within established irrigation district boundaries which would prematurely reduce the utility of such systems.
- NRP-35 Encourage the development of water conservation programs by water purveyors for both agricultural and urban uses.
- NRP-36 Encourage development of educational programs to increase public awareness of water conservation opportunities and the potential benefits of implementing conservation measures and programs.
- NRP-37 Recognize that efforts to reserve water in Glenn County for wildlife may also bring long-term benefits to the effort to retain water resources locally.
- NRP-38 Recognize the impacts of gravel extraction on groundwater quantity and quality and encourage extraction methods that preserve and enhance groundwater resources.
- PSP-43 Support ongoing regulatory and compliance efforts at the federal and State level for the protection of water quality.
- PSP-44 Support the Rice Herbicide Action Plan and encourage other agricultural practices which reduce the threat of surface water pollution from agricultural chemical use.
- PSP-45 Zone floodways and stream channels in a manner that promotes protection of water quality.
- PSP-46 Discourage on-site sewage disposal systems on small lots in areas containing gravelly soils.
- PSP-47 Support the preparation of area groundwater studies to ensure the protection of groundwater and to ensure that the holding capacity of the area is not exceeded.

## ENVIRONMENTAL SETTING

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### LOCAL SETTING

Glenn County is located in the west-central portion of the Sacramento River Hydrologic Region. Primarily an agricultural area, the County totals approximately 850,000 acres with 30 percent in agriculture and only 1 percent in urban uses (Wood Rodgers and Associates, 2003). A small portion of western Glenn County lies within the North Coast hydrologic region. In 2000, the population of Glenn County was

approximately 26,500, with 50 percent in urban (small community) and 50 percent in rural/farm housing. By the year 2030, Glenn County is expected to see approximately 27 percent growth to about 34,300 (Sacramento Valley Integrated Regional Water Management Plan, 2006). Numerous water agencies and districts oversee the provision and development of water supplies in Glenn County.

Groundwater in the Glenn Groundwater Authority (GGA) service area is extracted to serve municipal, domestic, and agricultural beneficial uses. Municipal and domestic water supply demand in the GGA service area is met with groundwater. Agricultural water users within the GGA area that do not have a surface water supply must rely upon groundwater to meet the entire agronomic water demand.

## **GROUNDWATER BASINS**

There are seven groundwater basins within Glenn County: the Stonyford Town Area, Funks Creek, Squaw Flat, Stony Gorge Reservoir, Elk Creek Area, Chrome Town Area, and Sacramento Valley Groundwater Basins. Of these, all except the Sacramento Valley Groundwater Basin are small (less than 5 square miles) isolated basins located in the Coast Ranges in the central to western portions of the County. These small basins have not been divided into subbasins. The Stonyford Town Area and Funks Creek Groundwater Basins also extend into Colusa County.

The Sacramento Valley Groundwater Basin, in contrast to the smaller basins described above, covers over 5,900 square miles and 10 counties, and has been divided into 18 subbasins. The California Department of Water Resources defines the following:

“A groundwater basin is defined as an alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined features that significantly impede groundwater flow such as rock or sediments with very low permeability or a geologic structure such as a fault.”

“A subbasin is created by dividing a groundwater basin into smaller units using geologic and hydrologic barriers or, more commonly, institutional boundaries. These subbasins are created for the purpose of collecting and analyzing data, managing water resources, and managing adjudicated basins.”

Glenn County overlies portions of three subbasins of the Sacramento Valley Groundwater Basin: The Corning, Colusa and Butte Subbasins. The Colusa Subbasin underlies the majority of the valley portion of the County west of the Sacramento River, and also extends into Colusa, and Yolo Counties. The West Butte Subbasin underlies the portion of the County east of the Sacramento River, and also extends into Colusa and Butte Counties. Groundwater basins in Glenn County and the surrounding areas are shown in Figure 3.1-1.

## **GROUNDWATER FORMATIONS OF THE SACRAMENTO VALLEY GROUNDWATER BASIN - COLUSA SUBBASIN**

**Water-Bearing Formations.** The Colusa Subbasin aquifer system is composed of continental deposits of late Tertiary to Quaternary age. Quaternary deposits include Holocene stream channel and basin deposits and Pleistocene Modesto and Riverbank formations. The Tertiary deposits consist of the Pliocene Tehama Formation and the Tuscan Formation. Except where noted, the following information is taken from USBR (1960).

**Holocene Stream Channel Deposits.** These deposits consist of unconsolidated gravel, sand, silt, and clay derived from the erosion, reworking, and deposition of adjacent Tehama Formation and Quaternary stream terrace deposits. The thickness varies from 1- to 80-feet (Helley and Harwood 1985). These deposits represent the upper part of the unconfined zone of the aquifer and are moderately-to-highly permeable; however, the thickness and areal extent of the deposits limit the water-bearing capability. **Holocene Basin Deposits.** These

deposits are the result of sediment-laden floodwaters that rose above natural levees of streams and rivers and spread across low-lying areas. They consist primarily of silts and clays and may be locally interbedded with stream channel deposits along the Sacramento River. Thickness of the unit ranges up to 150 feet. These deposits have low permeability and generally yield low quantities of water to wells. The quality of groundwater produced from basin deposits is often poor.

**Pleistocene Modesto and Riverbank Formations.** Terrace deposits include the Modesto Formation (deposited between 14,000 and 42,000 years ago) and the Riverbank Formation (deposited between 130,000 and 450,000 years ago). The Modesto deposits consist of moderately to highly permeable gravels, sands, and silts. Thickness of the formation ranges from less than 10 feet to nearly 200 feet across the valley floor (Helley and Harwood 1985). The Riverbank deposits are the older terrace deposits that occur at a higher topographic level and consist of poorly to highly pervious pebble and small cobble gravels interlensed with reddish clay, sand, and silt. Thickness of the formation ranges from less than 1 foot to over 200 feet depending on location. The formation yields moderate quantities of water to domestic and shallow irrigation wells and also provides water to deeper irrigation wells that have multiple zones of perforation. Generally, the thickness of the formation limits the water-bearing capabilities.

**Pliocene Tehama Formation.** The Tehama Formation is the predominant water-bearing unit within the Colusa Subbasin and reaches a thickness of 2,000 feet (Olmsted and Davis 1961). The formation occurs at depths ranging from a few feet to several hundred feet from the surface. The formation consists of moderately compacted silt, clay, and fine silty sand enclosing lenses of sand and gravel; silt and gravel; and cemented conglomerate. Occasional deep sands and thin gravels constitute a poorly to moderately productive, deep, water-bearing zone.

**Pliocene Tuscan Formation.** The Tuscan Formation occurs in the northern portion of the subbasin at an approximate depth of 400 feet from the surface and may extend to the west to the Greenwood Anticline east of Interstate Highway 5 (DWR 2000). The formation is composed of a series of volcanic mudflows, tuff breccia, tuffaceous sandstone, and volcanic ash layers. The formation is described as four separate but lithologically similar units, A through D (with Unit A being the oldest), which in some areas are separated by layers of thin tuff or ash units (Helley and Harwood 1985).

**Units A, B, and C are found within the subbasin.** Unit A is the oldest waterbearing unit of the formation and is characterized by the presence of metamorphic clasts within interbedded lahars, volcanic conglomerate, volcanic sandstone, and siltstone. Unit B is composed of a fairly equal distribution of lahars, tuffaceous sandstone, and conglomerate. Unit C consists of massive mudflow or lahar deposits with some interbedded volcanic conglomerate and sandstone. In the subsurface, these low permeability lahars form thick, confining layers for groundwater contained in the more permeable sediments of Unit B.

### **SUBAREAS OF THE COLUSA SUBBASIN**

**Stony Creek Fan.** The Stony Creek Fan occupies the northern extent of the subbasin and extends from Black Butte Reservoir to the City of Willows, northeast from the City of Willows to the Sacramento River, and north beyond the Tehama County line. The geologic units within the fan area include Holocene alluvial deposits, Pleistocene deposits of the Riverbank and Modesto formations, and Pliocene deposits of the Tehama and Tuscan formations.

Holocene alluvial deposits are observed along Stony Creek to the north and along the Sacramento River to the east. Modesto and Riverbank deposits extend to the east along Stony Creek and south and southeast within several ancestral stream channels (DWR 2000). Older alluviated floodplain and channel deposits reach a thickness of 150 feet at Stony Creek and 110 feet along the Sacramento River.

Thick clays of the upper Tehama Formation underlie the intermediate waterbearing zone of the Stony Creek plain at a depth of 300 feet, rising to a minimum depth of 40 feet on the axis of the Willows anticline. Wells installed 4 miles east of Highway 99W intersect occasional Tehama Formation gravels between 225- and 625-foot depths.

Tuscan Units A, B, and C are believed to extend into the Colusa Subbasin north of the City of Willows. The sediments of the Tuscan Formation interfinger with the sediments of the Tehama Formation in the subsurface (Lydon 1969). The degree of hydraulic conductivity between the Tuscan Formation, the Tehama Formation, and the overlying Stony Creek fan deposits has not been established.

**Willows-to-Williams Plain.** Basin deposits overlie much of the flat alluvial plains in the area between Willows and Williams. Permeabilities of the near surface soils are extremely low. Riverbank deposits are observed along the western subbasin boundary north of Maxwell. The interstream areas of the westside creeks contain little gravel and are underlain by a poorly pervious, occasionally alkaline, claypan soil. The Tehama Formation contains little gravel and is not an important water-bearing material in this region.

**Arbuckle and Dunnigan Plains.** Quaternary surface deposits of alluvium, Modesto and Riverbank formations, and basin deposits in the Arbuckle and Dunnigan plains occur east of Hungry Hollow and Dunnigan hills from Williams to Cache Creek. Basin deposits overlie older alluvial deposits. The region north of Arbuckle is alluviated to depths of 20- to 60-feet with moderately to highly permeable sands and gravels from Sand and Cortina creeks. This zone extends east of Highway 99W and, in the College City area, appears to be Sacramento River channel deposits. The area between Salt and Petroleum creeks is composed of poorly to moderately permeable gravels, clayey sands, and silts. Petroleum and Little Buckeye creeks have deposited a thin, moderately to highly permeable sandy gravel and sandy silts over older stream and terrace alluvium.

The area in the vicinity of Zamora is underlain by a homogeneous section of gravels, sands, and interbedded clays to minimum depths of 450 feet. Water producing members range from 25- to 35- percent of total material penetrated. Well production is high within gravel channels. A poorly to highly productive water-bearing zone consisting of older alluvial deposits and Tehama deposits on the western and southwestern edges of the Arbuckle Plain ranges in depth from 100- to 300-feet. The zone thickens easterly to depths of 400- to 450-feet.

Tehama deposits coarsen in this area and are an important water-bearing unit. The upper 800- to 900-feet contains 10- to 13-percent fine pebble gravel with a well-sorted, fine to medium sand matrix. This portion of the Tehama Formation is highly pervious, loose, and well bedded. The gravel beds range from 5- to 20-feet in thickness and are well confined within a silt and clayey silt section.

**Cache Creek Floodplain.** Holocene stream channel deposits are observed along the entire extent of Cache Creek (DWR 2000). The Cache Creek area is alluviated with floodplain deposits which are exposed north of the town of Yolo and extend to Knights Landing. The relative proportion of sand and gravel for the depth interval of 20- to 100-feet is approximately 27 percent.

Between depths of 100- to 200-feet the proportion is reduced to 24 percent. The percentage of sand and gravel for deposits extending northward from Cache Creek averages 22 percent for the 20- to 200-foot interval. Farther east the proportion increases to 36 percent for the same depth interval (Olmsted and Davis 1961). Tehama deposits are penetrated in the depth interval of 100- to 200-feet.

## GROUNDWATER STORAGE

Groundwater storage capacity of the Colusa Subbasin was estimated based on estimates of specific yield for the Sacramento Valley as developed in DWR (1978). Estimates of specific yield, determined on a regional

basis, were used to obtain a weighted specific yield conforming to the subbasin boundary. The estimated specific yield for the subbasin is 7.1 percent. The estimated storage capacity to a depth of 200 feet is approximately 13,025,887 acre-feet.

### **GROUNDWATER LEVELS**

The California Department of Water Resources (DWR) maintains a publicly available on-line database, which includes groundwater level data for the County. DWR's Water Data Library Website can be found at <http://www.wdl.water.ca.gov/>. Wells monitored by DWR and cooperating agencies are identified by the State Well Numbering System. Data can be obtained for specific wells by means of a map interface, by groundwater basin, or by the assigned State Well Numbering System.

Review of hydrographs for long-term comparison of spring-spring groundwater levels indicates a slight decline in groundwater levels associated with the 1976-77 and 1987-94 droughts, followed by recovery to pre-drought conditions of the early 1970's and 1980's. Some wells increased in levels beyond the pre-drought conditions of the 1970's during the wet season of the early 1980's. Generally, groundwater level data show an average seasonal fluctuation of approximate 5-feet for normal and dry years

A hydrograph for Well 21N03W33A004M, an irrigation well located in the Glenn County portion of the Colusa Groundwater Subbasin (5-21.52) has been monitored and reported by DWR and is included in California's Groundwater Update (2013). This well is located in the center of the upper portion of the groundwater subbasin, midway between the cities of Orland and Willows. The land use in the area of the well is predominately agriculture. The well is 750 feet deep and is constructed in the semi-confined to confined portions of the aquifer system. Groundwater levels in this well have been monitored monthly from 1958 to 1995, and three to four times per year since 1995.

The hydrograph shows a decline in groundwater levels during the 1970s, prior to bringing in surface water through the Tehama-Colusa Canal. During the 1980s, groundwater levels increased as a result of the combination of switching from groundwater to surface water use, and because of the wet hydrology associated with the 1982-1984 water years. The decline in groundwater levels in the early 1990s is likely the result of surface water cutbacks, increased surface water pricing, and limited dry-year water reliability combined with drought conditions, causing many farmers to switch back to groundwater instead of surface water supply.

The most recent decrease in groundwater levels in the early 2000s is likely a result of the recent trend of converting pasture, annual crops, and idle land to permanent orchard crops irrigated with groundwater. Between 2003 and 2009, permanent crops increased 17,000 acres county wide, while an equal amount of field crops, grasses, and idle and pasture land decreased. Changes in irrigation methods have also contributed to the observed declines. Between 2003 and 2009, surface drip and micro-sprinkler irrigation has increased, and methods such as wild flooding, furrow irrigation, and border strip irrigation has decreased. The former methods rely on groundwater and the latter rely on surface water deliveries.

Groundwater is the preferred source of water for micro sprinklers and drips, because surface water, having more suspended particles, tends to plug the equipment. Other side effects of these crop and irrigation changes are the reduced amounts of water being applied via micro or drip sprinklers, which virtually eliminate any applied water that would have percolated down to the groundwater as recharge. During periods of reduced surface water, permanent crops eliminate the possibility of idling the land.

The hydrograph for the well shows that the seasonal fluctuation in groundwater levels can be as much as 70 feet over the period of record beginning in 1965. The lowest groundwater levels were during the drought in the late 1970s. Since 2009 up until 2013, the trend of declining groundwater levels has continued, and for



many wells along the west side of the Sacramento Valley, groundwater levels are either at or are approaching an all-time low.

## GROUNDWATER QUALITY

Calcium-magnesium bicarbonate and magnesium calcium bicarbonate are the predominant groundwater types in the subbasin. Calcium bicarbonate waters occur locally from Orland to Artois and near Stony Creek. Mixed character waters for different regions of the subbasin occur as follows: sodium bicarbonate waters from Williams-Colusa south to Grimes; magnesium-sodium bicarbonate or sodium-magnesium bicarbonate waters near Williams-Arbuckle area and locally near Zamora; and magnesium bicarbonate waters locally near Dunnigan. Total dissolved solids (TDS) values range from 120- to 1,220-mg/L, averaging 391 mg/L (DWR Bulletin 118).

**Impairments.** High EC, TDS, adjusted sodium absorption ratio (ASAR), nitrate, and manganese impairments occur near Colusa. High TDS and boron occur near Knights Landing. High nitrates occur in Arbuckle, Knights Landing, and Willows. Localized areas have high manganese, fluoride, magnesium, sodium, iron, ASAR, chloride, TDS, ammonia, and phosphorus.

In 2019 The Environmental Protection Agency (EPA) issued an emergency order related to the drinking water in the Glenn County community located within the Grindstone Indian Rancheria near Elk Creek. The EPA ordered the Grindstone Indian Rancheria to provide alternative drinking water, disinfect the system's water and monitor the water for contamination. The move comes after the EPA said the community was not complying with an earlier drinking water order issued in 2017. The EPA said Stony Creek has numerous potential contaminants from agricultural, municipal and industrial operations.

The Department of Toxic Substances Control (DTSC) identifies the Orland Dry Cleaners site as the source of contamination to a groundwater plume. The primary contaminant of concern in the groundwater is PCE. Between 2003 and 2006, several investigations were conducted to further evaluate the extent of contamination in both soil and groundwater. The results of these investigations indicate that the PCE-contaminated groundwater plume extends approximately 2.5 miles from the source in a southeast direction in the direction of groundwater flow to a depth ranging from approximately 12 to 127 feet below ground surface. The site consists of a single building, occupying approximately 2,000 square feet, at 726 Fifth Street in Orland, Glenn County California. Historically, tetrachloroethene (PCE), a cleaning solvent used in the dry cleaning industry, was discharged into a drain located inside the building.

## GROUNDWATER INFRASTRUCTURE

According to DWR's 2013 Water Plan Update well completion reports, or well logs, submitted by licensed well drillers to the landowner, the local County Department of Environmental Health, and DWR provide insight into well development from 1977 through 2010. Among other things, well logs commonly identify well location, construction details, borehole geology data, installation date, and type of well use.

Well drillers have been required by law to submit well logs to the State since 1949. California Water Code Section 13751 requires drillers who construct, alter, abandon, or destroy a well, to submit a well completion report (well log) to DWR within 60 days of the completed work. Confidentiality requirements (California Water Code Section 13752) limit access to the well logs to governmental agencies conducting studies, to the owner of the well, and to persons performing environmental cleanup studies.

Well logs submitted to DWR for wells completed from 1977 to 2010 were used to evaluate the distribution and the uses of groundwater wells in the region<sup>1</sup>.

The number type of wells in the Sacramento River region are grouped according to their location by county and according to the six most common well-use types: domestic, irrigation, public supply, industrial, monitoring, and other. Public supply wells include all wells identified on the well log as municipal or public. Wells identified as “other” include a combination of the less-common well types, such as stock wells, test wells, or unidentified wells (no information listed on the well log).

Well-log data is listed in Table 3.1-1. As shown in the table, the number of wells installed within Glenn County between 1977 and 2010 is approximately 3,154. The top counties with the most domestic wells within the Sacramento Valley Groundwater Basin are, Shasta 9,252, Tehama 9,472, Butte 11,527, and Sacramento 13,155 wells.

Of the wells developed within Glenn County between 1777-2010 (for which Well Completion Reports have been filed), 1,784 are domestic, 845 are irrigation, 18 are Public Supply, 20 are Industrial, 322 are Monitoring, and 165 wells have unknown or other uses.

**TABLE 3.1-1: WELL LOGS BY USE GLENN COUNTY (1977-2010)**

COUNTY	TOTAL NUMBER OF WELL LOGS BY WELL USE						TOTAL WELL RECORDS
	DOMESTIC	IRRIGATION	PUBLIC SUPPLY	INDUSTRIAL	MONITORING	OTHER	
Glenn	1,784	845	18	20	322	165	3,154

Source DWR California's Groundwater Update 2013

The Sacramento River region includes 11 planning areas. Table 3.1-2 lists the 2005-2010 average annual total water supply met by groundwater, by planning area and by type of use, and shows the quantity and the percentage of groundwater contribution to the total water supply for the region.

Groundwater use by planning area within the Sacramento River Hydraulic region shows that two of the largest groundwater users in the region, the Butte-Sutter-Yuba Area and Colusa Basin, rely on about 1,007 Thousand Acre Feet (taf) of combined groundwater pumping to meet 21 and 25 percent, respectively, of their total water supply needs. In terms of volume, the Butte-Sutter-Yuba PA applies 90 percent (508 taf) of the groundwater extracted toward agricultural purposes, while the Colusa Basin uses 96 percent (499 taf) of the groundwater extracted for agricultural purposes.

**TABLE 3.1-2: AVERAGE ANNUAL WATER SUPPLY MET BY GROUNDWATER - SACRAMENTO RIVER HYDROLOGIC REGION (2005-2010)**

SACRAMENTO RIVER HYDROLOGIC REGION	AGRICULTURE USE MET BY GROUNDWATER		URBAN USE MET BY GROUNDWATER		MANAGED WETLANDS USE MET BY GROUNDWATER		HYDROLOGIC REGION WATER USE MET WITH GROUNDWATER	
	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*
DWR PLANNING AREA NAME								
Shasta - Pit	83.2	25%	11.3	67%	0.0	0%	94.5	26%
Upper Northwest	3.3	35%	0.4	62%	0.0	0%	3.7	37%
Lower Northwest	238.4	51%	47.9	79%	0.0	0%	286.3	55%

<sup>1</sup> DWR does not have well logs for all of the wells completed in the region; for some well logs, information regarding well location or use is inaccurate, incomplete, ambiguous, or missing. For these reasons, some well logs could not be used in DWR’s evaluation.

SACRAMENTO RIVER HYDROLOGIC REGION	AGRICULTURE USE MET BY GROUNDWATER		URBAN USE MET BY GROUNDWATER		MANAGED WETLANDS USE MET BY GROUNDWATER		HYDROLOGIC REGION WATER USE MET WITH GROUNDWATER	
	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*
DWR PLANNING AREA NAME								
Northeast Valley	175.3	57%	41.5	51%	0.0	0%	216.8	56%
Southwest	42.1	81%	5.1	54%	0.0	0%	47.1	77%
Colusa Basin	498.7	26%	14.0	100%	9.2	6%	521.9	25%
Butte - Sutter - Yuba	508.3	21%	47.2	69%	10.9	4%	566.4	21%
Southeast	44.0	13%	23.3	20%	0.0	0%	67.3	15%
Central Basin West	473.0	57%	47.0	65%	0.0	0%	520.0	58%
Sacramento Delta	19.5	4%	4.6	15%	0.0	0%	24.2	4%
Central Basin East	208.5	47%	186.4	43%	0.0	0%	394.9	45%

Source DWR California's Groundwater Update 2013

Notes: \*Percent use is the percentage of the total water supply met by groundwater, by type of use where Total water use = groundwater + surface water + reuse.. taf = thousand acre.

As shown below in Table 3.1-3, within the geographical boundary of Glenn County, average annual water use met by groundwater averaged 291.8 taf or approximately 27% of all water use, of which approximately 277.5 taf of groundwater (95%) was for Agriculture uses.

**TABLE 3.1-3 AVERAGE ANNUAL WATER SUPPLY MET BY GROUNDWATER - GLENN COUNTY (2005-2010)**

SACRAMENTO RIVER HYDROLOGIC REGION	AGRICULTURE USE MET BY GROUNDWATER		URBAN USE MET BY GROUNDWATER		MANAGED WETLANDS USE MET BY GROUNDWATER		COUNTYWIDE WATER USE MET WITH GROUNDWATER	
	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*
COUNTY								
Glenn	277.5	28%	11.0	100%	3.3	4%	291.8	27%

Source DWR California's Groundwater Update 2013

Notes: \*Percent use is the percentage of the total water supply met by groundwater, by type of use where Total water use = groundwater + surface water + reuse.. taf = thousand acre.

## MAJOR DOMESTIC WATER SYSTEMS

Numerous water companies and community services districts (CSDs) oversee the provision and delivery of water supplies for urban uses in Glenn County. These include the following urban water purveyors.

- California Water Service Company (Cal Water).** Cal Water is an investor-owned public utility supplying water service to 1.7 million Californians through 435,000 connections. Its 24 separate water systems serve 63 communities from Chico in the north to the Palos Verdes Peninsula in Southern California. California Water Service Group, Cal Water's parent company, is also serving communities in Washington, New Mexico and Hawaii.

Cal Water incorporated in 1926 and has provided water service to the Willows community since 1927. As described in the District's 2015 Urban Water Management Plan the number of municipal connections in 2015 for the City of Willows was 2,371 service connections. Total system demand in 2015 was 1,044 AF. Residential customers account for approximately 85 percent of services and 69 percent of water use in the District, most of which is associated with single-family water use.

The City of Willows Water Department owns and operates a very small water system south of the District Cal Water boundary in the southernmost portion of the City of Willows.

Additionally, Cal Water has provided water utility services in the Hamilton City area since 1962. To meet the needs of Hamilton City customers, Cal Water utilize three wells to pump an average of 0.56 million gallons of groundwater per day, which is delivered through 7.7 miles of pipeline.

- **City of Orland.** The City of Orland Public Works Department maintains the City water system from production at their wells through distribution to City water customers through 2,615 metered connections serving 2,315 residential water customers and 300 non-residential customers. The Public Works Department continuously monitors the quality of the water that is provided to its residents and holds the responsibility of providing safe drinking water, and meeting state water quality standards, as its highest priority. The City of Orland's source of water is from six wells that are located at various locations within the City limits. These wells are continuously monitored and treated to meet or exceed State and Federal requirements. The City's water distribution system consists of approximately 34 miles of pipeline ranging in size from 4-inch diameter to 10-inch diameter. A network of 10-inch diameter water mains is planned to connect all of the wells, with 8-inch and 6-inch diameter distribution piping throughout the City. There are 303 public fire hydrants distributed throughout the City and a total of 14 private fire hydrants located at the fairgrounds, high school and Glenn County Public Works Corporation Yard. All of the buildings within the City are on water meters.
- **Black Butte Water District.** Black Butte District serves the area known as Estates Subdivision Unit No. 1 and vicinity, located 1-1/2 miles northwest of Orland in Glenn County, California. The districts has an estimated residential service population of 284 that are served through 86 unmetered service connections.
- **Elk Creek Community Services District.** The Elk Creek CSD is located in western Glenn County approximately 22 miles west of the City of Willows. The Elk Creek CSD provides domestic water to the community of Elk Creek. As of the most recent MSR in 2014, there were 90 active water service connections, and a service population of approximately 191.
- **Butte City Community Services District.** The Butte City Community Services District (BCCSD) was formed in 1964 pursuant to the Community Services District law (Government Code Section 61000 et seq.) and declared to be a legal entity by the Glenn County Board of Supervisors on the 6th day of November, 1961. The District provides water services to the community of Butte City in the Eastern Area of Glenn County through 48 unmetered water service connections and a service population of approximately 75.
- **Artois Community Services District.** The Artois Community Service's District serves the community of Artois through 59 metered water service connections.

Figure 3.1-2 shows all water purveyors (surface and groundwater) within Glenn County that provide end user water for all purposes including residential, agricultural, and resource conservation uses.

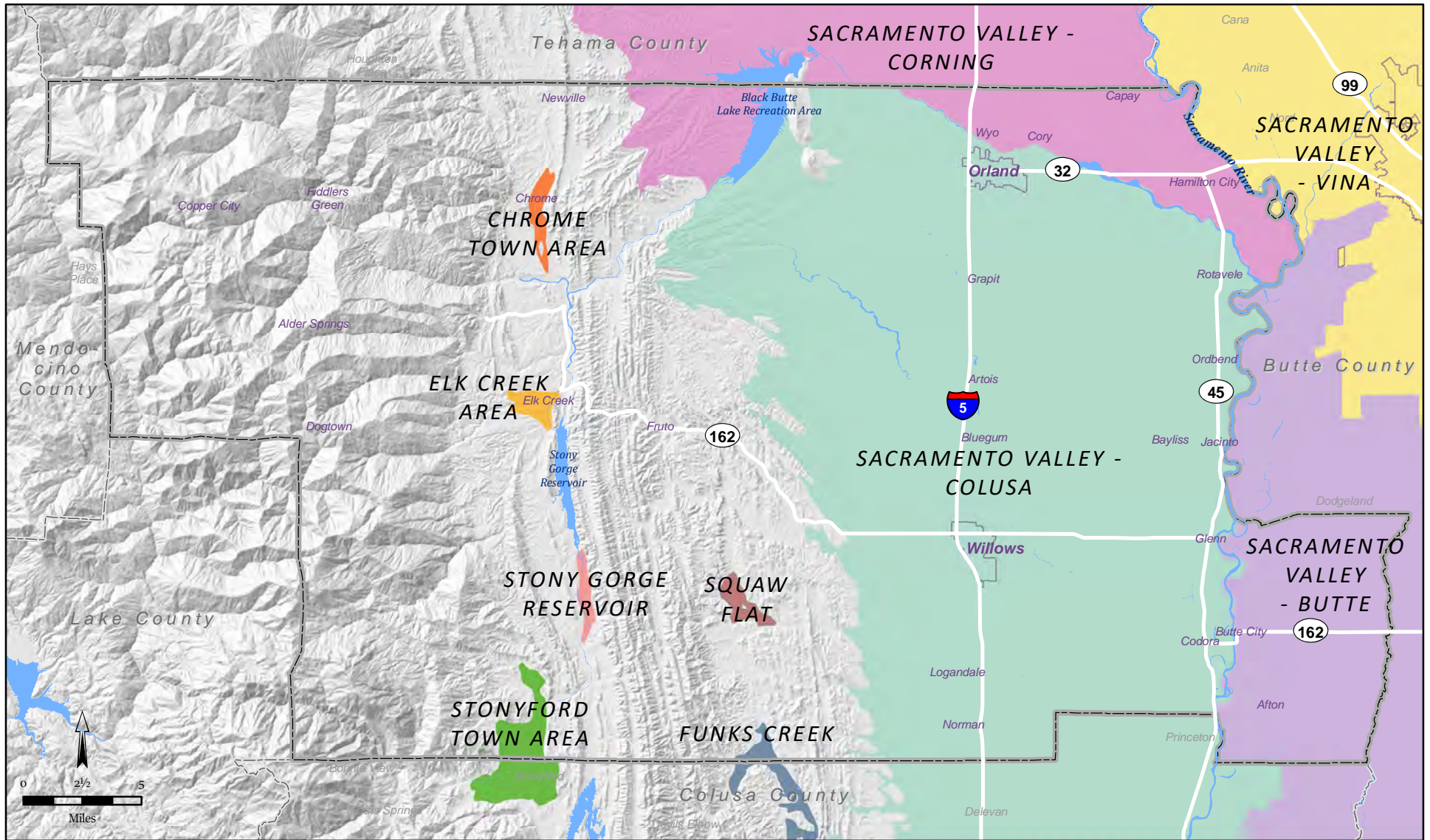
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Sources: DWR, CA Bulletin 118 Groundwater Basins. Map date: July 24, 2019.

**Legend**

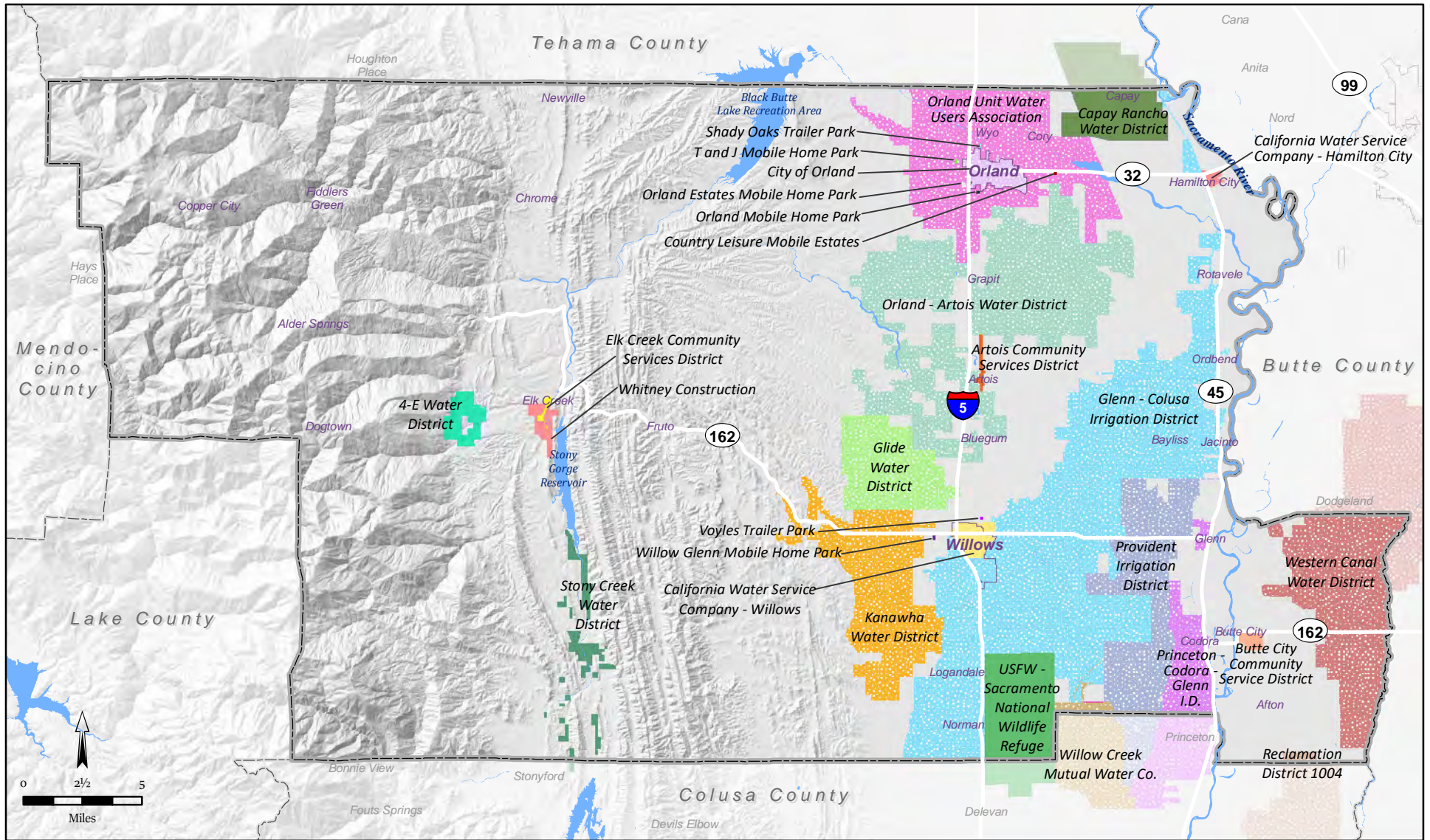
- |  |                            |   |                             |
|--|----------------------------|---|-----------------------------|
|  | CHROME TOWN AREA           |  | SACRAMENTO VALLEY - CORNING |
|  | ELK CREEK AREA             |  | SACRAMENTO VALLEY - VINA    |
|  | FUNKS CREEK                |  | SQUAW FLAT                  |
|  | SACRAMENTO VALLEY - BUTTE  |  | STONY GORGE RESERVOIR       |
|  | SACRAMENTO VALLEY - COLUSA |  | STONYFORD TOWN AREA         |

COUNTY OF GLENN, CALIFORNIA

**FIGURE 3.1-1. GROUNDWATER BASINS**

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Sources: DWR 103 Water Districts, Groundwater & Regional Planning Office, South Central Regional Office, 8/3/2018. Map date: September 18, 2019.

**Legend**

- |   |                                       |                                 |  |
|---|---------------------------------------|---------------------------------|--|
| Surface Water Provider                      | Country Leisure Mobile Estates        | Orland Unit Water Users Assoc   | USFWS - Sacramento Nat'l Wildlife Refuge |
| 4-E Water District                          | Elk Creek Community Services District | Princeton - Codora - Glenn I.D. | Voyles Trailer Park                      |
| Artois Community Services District          | Glenn - Colusa I.D.                   | Provident I.D.                  | Western Canal Water District             |
| Butte City Community Service District       | Glide Water District                  | Provident I.D. - Willow Creek   | Whitney Construction                     |
| California Water Service Co - Hamilton City | Kanawha Water District                | Reclamation District No 1004    | Willow Creek Mutual Water District       |
| California Water Service Co - Willows       | Orland - Artois Water District        | Shady Oaks Trailer Park         | Willow Glenn Mobile Home Park            |
| Capay Rancho Water District                 | Orland Estates Mobile Home Park       | Stony Creek Water District      |  |
| City of Orland                              | Orland Mobile Home Park               | T and J Mobile Home Park        |  |

COUNTY OF GLENN, CALIFORNIA  
**FIGURE 3.1-2.**  
**WATER DISTRICTS WITHIN**  
**GLENN COUNTY**

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## 3.2 WASTEWATER

Wastewater in Glenn County is treated and disposed of using one of several methods. The primary methods are onsite disposal (such as septic) and centralized disposal (such as wastewater treatment plants). There are five communities in the County served by centralized wastewater disposal systems: Orland, Willows, Hamilton City, Northeast Willows, and Parkway Estates.

The areas served by onsite systems are generally more rural or agricultural in nature. Although most onsite systems serve an individual dwelling or commercial establishment, some serve groups of homes or businesses.

### KEY TERMS

**Effluent:** Effluent is an outflowing of water from a natural body of water, or from a man-made structure. Effluent in the man-made sense is generally considered to be water pollution, such as the outflow from a sewage treatment facility or the wastewater discharge from industrial facilities. In the context of waste water treatment plants, effluent that has been treated is sometimes called secondary effluent, or treated effluent.

**NPDES:** Water pollution degrades surface waters making them unsafe for drinking, fishing, swimming, and other activities. As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

**WWTP:** Wastewater treatment plant. Treatment of wastewater may include the following processes: screening to remove large waste items; grit removal to allow sand, gravel, and sediment to settle out; primary sedimentation where sludge can settle out of the wastewater; secondary treatment to substantially degrade the biological content of the sewage; tertiary treatment to raise the quality of the effluent before it is discharged; and, discharge.

### REGULATORY FRAMEWORK

In California, all wastewater treatment and disposal systems fall under the overall regulatory authority of the State Water Resources Control Board (SWRCB) and the nine California Regional Water Quality Control Boards (RWQCBs), who are charged with the responsibility of protecting beneficial uses of State waters (ground and surface) from a variety of waste discharges, including wastewater from individual and municipal systems. Glenn County falls within the jurisdiction of the Central Valley RWQCB.

The RWQCB's regulatory role often involves the formation and implementation of basic water protection policies. These are reflected in the individual RWQCB's Basin Plan, generally in the form of guidelines, criteria and/or prohibitions related to the siting, design, construction, and maintenance of on-site sewage disposal systems. The SWRCB's role has historically been one of providing overall policy direction, organizational and technical assistance, and a communications link to the State legislature.

The RWQCBs may waive or delegate regulatory authority for on-site sewage disposal systems to Counties, Cities or special districts. Although not mandatory, it is commonly done and has proven to be administratively efficient. In some cases, this is accomplished through a Memorandum of Understanding (MOU), whereby the local agency commits to enforcing the Basin Plan requirements or other specified standards that may be more restrictive. The RWQCBs generally elect to retain permitting authority over large and/or commercial or industrial on-site sewage disposal systems, depending on the volume and character of the wastewater. The

established protocol for involvement of the RWQCB in permitting and review is established by a routine understanding between the County and the RWQCB.

### **COMMUNITY SYSTEMS REGULATION**

The RWQCB has direct oversight and permitting responsibility for large-flow systems of greater than 2,500 GPD and community systems, unless the RWQCB chooses to waive that authority and delegate their oversight to the County on a case-by-case basis. Some community systems in the County fall within Public Utility Districts (PUDs), which have assumed responsibility for oversight and/or maintenance of the infrastructure. In these cases, the PUD is considered the responsible party (discharger) under terms of the permit issued by the RWQCB.

### **INDIVIDUAL ON-SITE SEWAGE DISPOSAL SYSTEM REGULATIONS**

Regulation of individual on-site sewage disposal systems in unincorporated Glenn County occurs at a variety of levels, including by the SWRCB, through the Central Valley RWQCB, and locally, by the County.

Counties typically regulate septic systems via their Environmental Health and/or Building or Planning Departments. In Glenn County, septic systems are regulated by the Department of Environmental Health. Local septic system ordinances often incorporate portions of the Uniform Plumbing Code and other specific requirements.

### **REGIONAL WATER QUALITY CONTROL BOARD BASIN PLAN FOR THE CENTRAL VALLEY**

The Central Valley RWQCB has adopted policies and requirements pertaining to on-site sewage disposal systems, commonly referred to as the Basin Plan.

The on-site sewage disposal systems element of the Basin Plan sets forth various objectives, guidelines, general principles and recommendations for the use of on-site sewage disposal systems that cover a variety of topics. Mandatory requirements for the siting and design of on-site sewage disposal systems are reflected in the Basin Plan. Included for all on-site sewage disposal systems are specific criteria related to separation distances to groundwater, setbacks to water features, soil conditions, percolation rates, special design systems, and leachfield replacement area. Further discussion of these criteria is provided later in this section.

### **ASSEMBLY BILL 885 (AB 885)**

AB 885 was passed by the California Legislature in September 2000, and mandates the establishment of statewide standards to regulate the placement and use of on-site wastewater treatment systems (OWTS). The SWRCB has been charged with developing this critical set of uniform statewide standards for on-site sewage disposal systems that are required to be incorporated into all RWQCB Basin Plans in the near future. For the past several years the SWRCB has been in the process of developing statewide regulations for on-site wastewater treatment systems per AB 885. The key aspects of the proposed regulations include:

**Site Evaluation Practices.** The proposed regulations will mandate more thorough and consistent soil and site evaluation practices for all new and repair/replacement OWTS for verification of soil depth and groundwater levels. Current practices focus primarily on attaining minimum horizontal setbacks and determination of groundwater separation, not on determination of soil texture, structure or depth. Proposed definitions for soil (especially rock content and weathered bedrock) will require more thorough and extensive soil profile evaluations and stricter interpretations of suitability than under current practices.

**Operation and Maintenance (O&M) Manuals.** The proposed AB 885 regulations require the preparation of an O&M manual for all new and repair/replacement OWTS. This will require that the County adopt regulations or policies mandating the preparation and submission of an O&M manual for all new and repair/replacement OWTS. The County will also have responsibilities for reviewing and maintaining official copies of these documents.

**Septic Tank Risers and Effluent Filters.** Access risers to “near” grade and the use of effluent filters will be required under the proposed regulations. These requirements will apply to new standard systems as well as supplemental treatment systems, and for any tank replacements.

**Supplemental Treatment Systems.** The proposed regulations have minimum vertical separation requirements that will lead to increased use of supplemental treatment systems. Minimum vertical separation is the depth of continuous unsaturated, undisturbed earthen material between the bottom of the dispersal system and the top of the seasonal high groundwater level, impermeable strata, or bedrock.

**Dispersal System Siting and Design Criteria.** The proposed dispersal system siting and design requirements are generally consistent with and/or less restrictive than the current RWQCB Basin Plan. Many of the requirements are structured to allow for more latitude in the use of supplemental treatment to overcome soil depth/suitability constraints for OWTS. Based on the soil definitions in the proposed regulations, there is likely to be an increased need to specify supplemental treatment systems and shallow dispersal designs (including mounds) for sites that may have been permitted for conventional trench designs under current practices.

**Groundwater Quality and Septic Tank Monitoring.** The proposed AB 885 regulations will mandate new groundwater sampling and septic tank inspections requirements for new and existing OWTS. The proposed regulations do not explicitly require the County to enforce this requirement or to collect and maintain any of the results from sampling that is performed. However, as the local agency responsible for implementing the regulations, at a minimum, the County would be obligated to provide some level of oversight for these activities, the details of which would likely have to be specified in the RWQCB MOU or the Conditional Waiver from the SWRCB.

**Record Keeping.** The proposed requirements specify only that system owners maintain copies of the Record Plan and the O&M Manual for the OWTS. The County, as the implementing authority will also be required to collect, review and maintain records of these same items.

## **GLENN COUNTY GENERAL PLAN**

The Adopted General Plan includes policies related to sewer and onsite septic systems.

### *POLICIES:*

NRP-26 Discourage onsite sewage disposal systems in areas with high groundwater recharge potential and eliminate existing concentrations of septic tanks in such areas through construction of community sewage treatment and disposal systems.

CDP 48 Consider septic system and septage disposal limitations when determining areas suitable for new development not served by sewer.

CDP 113 Require new development within urban limit lines to connect to sewer and water services when available, and discourage installation of septic tanks in urban areas. When sewer and water services are not immediately available, commitments to serve in the future shall be obtained from service providers prior to development approval.

## **GLENN COUNTY ADMINISTRATIVE CODE CHAPTER 20.06 - SEWAGE DISPOSAL REGULATIONS**

Glenn County Administrative Code Chapter 20.06 includes requirements for sewage disposal and onsite septic system requirements including requirements for septic application, site evaluation, soil conditions, percolation testing, verification and monitoring and other site requirements and conditions.

### **ENVIRONMENTAL SETTING**

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On-site systems, commonly referred to as septic systems, are useful for handling the wastewater disposal needs of individual dwellings or commercial establishments for which connection to community facilities is not feasible. An on-site system consists of a septic tank that receives wastewater, allows the heavier solids to settle in the tank, and releases the remainder to an attached leach field. The leach field consists of underground perforated parallel lines through which water can seep into the surrounding soil. The solids which settled out of the wastewater in the septic tank must be periodically removed.

Septic tanks work well in areas of low density development where there is sufficient room to separate leach lines from potable water wells and lines. On-site systems are relatively inexpensive, easy to maintain, and contribute to water recharge in the area. However, on-site systems require certain soil conditions, topography, and water table conditions in order to work. If the proper conditions are not present, the leach field can become saturated and groundwater may become contaminated.

### **COMMUNITY SYSTEMS**

The communities of Orland, Willows, Hamilton City, Northeast Willows, and Parkway Estates are served by community systems for wastewater disposal and treatment, as described in greater detail below.

There are five communities in the County served by centralized wastewater disposal systems:

**Hamilton City CSD.** The Hamilton City CSD has 708 sewer connections. Of these 606 are residential, 29 are business, 3 are industrial, 6 are governmental, 8 are school and 56 are “other” connections.

The Hamilton City CSD wastewater treatment facilities are located southeast of Hamilton City (Assessor's Parcel Number 032-250-002-9). The wastewater treatment plant (WWTP) is governed by Waste Discharge Requirement Order No. 98-081 adopted by the California Regional Water Quality Control Board, Central Valley Region. The wastewater collection system has a capacity of 500,000 gpd. As specified in the California Regional Water Quality Control Board Central Valley Region, Order No. 98-081, the 30-day average dry-weather discharge is 500,000 gallons.

The wastewater treatment facility was constructed from 1966 to 1969 and started operation in 1969. At that time, the District constructed the stabilization ponds and discharged the treated wastewater to Dunning Slough. Later the District ceased discharging to the Slough and on March 26, 1976, the California Regional Water Quality Control Board revised the waste discharge requirements to prohibit discharges of waste from the facility to surface waters. On January 23, 1987, the Regional Water Quality Control Board updated the waste discharge requirements and included a limit on the 30- day average daily dry weather discharge flow to the ponds to 0.5 million gallons.

The wastewater treatment facility includes seven stabilization ponds designed to treat a maximum daily dry weather influent flow of 0.5 million gallons, with a dry weather influent rate of 0.222 to 0.230 million gallons per day. The ponds range in size from two to four acre-feet. Total pond storage, while providing a minimum vertical clearance of two feet from the surface of wastewater in the ponds to the top of pond levees (free board") is approximately 18 acre-feet.



**Northeast Willows CSD.** The Northeast Willows Community Services District was formed in 1965 and provides for the collection, treatment or disposal of sewage from the district and its inhabitants. However, the District only provides directly for the collection of wastewater, and wastewater treatment is provided by the City of Willows under a Joint Powers Agreement. The City of Willows owns the wastewater collection system within the City and the treatment and disposal system that provides sewerage service to the Northeast Willows CSD. The City provides or can contract for all maintenance, including routine inspection, rodding, balling, flushing, plugging, and the making of minor repairs, excluding replacement and installation of lines and pipes, to the entire sewage collection system, main trunk sewers and facilities. In practice, the City of Willows' contract staff provides collection and treatment, maintains and cleans the system, and inspects any new connections or upgrades. The CSD includes 300 residential sewer service connections within its service area.

The Northeast CSD wastewater treatment facilities are located at 1600 S. Tehama Street, Willows. The wastewater treatment plant (WWTP) is governed by Waste Discharge Requirement Order No. R5-2006-0009 adopted by the California Regional Water Quality Control Board, Central Valley Region. The WDR Order regulates the discharge of wastewater from the Willows WWTP to Agricultural Drain C and Glenn-Colusa Irrigation District Lateral 26-2, both are tributaries to the Colusa Basin Drain.

There are no waste discharge specifications specifically for the Northeast Willows CSD because the wastewater collected is treated by the City of Willows. The CSD has an agreement with Willows for wastewater treatment at the WWTP for up to 96,000 gallons per day, and the CSD currently sends approximately 48,000 gallons per day to the WWTP.<sup>2</sup>

**City of Orland.** The Orland wastewater collection system consists of 30 miles of sanitary sewer main and 400 sanitary sewer manholes. The sewer mains range in size from 6-inch diameter to 24-inch diameter vitrified clay and concrete pipe, with some PVC in recently developed areas. There are four sanitary sewer lift stations operating within the collection system. Each lift station serves an area of less than 20 acres.

The domestic wastewater treatment facility consists of four unlined evaporation ponds and a 44-acre irrigation field. The field is flood irrigated with wastewater following pond treatment an average of two times per week during the winter and every other week during the summer. The irrigation field has a capacity of 19.6 million gallons. The four domestic wastewater ponds were constructed in 1958 to accommodate an average flow of 2.13 million gallons per day (MGD) and a peak flow of 6.08 MGD. The domestic wastewater flow currently averages 0.72 million gallons per day, with a peak flow of 1.24 million gallons per day.

During the summer months, irrigation water is introduced into the sewer line to help control odors by keeping an adequate volume of water in the unlined ponds.

The industrial brine ponds were designed in 1983 to receive an average of 4.2 million gallons per year from surrounding processing facilities. The industrial class II surface impoundments consist of two lined evaporation ponds covering a total of 5.3 acres and have a total volume of 8 million gallons. Each pond is designed to receive 2.5 million gallons of wastewater per year, allowing for one pond to be dewatered and inspected annually while the other remains in service. Industrial wastewater has been segregated from the City of Orland's domestic wastewater since 1 October 1985. In 2009, the facility received a total industrial wastewater volume of 3.7 million gallons.

The class II surface impoundments are constructed with a single 30 mil PVC liner in 1985 and covered with 12 inches of soil. In 1995, a leachate collection and recovery system (LCRS) was installed within the existing soil cover material. The soil was then covered with a sand layer and a new 40 mil minimum Hypalon®

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<sup>2</sup> Phone Interview with Willows Community Services Director Steve Soeth 11/14/2019

(chlorosulfonated polyethylene) liner was placed over the sand layer. The combination of two synthetic liners with an intervening LCRS is an engineered alternative to the prescriptive requirements in Title 27.

Land use within 1,000 feet of the facility includes residential development, agriculture, and an airport (Orland Haigh Field Airport).

Population projections for Orland predict that by 2027 (the life of the revised General Plan), the population will be between 8,974 and 10,495. The wastewater treatment plant can support a population of approximately 12,000.

**City of Willows.** The City of Willows operates and maintains the sewer system consisting of gravity sewers and pumping stations to collect wastewater from residential and commercial customers. The collected wastewater is discharged to trunk sewers and interceptors owned and operated by the City of Willows and conveyed to the Willows Wastewater Treatment Plant for treatment.

The WWTP is owned and operated by the City and serves the population of Willows and the Northeast Willows Community Services District. The WWTP produces disinfected tertiary recycled water through extended aerated ponds, clarifiers, filtration, chlorine disinfection and dechlorination. There are 2,255 residential connections and 222 commercial/industrial connections.

The City entered into an agreement with Solar Power Partner, LP (SPP) in 2013 to provide solar power at the City's Wastewater Treatment Plant. Under the agreement SPP provided solar array equipment and the City provided the underlying real property for the solar array. The City will purchase the power generated by the array for a period of 20 years from SPP, with an option to take ownership of the array at the end of the 20-year period.

According to the Sewer Master Plan of 2008, the wastewater collection system consists of 29 miles of Vitrified Clay Pipe (VCP) and some Polyvinyl Chloride Pipe (PVC) and Asbestos Cement sewer mains ranging in size from four inches to eighteen inches in diameter with five small-capacity pump stations.

Water entering the collection system through defective cleanouts, joints and pipes, and manhole walls can be attributed to groundwater, commercial/industrial uses and storm runoff. Limited efforts have been completed to upgrade the system. Thus, infiltration and inflow (I&I) is becoming a problem to the system. Infiltration and inflow are significant in the piping tributaries to the Sycamore Lift Station according to the Sewer Master Plan

The original Wastewater Treatment Plant was constructed in 1948 and later upgraded in 1992. In 2007, the City of Willows completed a major upgrade to the wastewater treatment plant (WWTP) by increasing the treatment capability from secondary to tertiary quality effluent with a rated capacity of 1.2 mgd (million gallons per day). The treatment system includes influent screening, extended aeration (biolac system), activated sludge with two secondary clarifiers, nine continuous backwash sand filters, disinfection with sodium hypochlorite, dechlorination using sodium bisulfite injection, equalization and emergency storage ponds, and sludge storage lagoons. The WWTP currently has a daily dry weather average flow of approximately 0.650 million gallons per day (650,000 gallons per day) from all customers in Willows WWTP service area.



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### 3.3 STORMWATER AND DRAINAGE

Storm drainage services are provided by storm drain maintenance districts and a County Service Area has been formed in Glenn County to dispose of storm waters. For additional information related to flooding see Chapter 4.0 (Hazards, Safety and Noise) Section 4.4 (Flood Hazards).

#### REGULATORY FRAMEWORK

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##### *FEDERAL*

#### **CLEAN WATER ACT (CWA)**

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.

The California State Water Resources Control Board and RWQCBs enforce State of California statutes that 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 including the Sacramento River, and other waters in the Planning Area. In the Planning Area, the RWQCB is responsible for protecting surface and groundwater 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.

## **FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)**

Glenn County is a participant in the National Flood Insurance Program (NFIP), a Federal program administered by FEMA. Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 has adopted as a desired level of protection, an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of occurrence on the order of once in 100 years, although such a flood may occur in any given year. Communities are occasionally audited by the Department of Water Resources to insure the proper implementation of FEMA floodplain management regulations.

## **NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)**

National Pollutant Discharge Elimination System (NPDES) permits are required for discharges to navigable waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, oceans, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. NPDES permits are issued under the Federal Clean Water Act, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.).

The RWQCB issues these permits in lieu of direct issuance by the Environmental Protection Agency, subject to review and approval by the EPA Regional Administrator (EPA Region 9). The terms of these NPDES permits implement pertinent provisions of the Federal Clean Water Act and the Act's implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries, and anti-degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable so as to achieve the Clean Water Act's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the CWA.

These NPDES permits regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. NPDES permits are issued for five years or less, and therefore must be updated regularly. To expedite the permit issuance process, the RWQCB has adopted several general NPDES permits, each of which regulates numerous discharges of similar types of wastes. The SWRCB has issued general permits for stormwater runoff from construction sites statewide. Stormwater discharges from industrial and construction activities can be covered under these general permits, which are administered jointly by the SWRCB and RWQCB.

## *STATE*

## **DEPARTMENT OF WATER RESOURCES**

The Department of Water Resources' (DWR) major responsibilities include preparing and updating the California Water Plan to guide development and management of the State's water resources, planning, designing, constructing, operating, and maintaining the State Water Resources Development System, protecting and restoring the Sacramento-San Joaquin Delta, regulating dams, providing flood protection, assisting in emergency management to safeguard life and property, educating the public, and serving local water needs by providing technical assistance. In addition, the DWR cooperates with local agencies on water resources investigations; supports watershed and river restoration programs; encourages water conservation; explores conjunctive use of ground and surface water; facilitates voluntary water transfers; and, when needed, operates a State drought water bank.

## **CALIFORNIA WATER CODE**

California’s primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Division 7 of the California Water Code) (Porter-Cologne Act). The Porter-Cologne Act grants the SWRCB and each of the RWQCBs power to protect water quality, and is the primary vehicle for implementation of California’s responsibilities under the Federal Clean Water Act. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a Water Quality Control Plan (Basin Plan) for its region. The regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

## **WATER QUALITY CONTROL PLAN (BASIN PLAN) FOR THE CENTRAL VALLEY REGION**

The Water Quality Control Plan for the Central Valley Region (Basin Plan) includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The term “water quality standards,” as used in the Federal Clean Water Act, includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain the water quality standards.

The RWQCB regulates waste discharges to minimize and control their effects on the quality of the region’s ground and surface water. Permits are issued under a number of programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. The Basin Plan reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code and the Clean Water Act.

## **STATE WATER RESOURCES CONTROL BOARD (STATE WATER BOARD) STORM WATER STRATEGY**

The Storm Water Strategy is founded on the results of the Storm Water Strategic Initiative, which served to direct the State Water Board’s role in storm water resources management and evolve the Storm Water Program by a) developing guiding principles to serve as the foundation of the storm water program, b) identifying issues that support or inhibit the program from aligning with the guiding principles, and c) proposing and prioritizing projects that the Water Boards could implement to address those issues. The State Water Board staff created a strategy-based document called the Strategy to Optimize Management of Storm Water (STORMS). STORMS includes a program vision, missions, goals, objectives, projects, timelines, and consideration of the most effective integration of project outcomes into the Water Board’s Storm Water Program.

*LOCAL***GLENN COUNTY GENERAL PLAN**

The existing Glenn County General Plan identifies the following goals and policies related to stormwater and/or flood control:

*GOALS:***PSG-5 Protection and reduction of loss of life and personal property due to flooding.***POLICIES:*

PSP-38 Recognize the special status of lands located within the designated floodways adopted by the State Reclamation Board.

PSP-39 Support efforts to revise the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for the areas around Hamilton City, Willows and Orland in order to improve their accuracy.

PSP-40 Endeavor to avoid areas subject to flooding when considering approval of new development.

PSP-41 Require the installation of storm drain and other flood protection/prevention improvements as a condition of all new development approvals.

PSP-42 Encourage the formation of a countywide service area or individual storm drain maintenance districts to finance and construct needed flood control improvements.

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**ENVIRONMENTAL SETTING**

The Glenn County Public Works Agency manages several special drainage districts. These special districts are for flood control, stream cleaning, and include storm drain maintenance and construction.

**STORM DRAINAGE SYSTEM**

Storm drainage services are provided by storm drain maintenance districts and a County Service Area that has been formed in Glenn County to dispose of storm waters. These entities are described below.

The special districts are designed to provide for the control of the flood and storm water flows within the designated areas of the special districts as well as countywide to protect the land, properties, facilities, and people within the county from damage caused by storm and flood waters. By maintaining a healthy drainage system, the County is able to preserve such waters for beneficial uses such as water supply, groundwater percolation, recreation and the environment.

**Storm Drain Maintenance District #1**

Storm Drain Maintenance District #1 has an independent Board of Directors and staff, and provides service to an area southeast of Orland. The District maintains a natural drain (which runs southeast through the District) as needed.

### **North Willows County Service Area (formerly Storm Drain Maintenance District #2)**

North Willows County Service Area provides service to an area northeast of Willows. This CSA, which is administered by the County Public Works Department, maintains natural drains and a pipeline system with a pump. The CSA has three long-range plans under consideration:

- Diversion of some drainage west of I-5.
- Development of standby power for the pumps.

### **Storm Drain Maintenance District #3**

Storm Drain Maintenance District #3 is governed by the Board of Supervisors and provides service to an area located between the Kanawha Water District and the Willows Airport. The District is administered by the County Public Works Department, which maintains a natural drain that traverses the area. The water then drains east across the south end of the Willows Airport. The Kanawha Water District cooperates with the District to maintain the drain.

### **WILLOWS PUBLIC WORKS DIVISION**

The City of Willows Public Works Division is responsible for operating, maintaining, and improving the City's drainage and stormwater infrastructure, and facilities. Key areas of responsibility include the maintaining and improvements to streets, sewer, and storm drains. The City currently does not have an adopted storm drain master plan.

### **COLUSA BASIN DRAINAGE DISTRICT**

The CA State Legislature formed the Colusa Basin Drainage District in 1987 to address flooding and winter drainage, irrigation drainage and subsidence problems in the Colusa Basin Watershed. In September 2000, Congress enacted the "Colusa Basin Watershed Integrated Resources Management Act" (PL 106-566, Title VI) authorizing federal participation in development of a flood control and environmental restoration program for the watershed. The District's Service Area includes 1,036,000 acres (22,160 federal/1,013,842 non-federal) of lands within the counties of Glenn (District #1), Colusa (District #2), and Yolo (District #3) with each jurisdiction having District representation.

### **AREA-SPECIFIC DRAINAGE MASTER PLANS**

**City of Orland Storm Drain Master Plan (2009).** The City of Orland maintains five storm drain detention basins within the city limits. The primary storm drainage system collects and transmits storm water from residential and commercial properties within the city limits to the Lely Aquatic Park basin. The other four detention basins provide storage for individual developments. The City adopted a Storm Water Master Plan in 2009 to provide planning for current and future development within the Planning Area of the City of Orland.

### **REGIONAL FLOOD CONTROL**

**Central Valley Flood Protection Plan (2012/2017 Update).** The Central Valley Flood Protection Plan (CVFPP) was adopted by the Central Valley Flood Protection Board in 2012 and updated in 2017. The CVFPP is a guide to managing flood risk in the Central Valley and it will be updated every five years. The goal of the CVFPP is to improve flood risk management with the following supporting goals:

- Improve operations and maintenance

- Promote ecosystem functions
- Improve institutional support
- Promote multi-benefit projects

Flood infrastructure is to be planned and managed centrally, but O&M, flood response, and infrastructure implementation can be implemented either regionally or locally. The CVFPP promotes regional governance via local consolidation and collaboration among partnering agencies.

**Reclamation Districts.** Reclamation districts are governed by a board of trustees that are appointed by the County Board of Supervisors or are elected directly from the populations they serve (§50650). The board of trustees can consist of three, five or seven members and have the power to do all things necessary or convenient for accomplishing the purposes for which the reclamation district was formed (50900). The owners of the majority of acreage in the district may vote to adopt governing bylaws (§50370). A district may, by resolution of the board, provide a procedure for the collection charges and fees, by way of the tax bills of the county or counties in which such district is located (§50904).

There are four reclamation districts in Glenn County, which are:

- Reclamation District No. 2047
- Reclamation District No. 2106
- Reclamation District No. 2140
- Reclamation District No. 1004

Reclamation District No. 2106 is a multicounty district, extending into Butte County. The District is approximately 49,549 acres in size, with approximately 35,507 acres located in Glenn County and approximately 14,402 acres located in Butte County. The District consists of approximately 439 parcels, 408 of which are found in Glenn County and 31 of which are located in Butte County. The Glenn Local Agency Formation Commission is the principal county LAFCo for Reclamation District No. 2106 as the majority of the parcels, along with the majority of the land value, lies within Glenn County.

Reclamation Districts 1004 and 2047 are also multicounty districts. Only a small portion of Reclamation District No. 1004, consisting of six parcels, totaling approximately 468 acres in area, is located within Glenn County. The remaining portion of Reclamation District No. 1004 is within Colusa County. As the majority of the assessed land value of Reclamation District No. 1004 is within Colusa County, the Colusa Local Agency Formation Commission is the principal county LAFCo for this District. As the principal county LAFCo, Colusa LAFCo is the agency that would act on annexations, detachments, SOI modifications and SOI Plans, and municipal services reviews for Reclamation District No. 1004. Likewise, a large portion of Reclamation District No. 2047, consisting of approximately 1,569 parcels totaling approximately 95,605 acres in size, is located within Glenn County. Even though a large portion of Reclamation District No. 2047 is within Glenn County, Colusa LAFCo is the principal county LAFCo for this district.

**Levee Districts.** Levee districts are governed by a three-member board of directors that are appointed by the County Board of Supervisors or are elected directly from the populations they serve. Levee districts may acquire by purchase, condemnation, gift or other action, drains, canals, sluices, bulkheads, watergates, levees, embankments, pumping plants and pipelines and to purchase, construct or otherwise acquire, maintain and keep in repair all things reasonable or convenient for the protection of the lands of the district from overflow and for the purpose of conserving or adding water to the sloughs and drains in the district. The district may

co-operate and contract with the United States, the State of California, or any department or agency of either, in order to accomplish any of the purposes of the district.

There are three levee districts in Glenn County, which are:

- Levee District No. 1
- Levee District No. 2
- Levee District No. 3

**Levee District No. 1** is located north and south of the unincorporated community of Glenn along the west side of the Sacramento River. The District consists of approximately 207 parcels and totals approximately 9,630 acres in size. The predominant land use within the District boundaries is agricultural, along with some agricultural processing facilities and scattered residential uses. The majority of the district is zoned for agricultural uses. The District has an estimated population of 300. The District is responsible for maintenance of the levee located on the west side of the Sacramento River, from the north border of Levee District No. 2 northwards for approximately 12 miles.

**Levee District No. 2** is located in the Four Corners area of southeast Glenn County, along the west side of the Sacramento River. The District consists of approximately 130 parcels and totals approximately 5,620 acres in size. The predominant land use within the District boundaries is agricultural, along with some agricultural processing facilities and scattered residential uses. The majority of the district is zoned for agricultural uses. The District has an estimated population of 115. The District is responsible for maintenance of the levee located on the west side of the Sacramento River, from the Colusa County border northwards for approximately 4.9 miles.

**Levee District No. 3** is located in the southeast Glenn County area, east of the Sacramento River, and includes the unincorporated community of Butte City. The District consists of approximately 247 parcels and totals approximately 12,820 acres in size. The predominant land use within the District boundaries is agricultural, along with some agricultural processing facilities. The unincorporated community of Butte City, which is developed with approximately 40 dwellings, is located within the District. The majority of the district is zoned for agricultural uses, although the Butte City area is zoned for single-family residential uses. The District has an estimated population of 115. The District is responsible for maintenance of the levee located on the east side of the Sacramento River, from the Colusa County border northwards for a distance of approximately 12 miles.



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### 3.4 SOLID WASTE

There are four types of solid waste generated in Glenn County: residential waste, commercial waste, industrial waste, and natural resource byproducts. Most of the waste brought to landfills is residential waste. Natural resource byproducts include rice stubble and straw, manures, gas well muds, cannery waste, and waste from prune dehydrators. Rice stubble and straw is usually burned or disked into the land, while manures are often used as fertilizer.

#### KEY TERMS

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**Class I landfill:** A landfill that accepts for disposal 20 tons or more of municipal solid waste daily (based on an annual average); or one that does not qualify as a Class II or Class III municipal solid waste landfill.

**Class II landfill:** A landfill that (1) accepts less than 20 tons daily of municipal solid waste (based on an annual average); (2) is located on a site where there is no evidence of groundwater pollution caused or contributed by the landfill; (3) is not connected by road to a Class I municipal solid waste landfill, or, if connected by road, is located more than 50 miles from a Class I municipal solid waste landfill; and (4) serves a community that experiences (for at least three months each year) an interruption in access to surface transportation, preventing access to a Class I landfill, or a community with no practicable waste management alternative.

**Class III landfill:** A landfill that is not connected by road to a Class I landfill or a landfill that is located at least 50 miles from a Class I landfill. Class III landfills can accept no more than an average of one ton daily of ash from incinerated municipal solid waste or less than five tons daily of municipal solid waste.

**Transfer station:** A facility for the temporary deposition of some wastes. Transfer stations are often used as places where local waste collection vehicles will deposit their waste cargo prior to loading into larger vehicles. These larger vehicles will transport the waste to the end point of disposal or treatment.

#### REGULATORY FRAMEWORK

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##### *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 current Act governs the management of solid and hazardous waste and underground storage tanks (USTs). RCRA was an amendment to the Solid Waste Disposal Act of 1965. RCRA has been amended several times, most significantly 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 the Environmental Protection Agency (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 management program is substantially equivalent to, consistent with, and no less stringent than the Federal program.

*STATE***CALIFORNIA INTEGRATED WASTE MANAGEMENT ACT (AB 939 AND SB 1322)**

The California Integrated Waste Management Act of 1989 (AB 939 and SB 1322) 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% by 1995 and 50% by 2000. The purpose of AB 939 and SB 1322 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.

**AB 341 (75 PERCENT SOLID WASTE DIVERSION)**

AB 341 requires CalRecycle to issue a report to the Legislature that includes strategies and recommendations that would enable the state to divert 75 percent of the solid waste generated in the state from disposal by January 1, 2020, requires businesses that meet specified thresholds in the bill to arrange for recycling services by January 1, 2012, and also streamlines various regulatory processes.

**SB 1374 (CONSTRUCTION AND DEMOLITION WASTE MATERIALS DIVERSION)**

Senate Bill 1374 (SB 1374), Construction and Demolition Waste Materials Diversion Requirements, requires that jurisdictions summarize their progress realized in diverting construction and demolition waste from the waste stream in their annual AB 939 reports. SB 1374 required the CIWMB to adopt a model construction and demolition ordinance for voluntary implementation by local jurisdictions.

**AB 2176 (MONTANEZ, CHAPTER 879, STATUTES OF 2004)**

This law requires the largest venue facilities and events (as defined) in each city and county to plan and implement solid waste diversion programs, and annually report the progress of those upon the request of their local government. In turn, local jurisdictions must report to the CIWMB waste diversion information for the top 10 percent of venues and events by waste generation.

A large event is defined as:

1. Serves an average of more than 2,000 individuals per day of operation (both people attending the event and those working at it—including volunteers—are included in this number); and
2. Charges an admission price or is run by a local agency.

The bill specifically includes public, nonprofit, or privately-owned parks, parking lots, golf courses, street systems, or other open space when being used for an event, including, but not limited to, a sporting event or a flea market in addition to events that meet both of the above.

A large venue is defined as:

- A permanent facility that annually seats or serves an average of more than 2,000 individuals within the grounds of the facility per day of operation (both people attending the event and those working at it—including volunteers too—are included in this number).

Venues include, but are not limited to airports, amphitheaters, amusement parks, aquariums, arenas, conference or civic centers, fairgrounds, museums, halls, horse tracks, performing arts centers, racetracks, stadiums, theaters, zoos, and other public attraction facilities.

### **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 (§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. The model ordinance requires that any new development project, for which an application is submitted on or after September 1, 1994, include “adequate, accessible, and convenient areas for collecting and loading recyclable materials.” For subdivisions of single family detached homes, recycling areas are required to serve only the needs of the homes within that subdivision.

### **CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN)**

CALGreen requires the diversion of at least 50 percent of the construction waste generated during most new construction projects (CALGreen Sections 4.408 and 5.408) and some additions and alterations to nonresidential building projects.

#### *LOCAL*

### **GLENN COUNTY CODE, CHAPTER 7.080**

Chapter 7.080 of the County Code regulates the management of garbage, recyclables, and other wastes. Chapter 7.080 sets forth solid waste collection, disposal, and diversion requirements for residential, commercial, industrial, and other uses.

### **GLENN COUNTY GENERAL PLAN**

The existing Glenn County General Plan Public Safety Element includes the following goals and policies related to solid waste:

#### GOAL:

**PSG-8: Reduce the County’s reliance on landfilling, reduce the volume of the solid waste stream, increase recovery of materials, and dispose of remaining waster in the most environmentally and fiscally responsible manner available.**

#### POLICIES:

PSP-57 Achieve maximum waste diversion through the expansion and/or development of cost-effective recycling and source reduction programs tailored for both rural and urbanized jurisdictions in the county.

PSP-58 Extend the useful life of the existing landfill site

PSP-59 Formulate alternatives to the current facilities for the collection and disposal of solid waste based on capacity and use of transfer stations.

PSP-60 Establish compatibility standards for landfill, recycling and composting facilities.

PSP-61 Develop an effective public information program aimed at achieving maximum participation, diversion of materials and preservation of landfill space.

PSP-62 Promote reduction of the amount of packaging material generated by local businesses through use of alternative materials.

PSP-63 Support State and national efforts that establish incentives for packaging to meet certain recycled content or post-consumer percentage.

PSP-64 Investigate the types of local incentives that can be implemented to promote business/industry source reduction and recycling activities.

PSP-65 Assure that local plans and ordinance accommodate and facilitate the siting of recycling facilities, composting facilities, transfer stations, and pyrolysis facilities.

PSP-66 Encourage the establishment of commercial recycling activities within the county.

PSP-67 Develop a regional plan, with the cities of Willows and Orland for the siting and development of a private sector-operated yard and leaf material composting facility.

PSP-68 Expand leaf collection programs to the agricultural and farming sector.

PSP-69 Reduce the volume of used tires disposed of in Glenn County.

PSP-70 Retain all existing Glenn County solid waste disposal facilities during the short-term and medium-term planning periods for the *Source Reduction and Recycling Elements*.

PSP-71 Increase the recovery rate for cans and bottles that have redemption value.

PSP-72 Increase recovery of corrugated paper and newspaper currently in the waste system.

PSP-73 Identify potential sites for septage disposal, and gas well drilling mud disposal.

## WASTE COLLECTION SERVICES

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Residential and commercial garbage pickup is provided by Waste Management of Glenn County. Garbage picked up from areas are taken to the Glenn County Landfill and Glenn County Transfer Station. Residential trash is collected every week, while recycle and yard waste are collected every other week on an alternating basis.

## WASTE DISPOSAL FACILITIES

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Solid waste in Glenn County is collected by franchised haulers, with rates set by the Board of Supervisors for the unincorporated area and by the City Councils in the cities of Willows and Orland, and brought to landfill. The only Waste Disposal Facility in Glenn County is located at the West end of County Road 33, near Artois. In order to maximize the life of the landfill, staff operate a variety of recycling and diversion programs that have successfully reduced the amount of refuse by nearly 50% since 1995. The Glenn County Public Works Department, Solid Waste & Recycling Division is charged with the task of operating the landfill site as well as compliance with all Federal, State and local regulations associated with the operation of a landfill. The landfill is operated by the County under a Joint Powers Agreement with the cities of Orland and Willows. According to the Glenn County Integrated Waste Management Plan (GCIWMP), the site is required to be capped and closed

by 2020, when a new transfer station will be constructed. No new facilities are planned in the county, and it is anticipated that additional land will be purchased in the immediate vicinity of the existing site for expansion purposes.

After the waste is collected, the Glenn County Landfill Transfer Station is used to process and ship the material to its final destination. The Glenn County Transfer Station is owned and operated by Glenn County and also serves most of the county. Recyclables are processed at a Transfer Station on site at the Landfill where they are loaded onto larger trucks and taken to Sacramento Recycling.

The Glenn County Health Department, acting as the Local Enforcement Agency (LEA), is certified by the California Integrated Waste Management Board to enforce state laws and regulations at solid waste facilities within its jurisdiction. The Glenn County Landfill operates under a Solid Waste Facility Permit issued by the Glenn County Health Department. The operation and design of the facility are described in a Report of Disposal Site Information (RDSI).

### **GLENN COUNTY LANDFILL SITE & TRANSFER STATION**

Glenn County owns and operates the 195+ acre Glenn County Landfill Site, located on County Road 33, west of Artois. It is a Class III landfill (a facility at which protection is provided to water quality from municipal, industrial and agricultural wastes) with a maximum permitted capacity of 2,400,000 cubic yards. This site receives agricultural waste, construction and demolition waste, dead animal, industrial, inert, mixed municipal waste, and tires.

### **HAZARDOUS WASTE DISPOSAL**

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According to the COSWMP, opportunities for resource recovery are limited in Glenn County because most materials must be hauled to locations outside the county. Hazardous waste has been described, quantified and projected in the Glenn County Hazardous Waste Management Plan (CHWMP). There are currently no industries in the county authorized to provide onsite treatment of hazardous wastes, and there are no hazardous waste treatment, storage or disposal facilities located in Glenn County. The two major transportation corridors through the county, Interstate 5 and the railroad, as well as the other State highways, are routes for movement of large quantities of hazardous materials.

In February 2006, it became illegal for residents and small businesses to dispose of universal waste in the trash due to a decision by the Department of Toxic Substance Control and the California Integrated Waste Management Control. Universal waste is a type of hazardous waste containing mercury or other heavy metals that can release neurotoxins into the environment if not disposed of properly. Almost any product with a circuit board is considered universal waste. Other universal waste items include batteries, motor oil, mercury thermostats, fluorescent lights, cathode ray tube devices (computer monitors, televisions), and mercury thermometers. These items are banned from landfills and require special handling. The Glenn County Solid Waste & Recycling host free collection and disposal events to safely collect and dispose of these items and other E-waste, tires, and household hazardous waste.

### **SOLID WASTE GENERATION RATES AND VOLUMES**

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The California Department of Resources Recycling and Recovery (CalRecycle) tracks and monitors solid waste generation rates on a per capita basis. Per capita solid waste generation rates and total annual solid waste disposal volumes for Glenn County between 2014 and 2018 are shown in Table 3.4-1 below.

**TABLE 3.4-1: SOLID WASTE GENERATION RATES**

YEAR	WASTE GENERATION RATE (LBS/PERSON/DAY)	POPULATION	TOTAL DISPOSAL TONNAGE (TONS/YEAR)
2014	3.9	28,465	20,236
2015	3.8	28,530	20,038
2016	4.2	28,604	21,758
2017	3.8	28,694	20,046
2018	4.4	28,762	23,232

SOURCE: CAL RECYCLE. ACCESSED JUNE 2019.

As shown in the Table 3.4-1 above, the per capita waste generation rate fluctuated between 3.8 and 4.4 lbs/person/day over the 5-year (2014-2018) period, while the total annual disposal tonnage in Glenn County increased by 2,996 tons over the 2014 to 2018 time span. With the passage of SB 1016, per capita disposal rate is used to determine the diversion progress of a county and not the jurisdictional diversion rates. Therefore, a population increase resulting in the generation of more overall county waste does not affect the jurisdiction's ability to meet its waste goals. The County's waste disposal rate targets are shown in Table 3.4-2.

**TABLE 3.4-2: GLENN COUNTY WASTE DISPOSAL RATE TARGETS (POUNDS/DAY)**

YEAR	POPULATION		EMPLOYMENT	
	TARGET	ANNUAL	TARGET	ANNUAL
2014	4.8	3.9	19.4	13.1
2015	4.8	3.8	19.4	12.6
2016	4.8	4.2	19.4	13.4
2017	4.8	3.8	19.4	12.3

SOURCE: CAL RECYCLE. ACCESSED JUNE 2019.

The County's target rate on the above table represents a 50% diversion rate. In accordance with AB 939, which required counties and municipalities to aggressively pursue MSW source reduction and recycling, the County continues to meet and exceed all AB 939 goals. The various solid waste management actions adopted by the County include, but are not limited to, recycling and yard waste programs for residents and businesses, public education and public outreach awareness events, and school recycling and composting.

## LANDFILL CAPACITY

The Glenn County Landfill Site is permitted to accept 1,400 tons of solid waste per week, not to exceed 200 tons per day. The average daily disposal is approximately 64 tons per day. The allotted disposal area is 83 acres, and it is designed to hold 2,400,000 cubic yards of inert or designated wastes. The maximum depth of the landfill is 192 feet below mean sea level and the permitted height is no greater than 342 feet above mean sea level. The remaining capacity is 866,521 cubic yards, which is expected to be capped and closed by 2020. Currently Glenn County is proposing to develop a new Glenn County Solid Waste Conversion Facility (GCSWCF). The Project would include the construction and operation of a municipal solid waste, materials recovery facility, transfer station, and anaerobic digestion facility. These facilities and associated facilities, equipment and operations would be used to manage municipal solid waste from Glenn County and potentially from the City of Chico. The Glenn County landfills are summarized in Table 3.1-4.

**TABLE 3.4-3: GLENN COUNTY LANDFILL SUMMARY**

LANDFILL	LOCATION	MAXIMUM DAILY THROUGHPUT (TONS/DAY)	REMAINING CAPACITY (CUBIC YARDS)	ANTICIPATED CLOSURE DATE
Glenn County Landfill	Artois	200	866,521	2020

*SOURCE: CAL RECYCLE. ACCESSED JUNE 2019.*

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## **3.5 ELECTRICITY AND NATURAL GAS**

### **REGULATORY FRAMEWORK**

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#### *STATE*

#### **PUBLIC UTILITIES COMMISSION**

The California Public Utilities Commission (PUC) is the primary State agency that regulates privately owned public utilities in California. These utilities include telecommunications, electricity, natural gas, water, railroad, rail transit, and passenger transportation companies. A primary role of the PUC is to authorize utility rate changes. It also establishes service standards and safety rules, monitors the safety of utility and transportation operations, prosecutes unlawful marketing and billing activities, and oversees the merger and restructure of utility corporations.

#### **BIOENERGY ACTION PLAN – EXECUTIVE ORDER #S-06-06**

Executive Order #S-06-06 establishes targets for the use and production of biofuels and biopower, and directs State agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The executive order establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20% of its biofuels within California by 2010, 40% by 2020, and 75% by 2050. The executive order also calls for the State to meet a target for use of biomass electricity, including biomass cogeneration facilities.

#### **SENATE BILL 14 AND ASSEMBLY BILL 64**

Prior to the passage of SB 14 and AB 64 in 2009, California law required investor-owned utilities (IOUs) and energy service providers (ESPs) to increase their existing purchases of renewable energy by 1% of sales per year such that 20% of their retail sales, as measured by usage, are procured from eligible renewable resources (including biomass cogeneration) by December 31, 2010. This is known as the Renewable Portfolio Standard (RPS).

SB 14 and AB 64 require IOUs, POUs, and ESPs to increase their purchases of renewable energy such that at least 33% of retail sales are procured from renewable energy resources by December 31, 2020. For IOUs and ESPs, this is required only if the PUC determines that achieving these targets will result in just and reasonable rates.

#### **TITLE 24**

Title 24, Part 6, of the California Code of Regulations is also known as California's Energy Efficiency Standards for Residential and Nonresidential Buildings. Title 24 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. The 2008 Energy Efficiency Standards went into effect on January 1, 2010. Title 24, Part 11, of the California Code of Regulations establishes the California Green Building Standards Code (CalGreen). Initially, the code requirements were voluntary; however, CalGreen became mandatory in 2011. CalGreen addresses five areas of green building: 1) planning and design, 2) energy efficiency, 3) water efficiency and conservation, 4) material conservation and resources efficiency, and 5) environmental quality. The mandatory requirements are separated into non-residential and residential projects. CalGreen also includes two optional tiers: Tier 1 and Tier 2. The tiers employ higher thresholds that jurisdictions may adopt or that projects may meet voluntarily.

## EXISTING SETTING

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The Pacific Gas and Electric Company (PG&E) provides electrical and natural gas service to residences and businesses throughout Glenn County. As a private utility, PG&E has a service area that covers most of northern and central California. PG&E generates electric power from many sources, including hydroelectric powerhouses, a nuclear power plant (Diablo Canyon) and a few small fossil-fired power plants. PG&E also purchases power from independent power producers; generation sources from these producers can range from large fossil power plants to smaller renewable and cogeneration plants. After the power is produced or bought, it goes into PG&E's electric transmission and distribution systems to get to the homes and businesses of PG&E's customers.

Infrastructure to deliver electricity and natural gas is currently in place. PG&E generally can provide these services to newer development on request. However, some residences in the County, particularly in the more rural areas, may also heat their residences using propane, generally stored in individual tanks and delivered by propane companies.

### **PG&E STONY GORGE HYDROELECTRIC DAM**

The Stony Gorge Hydroelectric Dam is located on approximately 17 acres approximately 1 mile south of the community of Elk Creek, 18 miles west of the City of Willows and 17 miles west of I-5. The site is accessed by County Road 306, currently providing access to the PG&E powerhouse station that is located to the west. Stony Gorge is a hydroelectric dam producing a nominal 2,171 megawatts of electricity, with a Hydraulic Turbine (conventional) system. The concrete flat-slab buttress dam has a height of 153 feet and 868 feet long at its crest. Structurally it is a relatively early example of an Ambursen-type dam, using contraction joints between all face slabs and buttresses for stability. It impounds Stony Creek for irrigation storage and flood control. Along with the East Park Dam about fifteen miles upstream, it is part of the Orland Project in the Sacramento valley, one of the Bureau of Reclamation's first generation of water projects. The dam is owned by the Bureau and is operated by the local Orland Unit Water Users' Association. The reservoir it creates, Stony Gorge Reservoir, has a water surface of 1,280 acres, a shoreline of about eighteen miles, and a maximum capacity of 58,500 acre-feet. Construction on the project was completed in April, 1928.

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## 3.6 PUBLIC SAFETY SERVICES

This section addresses the provision of public safety services in Glenn County, including fire protection, law enforcement, and other local safety provisions.

### REGULATORY FRAMEWORK

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#### *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.

The State of California passed legislation authorizing 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. Non-compliance with SEMS could result in the State withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster.

#### **EMERGENCY RESPONSE/EVACUATION PLANS**

The State of California passed legislation authorizing 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. Non-compliance with SEMS could result in the State withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster.

#### **CALIFORNIA FIRE PROTECTION CODE**

The California Fire Code contains regulations relating to construction and maintenance of buildings and the use of premises. Topics addressed in the Code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions to protect and assist first responders, industrial processes, and many other general and specialized fire safety requirements for new existing buildings and premises.

##### *Uniform Fire Code*

The Uniform Fire Code with the State of California Amendments contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the California Fire Code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The Fire Code contains specialized technical regulations related to fire and life safety.

##### *California Health and Safety Code*

State fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code. This includes regulations for building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

### *NFPA 1710*

The NFPA 1710 Standards are applicable to urban areas and where staffing is comprised of career Firefighters. According to these guidelines, a career fire department needs to respond within six minutes, 90 percent of the time with a response time measured from the 911 call to the time of arrival of the first responder.

The standards are divided as follows:

- Dispatch time of one minute or less for at least 90 percent of the alarms
- Turnout time of one minute or less for EMS calls (80 seconds for fire and special operations response)
- Fire response travel time of four minutes or less for the arrival of the first arriving engine company at a fire incident and eight minutes or less travel time for the deployment of an initial full alarm assignment at a fire incident
- Eight minutes or less travel time for the arrival of an advanced life support (ALS) (4 minutes or less if provided by the fire department)

### *LOCAL*

#### **COUNTY EMERGENCY RESPONSE/EVACUATION PLANS**

Glenn County is responsible for emergency response and evacuation plans within the unincorporated areas of the county. The Glenn County Sheriff's Department operates the County Office of Emergency Services.

#### **GLENN COUNTY CODE**

The Glenn County Code, Master Fee Schedule includes development impact fees to fund public facilities, including fire and police services.

#### **GLENN COUNTY GENERAL PLAN**

The existing Glenn county General Plan has the following Policies related to Fire Protection:

GOAL:

**PSG-2. Protection and enhancement of the quality of life by reducing the loss of life and personal property due to fire.**

POLICIES:

PSP-9 Continue to support the County's volunteer fire forces and offer incentives for continued participation.

PSP-10 Maintain existing fire services levels and not allow their deterioration.

PSP-11 Determine the impact proposed development will have on the provision of fire protection services, and ensure that the established level of service is maintained.

PSP-12 Regularly review and evaluate fire district boundaries to determine if the existing service areas are the most efficient and cost-effective.

PSP-13 Establish as a priority adequate funding and fire fighting personnel for those areas targeted for growth.

PSP-14 Encourage fire districts to work with the county to require new development to pay its fair share for the provision of new fire stations, equipment, personnel and fire suppression improvements necessary to provide adequate fire protection services.

PSP-15 Actively involve fire protection personnel in land use planning decisions.

PSP-16 Require new development to be designed with fire protection and prevention in mind.

PSP-17 Apply contemporary fire prevention standards to all development.

PSP-18 Evaluate the creation of urban area fire departments for the Willows and Orland areas which would serve both the developed areas and developing areas within established urban limit lines.

PSP-19 Study the use of mutual aid agreements or memoranda of understanding for structural as well as wildland protection in areas currently under California Department of Forestry and U.S. Forest Service Jurisdiction.

PSP-20 Consider fire risk and hazard zones when approving residential development in areas subject to potential wildland fires.

PSP-21 Require that all community water systems serving new development meet or exceed Glenn County minimum standards for provision of water for peakload demands and required fire flows.

PSP-22 Comply with the State of California Fire Safety Regulations for the State Responsibility Area located within Glenn County.

PSP-23 Assign house numbers for all structures within the county.

PSP-24 Communicate the Emergency Response Plan to all public safety agencies when reviewing future development proposals throughout the county.

PSP-25 Encourage development of educational programs that will increase public awareness of fire safety and emergency response planning.

PSP-26 Periodically update the emergency Response Plan.

PSP-27 Recognize the autonomy of individual fire districts within the county.

## FIRE PROTECTION SERVICES

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Fire protection in Glenn County is provided by twelve individual fire districts (including the cities of Willows and Orland), the California Department of Forestry (CDF), and the U.S. Forest Service. On a seasonal basis, protection is also provided by the California Department of Forestry (CDF) in the unincorporated foothill and rural areas. In the areas covered by the CDF that are also served by a fire district, both respond to fires during the fire season (approximately May 1 to November 1). Fire departments in Glenn County may be staffed with paid professional firefighters, volunteers, or a combination of the two. Professional fire services in California are organized around a central command with response units, known as fire companies, geographically dispersed throughout Glenn County. Glenn County Volunteer Fire Departments are organized with a similar structure or as independent Glenn County Fire departments and districts with their own fire company.

In an emergency situation, 911 calls are received at a designated public safety answering point (PSAP). The Glenn County PSAP routes the call to the appropriate dispatch agency, which coordinates the Glenn County Fire Dept response. The responding Fire House may be determined based on geographic location or the resource needed for the call, such as an aerial ladder, fire hose, fire truck, water pumper, tanker truck, brush fire vehicle, rescue vehicle, or paramedic emergency services. In many cases, multiple Fire Stations and fire engines are dispatched to the emergency.

Fire prevention education is part of fire protection services under the authority of the Office of the State Fire Marshal. Fire prevention involves the enforcement of the Glenn County and California Fire Code and is closely associated with the building code and building permitting process. The acting Fire Marshal, who is contracted by the Community Development Services Agency, is involved in the plan review process for new construction or renovation projects and is responsible for ensuring that Fire Code requirements are met before signing off on design plans. Other common fire prevention efforts include educational programs in Glenn County schools, public information campaigns, smoke detector distribution programs, and outreach at public events. The Glenn County Fire Marshal also investigates structure fires to determine their causes.

The incidence of fire in the county is relatively low, particularly on the valley floor. The greatest hazards are in the forest area, which generally fall under the jurisdiction of state and federal agencies. The greatest threat of fire occurs annually during the months from June through October due to dry conditions and summer heat. Each summer, the CDF and U.S. Forest Service increase their staff in anticipation of brush and forest fires.

The rural fire protection districts are responsible for structural and wildfire protection as well as medical emergencies within their respective districts. Response times can range from one minute in the cities of Willows and Orland to more than 20 minutes in the rugged mountain areas.

Each fire protection district earns a rating calculated by the Insurance Service Office (ISO). This rating, known as a Public Protection Classification (PPC), is utilized by many insurance providers to calculate insurance premiums within the district. Ratings range from 1 to 10. Class 1 generally represents superior property fire protection, and Class 10 indicates that the area's fire-suppression program does not meet ISO's minimum criteria.

The PPC ratings are calculated on the following factors:

- Fire alarm and communication systems, including telephone systems, telephone lines, staffing, and dispatching systems;
- The fire department, including equipment, staffing, training, and geographic distribution of fire companies; and,



- The water-supply system, including the condition and maintenance of hydrants, and a careful evaluation of the amount of available water compared with the amount needed to suppress fires.

## **ISO RATING**

The Insurance Services Office (ISO) Public Protection Classification Program currently ranges ratings in Glenn County from FOUR to NINE on a scale of 1 to 10, with 1 being the highest possible protection rating and 10 being the lowest. The ISO rating measures individual fire protection agencies against a Fire Suppression Rating Schedule, which includes such criteria as facilities and support for handling and dispatching fire alarms, first-alarm response and initial attack, and adequacy of local water supply for fire-suppression purposes. The lower ratings generally occur in areas that are not served by a public water system, areas with insufficient equipment, or areas with inadequate water flow capacity.

## **DISTRICT PROFILES**

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### **ELK CREEK FIRE PROTECTION DISTRICT**

The Elk Creek Fire Protection District is located at 3288 Road 308 outside Elk Creek. The Elk Creek Fire Protection District provides fire protection services to the Mendocino National Forest and the surrounding rural area within western/central Glenn County. The CDF Tehama-Glenn unit operates out of the Elk Creek fire station and assists with emergency medical services, grass and range fires, Mendocino National Forest fires and structural fire response in western Glenn County.

### **GLENN-CODORA FIRE PROTECTION DISTRICT**

The Glenn-Codora Fire Protection District, located at 1516 Highway 45 in Glenn, provides fire protection and emergency response services to the Glenn community. It's boundaries generally run parallel to the southern portion of the Sacramento River. In addition to responding to fires, the Glenn-Codora Fire Protection District also responds to medical emergencies, motor vehicle accidents, and other hazards. It is staffed entirely of volunteer firefighting and non-firefighting support personnel.

### **GLENN-COLUSA FIRE PROTECTION DISTRICT**

The District provides services to a small sparsely populated area between the Sacramento River and Butte Creek at the southeastern corner of Glenn County. The District protects 28 square miles in Colusa County and 68 square miles in Glenn County. The fire station is located at 8282 State Highway 162 in Butte City, about four miles into Glenn County from the border with Colusa County. Development in this area is limited by flood hazards, poor access, and a lack of urban services.

### **KANAWHA FIRE PROTECTION DISTRICT**

The Kanawha Fire Protection District is located 1709 Co Rd. outside the City of Willows. The Kanawha Fire Protection District covers the largest, central-most portion of Glenn County, east of the City of Willows. The District is staffed completely by volunteer firefighting and non-firefighting support personnel.

### **INDIAN VALLEY-BEAR VALLEY FIRE PROTECTION DISTRICT**

The Bear Valley - Indian Valley Fire Protection District is a volunteer fire department serving unincorporated areas of Colusa and Glenn Counties. The district extends approximately seven miles north into Glenn County and the District encompasses approximately 60 square miles south into Colusa County where the fire stations are located. The District's primary role is to provide support in the event of structural fires, but the District also

provides occasional support to the CDF in fighting grass or range fires. The District maintains two fire stations, the main station in Stonyford and a smaller station at Century Ranch (Ladoga).

The District has mutual aid agreements with the Elk Creek Fire Protection District in Glenn County, the USDA Forest Service, the California Division of Forestry and Fire Protection and the other fire protection districts in Colusa County.

### **ORD FIRE PROTECTION DISTRICT**

The Ord Fire Protection District is located at 3221 CA-45 in Glenn. The Ord Fire Protection District covers the eastern portion of Glenn County surrounding the community of Ordbend. The District is staffed completely by volunteers and is equipped with three water pumpers, two water tankers, two grass rigs, one equipment truck and two ambulances.

### **ARTOIS FIRE PROTECTION DISTRICT**

The Artois Fire Protection District is located at 740 Main in Artois. The Artois Fire Protection District consists of the area between the City of Orland and the City of Willows in unincorporated Glenn County. The District is staffed completely by volunteers and includes both firefighting and non-firefighting support personnel.

### **BAYLISS FIRE PROTECTION DISTRICT**

The Bayliss Fire Protection District is located at 2593 County Road in Glenn. The Bayliss Fire Protection district is located on the eastern portion of Glenn County, along the Sacramento River and consists of volunteer firefighting and non-firefighting support personnel.

### **HAMILTON CITY FIRE PROTECTION DISTRICT**

The Hamilton City Fire Department, located in Hamilton City at 420 1st Street, provides fire protection and emergency response services to the Hamilton City community and surrounding area. In Hamilton City, the fire department is staffed by one full-time paid firefighter, thirty part-time paid firefighters, five non-firefighting paid staff, and six non-firefighting volunteers. The District also provides emergency medical services to the communities of Hamilton City.

### **CAPAY FIRE PROTECTION DISTRICT**

The Capay Fire Department, located a few miles northeast of Orland in Tehama County at 50 4th Avenue, provides fire protection and emergency response services to the Orland and Capay community. The district is located in the Northeast corner of Glenn County and extends several miles into Tehama county along the Sacramento River.

### **ORLAND RURAL FIRE PROTECTION DISTRICT**

The Orland Fire Protection District is located at 810 5<sup>th</sup> street in the City of Orland. The Orland Rural Fire Protection District includes the area around the City of Orland in unincorporated Glenn County. The Orland Rural Fire Protection District utilizes the Orland Fire Department station which is responsible for the emergency response activities for the City of Orland and surrounding communities. 50 volunteers train weekly and respond as needed daily to emergency calls of approximately 800 per year. The District and the City both provide equipment, materials and manpower through the Orland Volunteer Fire Department.

## WILLOWS RURAL FIRE PROTECTION DISTRICT

The Willows Rural Fire Protection District is located at 445 South Butte Street in the City of Willows. The Willows Rural Fire Protection District includes the area around the City of Willows in unincorporated Glenn County; which has a population of approximately 3,000, and covers approximately 78 square miles. The Willows Rural Fire Protection District utilizes the Willows Fire Department station which is responsible for the emergency response activities for the City of Willows and surrounding communities. They offer a vast range of emergency services, public relations and fire safety education. Response times of the Willows Fire Department average 4 minutes per call. The ISO rating is 4 within the City of Willow and 6 outside the city limits, within the rural fire protection district. In addition to fire service, Fire investigation is a vital function of the Willows Fire Department. Several members of the Willows Fire Department have received specialized training in fire origin and cause determination and are members are part of the Glenn County Bomb and Arson team. All fires are investigated to determine their cause and origin and a detailed incident investigation report is then prepared. These finding are then used in the public education program to help with the prevention of future fires.

## STATE/FEDERAL RESPONSIBILITY AREAS

Wildfire protection in the non-federally owned upland areas, or State Responsibility Areas (SRAs), is the responsibility of the CDF. The CDF Tehama-Glenn unit operates a fire station at Elk Creek (3288 Rd 308, Elk Creek) and assists with emergency medical services and structural fire response in western Glenn County.

Wildfire protection within the Mendocino National Forest is provided by the U.S. Forest Service, who works closely with CDF. The Mendocino National Forest Fire and Aviation station of the U.S. Forest Service operates within the City of Willows and supports fire protection and emergency services in the Mendocino National Forest and Glenn County. In addition to responding to fires, the Mendocino National Forest Fire and Aviation also responds to medical emergencies, motor vehicle accidents, rescue calls, incidents involving hazardous materials, and participates in educational programs.

## POLICE PROTECTION SERVICES

The unincorporated areas of Glenn County receive general public safety and law enforcement services from the Glenn County Sheriff's Department. The Sheriff's Department also operates the County Jail, Dispatch, County Coroner and the County Office of Emergency Services (OES). The Glenn County Sheriffs office operates out of its headquarters located at 543 W. Oak Street, Willows and the jail is located adjacent at 141 S. Lassen Street, Willows. The Sheriff's Department is responsible for all law enforcement patrol services throughout all areas of the unincorporated County. As of the latest Annual report and Statistical Analysis of the Glenn County Sheriffs Office in 2013, the Glenn County Sheriff's office has 47 sworn officers. The Glenn County Department Facility Location is shown on Figure 3.6-1.

The municipal police department serves the City of Orland, while the City of Willows contracts law enforcement services through the Glenn County Sheriff's Office. Both cities use the county jail for all detentions. Since many law enforcements matters cross jurisdictional lines, the municipal police forces work closely with the Glenn County Sheriff's Department. The Sheriff's Department also provides 24-hour dispatching services for the Orland police department. The County Sheriff's Department and the police forces of the city of Orland often work in concert for search and rescue efforts.

Within the Mendocino National Forest, the Forest Service has shared law enforcement responsibilities with local law enforcement agencies. The jurisdiction of the Forest Service includes misdemeanor resource codes, felony narcotics, arson, property theft, and public protection when life or property are threatened. Serious law enforcement problems within the Forest include drug and alcohol related crimes, vandalism and property theft, timber trespass, marijuana cultivation and public and employee safety. The Forest Service currently

maintains a Cooperative Law Enforcement Agreement with the Glenn County Sheriff's Office. The Fish and Game Warden patrols the National Wildlife Refuges. The California Highway Patrol polices State Highways 162, 45, and 32, Interstate Route 5, and all unincorporated county roadways and maintains an office at 464 N Humboldt Avenue in Willows.

## ORGANIZATION

The Glenn County Sheriff's office is composed of three (3) divisions: Operations, Support Services, and Jail. The Sheriff and Undersheriff are responsible for the administration and oversight of the division commanders.

### *OPERATIONS DIVISION*

The Operations Division consist of Uniformed Patrol and Special Operations, which includes Traffic, Boating Enforcement, Police Aides/Assistants, Civil Unit, Court Security Unit, and Animal Control Unit. The operations Division is commanded by a lieutenant, and there are currently 3 sergeants, 1 detective, 11 deputies, 2 county service officers, 1 bailiff, 1 service clerk, and 4 public service employees assigned to the division.

### *SUPPORT SERVICES DIVISION*

The Support Services Division consist of the major crimes unit, narcotics unit (G1.N.T.F.), evidence and property management, internal affairs, emergency services, volunteer services, communications, records, and clerical. The Support Services Division is commanded by a lieutenant, and there are currently 1 Administrative Services Officer, 3 detectives, 2 deputies, 1 California Highway Patrol Officer, 4 emergency dispatchers, 3 services clerks, and 3 public service employees assigned to the division.

### *JAIL DIVISION*

The Jail Division consist of the Glenn County Jail facility and transportation unit. The Jail Division is currently commanded by an acting lieutenant, and there are 1 correctional sergeant, 4 correctional corporals, 15 correctional officers, 1 food manager, 1 cook, 1 service clerk, 1 supervising secured facilities maintenance technician, and a contracted medical unit assigned to the division.

## CRIMES BY CATEGORY IN GLENN COUNTY

Statistics on the number of crimes by category of crime in Glenn County during each year from 2014 to 2017, as reported by the Federal Bureau of Investigation (FBI) Criminal Justice Information Services Division, are shown in Table 3.6-1 below.

**TABLE 3.6 -1: GLENN COUNTY SHERIFF'S DEPARTMENT CRIME STATISTICS (2014-2017)**

CATEGORY/CRIME	2014	2015	2016	2017
<b>Total Violent Crimes</b>	<b>81</b>	<b>44</b>	<b>34</b>	<b>81</b>
Homicide	0	1	1	0
Rape	21	2	0	5
Robbery	5	3	1	6
Assault	55	38	32	70
<b>Total Property Crimes</b>	<b>203</b>	<b>165</b>	<b>159</b>	<b>235</b>
Burglary	88	74	60	100
Motor Vehicle Theft	113	89	96	123
Larceny	2	2	3	12
Arson	2	2	1	2

SOURCE: FBI CRIME STATISTICS; [HTTPS://UCR.FBI.GOV/](https://ucr.fbi.gov/).

As shown in the table, the majority of crimes committed in Glenn County consist of property crimes, primarily motor vehicle theft. Additionally, in 2017, there were no homicides reported in Glenn County.

### GLENN COUNTY OFFICE OF EMERGENCY SERVICES

The Glenn County Office of Emergency Services (OES) is the single coordinating center for major emergency activities and integrates with all response agencies within the County. In cooperation with others, OES maintains and oversees countywide disaster and emergency preparedness, emergency notification system, public safety, volunteer programs, and provides training for first responders, businesses, and other governmental agencies.

## REFERENCES

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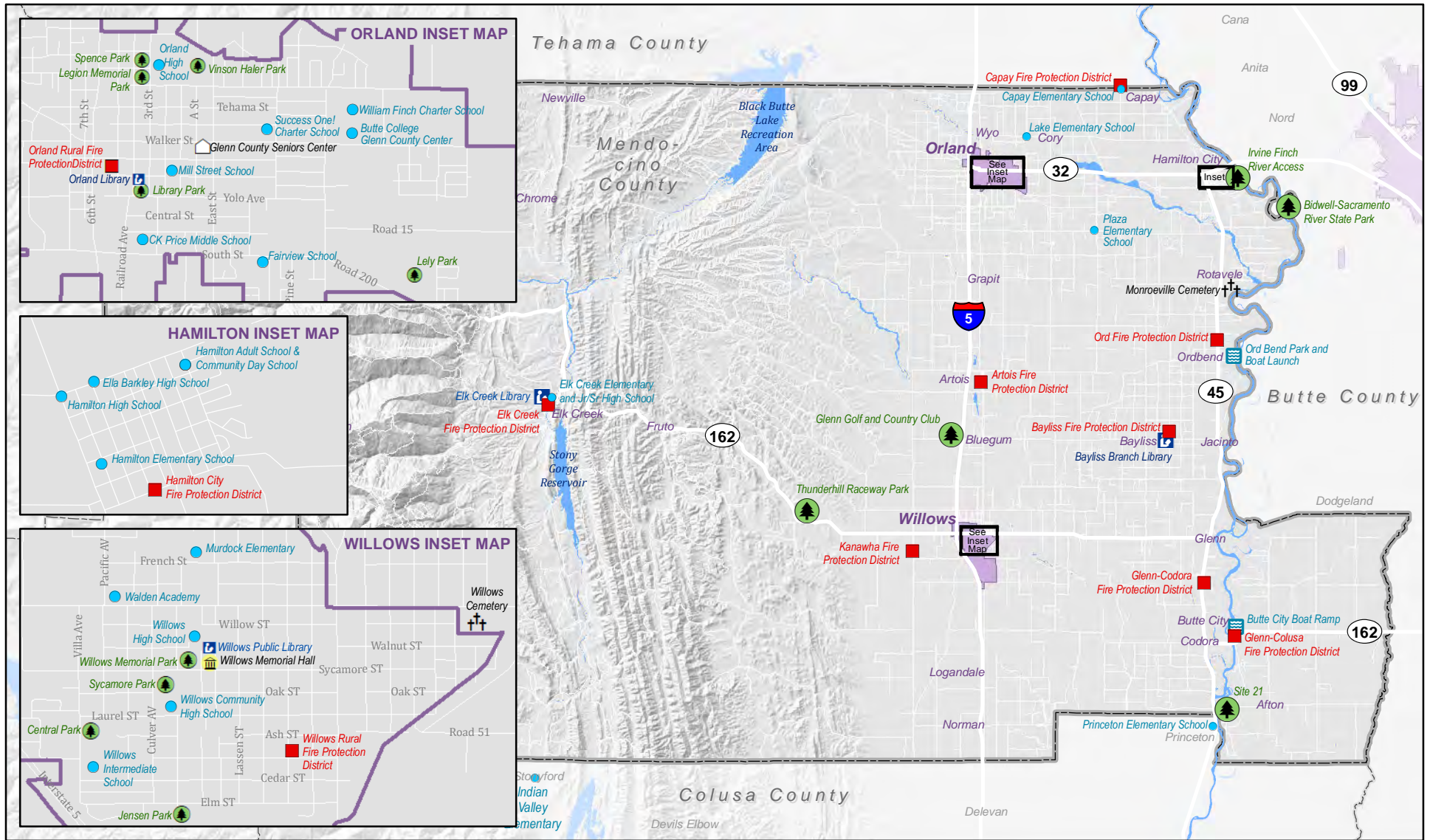
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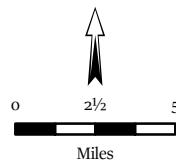
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Sources: USGS National Map; USGS Protected Areas Database; CalAtlas. Map date: March 29, 2019. Revised October 18, 2019.

**Legend**

- School
- Fire Station
- †† Cemetery
- Library
- Park
- Park/Boat Launch
- Senior Center
- Memorial Hall



COUNTY OF GLENN, CALIFORNIA

**FIGURE 3.6-1. COMMUNITY SERVICE FACILITIES**

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## 3.7 PARKS AND RECREATION

Parks, trails, and recreational facilities in Glenn County are managed and maintained by the County General Services Department and the U.S. Forest Service.

### REGULATORY FRAMEWORK

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#### *FEDERAL*

#### **NATIONAL WILDLIFE REFUGE**

Management of each National Wildlife Refuge is guided by the purpose of the individual refuge and the mission and goals of the Refuge System that includes the individual refuge, as well as U.S. Fish and Wildlife Service policy, laws, and international treaties. The National Wildlife Refuge System Administration Act of 1966, as amended by the Improvement Act, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations provide the federal laws for establishment and management of the refuges.

The Colusa, Delevan, and Sacramento National Wildlife Refuges are all part of the Sacramento National Wildlife Refuge Complex and are all guided by a single Comprehensive Conservation Plan (CCP). The Sacramento, Delevan, Sutter, and Colusa National Wildlife Refuges Final CCP guide the management of the Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges. The U.S. Fish and Wildlife Service manages the refuges as part of the Sacramento National Wildlife Refuge Complex.

#### **MENDOCINO NATIONAL FOREST**

The Mendocino National Forest Land and Resource Management Plan (LRMP) provides the framework to guide the ongoing land and resource management operations of the Mendocino National Forest. The LRMP's goal is to provide a management program reflecting a mix of activities for the use and protection of the Forest. The LRMP:

- Establishes the management direction and associated long-range goals and objectives for the Forest,
- Specifies the standards, approximate timing, and vicinity of the practices necessary to implement that direction, and
- Establishes the monitoring and evaluation requirements needed to ensure that the direction is being carried out, and to determine if outputs and effects have been reasonably estimated.

The LRMP is a strategic document that provides guidance for but does not make project level decisions. Those decisions are made after more detailed, site-specific environmental analysis and further public comment. The National Forest Management Act (NFMA) requires that resource plans and permits, contracts, and other instruments issued for the use and occupancy of National Forest System lands be consistent with the forest plan. The following are some examples of project decisions that require more detailed environmental analysis:

- Timber harvesting and related activities, such as slash disposal and road construction,
- Range allotment management plans,
- Fish or wildlife habitat improvement projects,
- Watershed improvement projects, and

- Developed recreation sites or trail construction.

The LRMP focuses primarily on management prescriptions for habitat, wilderness, and recreation uses. The LRMP anticipates a steady workforce and does not foresee the need for extensive construction of new facilities for administrative activities and to house the workforce, but rather anticipates that existing facilities will need to be maintained and improved.

The LRMP does not provide much direction regarding private development within the Mendocino National Forest. However, the U.S. Forest Service provides for special use permits for private activities. Special use permits may be requested from the U.S. Forest Service for a variety of land uses in national forests, including water transmission, agriculture, timber production, outfitting and guiding, recreation, telecommunication, research, photography and video productions, and granting road and utility rights-of-ways.

Recreation residences are also a federally permitted use in national forests. In 1968, a moratorium was placed on establishing additional residential tracts within forests and the moratorium was expanded in 1976 to also prohibit development of new lots within existing tracts. Existing recreation residences within a national forest are required to obtain a special use permit, which has a maximum term of 20 years. However, there is no guarantee that a new special use permit will be issued at the end of the permit term.

#### *STATE*

#### **QUIMBY ACT**

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.” Requirements of the Quimby Act apply only to the acquisition of new parkland and do not apply to the physical development of new park facilities or associated operations and maintenance costs. The Quimby Act seeks to preserve 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. The City has adopted park fees as allowed by the Quimby Act, as described in greater detail below.

#### **MENDOCINO NATIONAL FOREST**

The largest designated recreation area in Glenn County is the Mendocino National Forest, managed by the U.S. Forest Service. A variety of recreational opportunities exist within the forest: camping, hiking, backpacking, boating, fishing, nature study, photography, and off-highway vehicle travel. The Forest is a "working forest," so activities such as logging and grazing do occur. The U.S. Forest Service seeks to manage the variety of uses to ensure conservation of the forest resources.

Many of the developed recreation sites within the Mendocino National Forest were built 30-50 years ago. Since then, visitor preferences have changed and some facilities are in poor condition. In 2007, the U.S. Forest Service completed a 5-year analysis of recreational facilities and developed a list of proposed changes. These changes include fee increases for various facilities, removal of amenities, and replacement of existing amenities.

Plaskett Meadows, located within the Mendocino National Forest, is a popular spot for outdoor recreation and camping activities within Glenn County. The campground at Plaskett Meadows is in an area of mixed species of pine and fir. There are two small lakes for trout fishing, three to four acres each. No motorized boats allowed.

## **SACRAMENTO RIVER STATE RECREATION AREA (SRA)**

The Sacramento River SRA provides hundreds of acres of riverfront recreation at the east side of Glenn County. The park features boat ramps, picnic facilities, trails, and camping. Fishing and boating are popular activities at this park. Though the Ord Bend County Park and Butte City Launch Facility are the only public boat launch facilities in the area of the Sacramento River within Glenn County, people enter the river at several private sites. Much of the land adjacent to the Sacramento River is privately owned agricultural land.

Boating is a popular activity on the Sacramento River. The boating season generally begins in April and continues until winter weather sets in. A cleared navigational channel is maintained between Glenn County and Sacramento. This channel allows boats up to 40 feet in length to travel between Glenn County and Sacramento. There are several areas along the river for camping and houseboat rentals, most of which are outside the County of Glenn. A river cruise from the mouth of the Sacramento River near Antioch to Glenn County is approximately 145 miles and takes approximately 10-12 hours.

The river is generally not visible to motorists on SR 45, which parallels the river. However, Butte City and Hamilton City offer unique river access and views from river crossing bridges.

### **FISHING**

Fishing is plentiful in the Sacramento River. Salmon, steelhead trout, and striped bass are the most common fish in this area. People fish both from boats and the banks of the Sacramento River. The Mendocino National Forest offers 85 miles of trout streams. Big Stony Creek and Little Stony Creek and their tributaries are the primary fishing areas. The streams are occasionally stocked with trout by the California Department of Fish and Game. Letts Lake, a 35-acre lake stocked with trout and bass, is another popular fishing spot.

### **HUNTING**

More ducks and geese winter in the Sacramento Valley than any other area of the Pacific Flyway. Numerous wildlife refuges help sustain the birds in Glenn County through the fall and winter by providing food and sanctuary. Ducks generally arrive in August, and geese generally arrive in late November. Public hunting is permitted in areas of the refuges during the appropriate season, but hunters must obtain a permit from one of the check stations.

In addition to providing habitat for ducks and geese, the refuges also attract swans, marsh and shore birds, upland birds, and small mammals. Nearly 200 species of birds have been recorded in the area, making Glenn County a popular location for bird watchers.

There are also a number of commercial hunting clubs and cooperatives operated by community organizations throughout Glenn County. Hunting camps are operated on private agricultural land by special use permit.

### *LOCAL*

#### **GLENN COUNTY CODE**

The Glenn County Code, *Master Fee Schedule* includes development impact fees to fund public facilities, including parks.

#### **GLENN COUNTY GENERAL PLAN**

The existing Glenn County General Plan includes the following goals and policies related to schools:

GOAL:

**CDG-18. Adequate financing for existing and planned service delivery systems.**

POLICIES:

CDP-140. Establish mechanisms for funding park acquisition and development, as well as ongoing costs of park maintenance and recreation services.

## TYPES OF PARKS

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**Regional parks:** Regional parks are generally 100+ acres (with exceptions based on use characteristics, special features, etc.). Parks of less than 100 acres may still be determined regional in nature based on other criteria. Large tracts of land are often necessary to provide natural resource-based recreation opportunities and protect the natural resources for long-term use for outdoor recreation. Regional parks provide outdoor recreation facilities and activities that are primarily natural resource based (camping, picnicking, hiking, swimming, boating, canoeing, fishing, nature study).

Glenn County has five Regional Parks/ Facilities totaling approximately 281 acres.

**Community parks:** Community parks are generally 15 to 25 acres in size, and include areas for active sports as well as space for family and group activities, such as picnicking. Community parks are larger in size than neighborhood parks and serve to fulfill the active and passive recreational needs of multiple neighborhoods. The community park serves the needs of local neighborhoods by providing a close to home site for more active recreation that is not typically suitable or physically possible in a neighborhood park (i.e. formal sports fields and courts with night lighting). Community parks and sports parks are where most organized activities provided by the Parks and Recreation Department and various league sports are intended to occur.

Glenn County has one developed Community Park site, totaling approximately 3.4 acres.

**Neighborhood parks:** Neighborhood parks serve as the focal point of neighborhood communities, the hub for both physical and social activities in a recreational setting that should be primarily passive. Appropriately designed neighborhood parks act as “pulse points” within the city. They are spaces that develop a sense of place while at the same time evolve to reflect the neighborhood they represent. Neighborhood parks act as critical building blocks of the city’s image and assist in developing an overall sense of community and security. They also serve as critical nodes and access points in the city-wide green space network. Neighborhood parks are generally 5 to 7 acres. Amenities at neighborhood parks may include ball fields, basketball, volleyball, bocce ball, and tennis courts, small picnic areas, playground equipment, restroom facilities, water play features, and barbeques.

Glenn County currently does not have any Neighborhood Park sites.

**Special use parks:** The Special Use Parks allow for flexibility in providing recreational resources throughout city-wide park space network. This classification is intended to accommodate special circumstances, unique site characteristics, etc. in park, trail, and recreation resources. These types of resources add diversity to the park network and accommodate a variety of non-traditional recreation amenities beyond the standard neighborhood, and community, park classifications.

Glenn County has four Specialty Parks, located within the city limits of Willows and Orland, totaling approximately 5.19 acres.

## LOCAL RECREATION AREAS AND PARKS

### CITY OF ORLAND

The City of Orland Recreation Department is responsible for the operation of six existing parks within the City of Orland, as well as organizing various city-wide recreational activities that are offered on a year-around basis to city and county residents. The City of Orland has an extensive network of local park facilities. The amenities at the City of Orland parks include BBQ facilities, swimming pools, picnic tables, playgrounds, tot lots, trails, baseball fields, and basketball courts.

### CITY OF WILLOWS

The City of Willows Recreation Department is responsible for the operation of four parks and recreation facilities within the City of Willows, as well as organizing various city-wide recreational activities that are offered on a year-around basis to city and county residents.

### GLENN COUNTY

The Glenn County General Services Department operates ten parks encompassing approximately 290 acres. Table 3.7-1 lists park and recreation facilities in Glenn County.

**TABLE 3.7-1: SUMMARY OF PARKS AND RECREATION FACILITIES**

PARK/FACILITY NAME	ACREAGE	DEVELOPED ACRES	PARK TYPE
Ord Bend Park & Boat Ramp	12	12	Regional
Butte City Boat Ramp	1.2	1.2	Regional
Walk Creek Park	40	0	Regional
Site 48	28	0	Regional
Site 21 – Princeton Unit of the Sacramento River Wildlife Area	200	2	Regional
Hamilton City Park	3.4	3.4	Community
Monroeville Cemetery	>1.0	>1.0	Special Use
Orland Memorial Park	2.0	2.0	Special Use
Willows Memorial Hall	1.44	1.44	Special Use
Willows Memorial Park	.75	.75	Special Use
TOTAL	281.2	23.79	-

SOURCE: GLENN COUNTY GENERAL SERVICES, 2019

On a regional scale, there are currently four federal park facilities within the County, including Mendocino National Forest and the Sacramento National Wildlife Refuge. The Forest offers a variety of recreational opportunities both in Glenn County and in adjacent counties, including camping, backpacking, boating, fishing, hunting, and off-highway vehicle use. There are two designated wildernesses: the 100,600-acre Yolla Bolly Middle Eel Wilderness, and the Snow Mountain Wilderness with approximately 37,200 acres.

The Sacramento National Wildlife Refuge is located in the southeastern portion of the county adjacent to Interstate 5, of which approximately 8,555 acres located in Glenn County. The facility provides a wintering area for migratory waterfowl.

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## 3.8 SCHOOLS

### REGULATORY FRAMEWORK

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#### STATE

#### CALIFORNIA CODE OF REGULATIONS

The California Code of Regulations, Title 5 Education Code, governs all aspects of education within the 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 (Chapter 407, Statutes of 1998), 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 known as “Proposition 1A,” reformed 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 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% of the district’s bonding capacity (percentage is based on revenue sources for repayment), having at least 20% 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% 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 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 California 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) 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 the CDE in 2000 to reflect various changes in educational conditions, such as lowering of 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 School Site Analysis and Development Guide. 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.

### *LOCAL*

## **GLENN COUNTY CODE**

The Glenn County Code, Master Fee Schedule includes development impact fees to fund public facilities.

## **GLENN COUNTY GENERAL PLAN**

The existing Glenn County General Plan includes the following goals and policies related to schools:

### GOALS:

**CDG-18. Adequate financing for existing and planned service delivery systems.**

**CDG-24. Stimulate local workforce preparation and development to facilitate its placement and utilization in expanding local trade and employment.**

### POLICIES:

PF-P-33. Reserve adequate sites for new development and expanded public facilities needed to serve new growth and development and designate general locations for such facilities, including but not limited to schools, solid and liquid waste disposal facilities, drainage facilities, fire stations, and County government buildings and facilities.



CDP-136. Consider supplemental school mitigation fees for those instances where supplemental fees are necessary to meet the facility funding needs of a school district and where other methods of school financing are not adequate. “Supplemental school mitigation fees” shall mean payments made to a school district by a developer of a residential, commercial or industrial project to mitigate the impact on school facilities caused by the project, in addition to fees imposed pursuant to Government Code section 65995.

CDP-137. Grant a discretionary land use approval which is necessary for residential, commercial or industrial development only if the school district or districts within whose boundaries the development is planned first certifies to the Board of Supervisor that:

- The subject development will not significantly impact school facilities,
- The developer has paid in full the supplemental school mitigation fees corresponding to the development, or
- That the developer has arranged and agreed to mitigate the impact on school facilities in some other manner satisfactory to the district, consistent with the district’s financing plan.

As used in this policy, “discretionary land use approval” means a zoning change, general plan amendment, any other legislative action, and certification or approval of a negative declaration (ND) or an environmental impact report (EIR) pursuant to the California Environmental Quality Act (CEQA).

This policy shall apply only if the affected school district has:

- Adopted a facilities plan;
- Adopted a school financing plan describing the sources and amounts of funds required to fully implement the facilities plan;
- Completed a valid study justifying the amount of the supplemental school mitigation fees.

CDG-18. Ensure that supplemental school mitigation fees as established by the affected school district are in an amount which does not exceed the amount necessary, when added to other reasonably assured sources of funding identified in the school facilities financing plan, to fully implement the adopted school facilities.

CDG-167. Accommodate, encourage and support programs and facilities which advance education, training and job readiness at Butte College, through California State University, Chico and at local public schools.

## SCHOOLS

Glenn County Office of education provides school services for grades K through 12 within the communities of Orland, Willows, Hamilton City, Elk Creek, and Princeton and serves more than 1,500 students. Within Glenn County, there are four schools serving elementary age and middle school students (grades K-8), two K-6 school, one 5-6 school, one high school (grades 9-12), two 7-12, and two vocational high schools (grades 10-12). Table 3.4-1 lists public schools in Glenn County, the grades served by each school, the location, and the most recent enrollment for each school.

As shown in Table 3.8-1, the schools in the county had a total enrollment of approximately 1,505 students, of which 1,105 were enrolled in elementary and middle school (grades K – 8) and 400 were enrolled in high school (grades 9 – 12) or Junior/Senior High school (grades 7 – 12).

County-wide school districts had a total enrollment of 1,507 students for the 2018-2019 school year. Table 3.8-2 provides a summary of the public-school enrollment by grade within Glenn County.

**TABLE 3.8-1: PUBLIC SCHOOLS SERVING GLENN COUNTY**

SCHOOL	GRADES SERVED	ADDRESS	ENROLLMENT 2018-2019 SCHOOL YEAR
<b>ELEMENTARY AND MIDDLE SCHOOLS</b>			
Hamilton Elementary School	K-8	277 Capay Ave, Hamilton City	415
Lake Elementary School	K-8	4672 County Rd N, Orland	185
Capay Joint Union Elementary School	K-8	7504 Cutting Ave, Orland	199
Plaza Elementary School	K-8	7322 Co Rd 24, Orland	207
Princeton Elementary School	K-6	438 Norman Rd, Princeton	63
Elk Creek Elementary School	K-6	3430 Co Rd 309, Elk Creek	31
Indian Valley Elementary	5-6	3430 Co Rd 309, Elk Creek	5
Total			1,105
<b>HIGH SCHOOLS</b>			
Bidwell Point Highschool	10-12	3430 Sanhedrin Rd, Elk Creek	2
Elk Creek Jr/Sr Highschool	7-12	3430 Co Rd 309, Elk Creek	24
Ella Barkley Highschool	10-12	300 CA-32, Hamilton City	9
Hamilton Highschool	9-12	620 Canal St, Hamilton City	290
Princeton Jr/Sr Highschool	7-12	252 Princeton Rd, Colusa, CA	77
Total			402

SOURCE: CALIFORNIA DEPARTMENT OF EDUCATION EDUCATIONAL DEMOGRAPHICS UNIT ENROLLMENT FOR 2018-19

**TABLE 3.8-2: ENROLLMENT BY GRADE (2018-2019)**

DISTRICT	GRADE LEVEL													TOTAL 2018-2019
	K	1	2	3	4	5	6	7	8	9	10	11	12	
Capay Joint Union Elementary	22	17	23	19	22	29	19	24	24	0	0	0	0	<b>199</b>
Hamilton Unified	62	41	39	47	42	60	41	48	35	78	80	51	90	<b>713</b>
Lake Elementary	20	20	19	21	19	21	21	24	20	0	0	0	0	<b>185</b>
Plaza Elementary	22	22	22	23	24	24	22	23	25	0	0	0	0	<b>207</b>
Princeton Joint Unified	12	10	9	5	4	14	9	16	11	13	7	15	0	<b>140</b>
Stony Creek Joint Unified	8	2	7	8	6	2	3	4	6	3	6	3	4	<b>62</b>
<b>Total</b>	194	142	150	153	149	177	131	160	150	117	113	107	200	<b>1,507</b>

SOURCE: CALIFORNIA DEPARTMENT OF EDUCATION EDUCATIONAL DEMOGRAPHICS UNIT ENROLLMENT FOR 2018-19

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## **3.9 LIBRARIES AND OTHER PUBLIC FACILITIES**

### **LIBRARY SERVICES**

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Glenn County has two libraries, Elk Creek Library is located 120 Church Street in Elk Creek; and Bayliss Library, located at 7830 County Road 39 near Glenn. The libraries offer a circulating collection of books, magazines, videos, audiobooks, e-books, youth programs, computer access, wifi, interlibrary loan, and reference services for communities within the county.

### **SENIOR CENTER**

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The Glenn County Seniors Center, located at 19 Walker Street in Orland, is a multi-purpose Senior Center serving nutritious meals in group and home settings with access to supportive services for seniors 60 years of age and older throughout Glenn County. There are no membership fees to participate at the center.

### **HEALTH CARE**

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Health care facilities within Glenn County encompass Glenn General Hospital located in the City of Willows, Willow View Convalescent Center, residential care facilities, and a senior citizen housing complex as well as private physicians and other medical practitioners.

Glenn General Hospital, a County operated hospital, provides acute care service and is licensed for 80 beds. However, only thirty-two beds are currently available for use. The hospital is located at 1133 West Sycamore in the City of Willows. Glenn General Hospital offers 24-hour emergency care, outpatient care, general surgical care, outpatient surgical care, and minor heart surgery. The hospital sponsors an orthopedic clinic, a urology clinic, a cardiology clinic, podiatry clinic, gastroenterology clinic, neurology clinic, and obstetric-gynecology clinic.

Residents typically travel to other facilities, such as Enloe Hospital in Chico, for certain specialized services including burns, major heart surgery, and severe trauma and psychiatric care.

The Glenn County Public Health Department is organized under the Glenn County Health Services Agency and provides maternal and child health care programming, California Children's Services, child health and disability programs, vaccinations and general public health nursing to the community. In addition, the Public Health Department also provides Environmental Health services to Glenn County citizens comprised of water system reviews, vector control, restaurant checks and consultation.

Alcohol & drug programs are also organized under the County Health Service Agency and provide residential treatment, out-patient counseling, perinatal programs and community education and information. Mental Health programs offered by the same agency provide services to citizens of all ages who have a demonstrated mental disorder or affective disorder. Services include but are not limited to in-patient services, residential services, out-patient counseling, medication monitoring and community education and referral.

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# Chapter 4

## Hazards, Safety, and Noise



Issues and topics related to hazards, safety and noise within the County are addressed in this chapter. Some of these hazards may be naturally induced, such as wildfire hazards. Other health and safety hazards may be the result of natural hazards, which are exacerbated by human activity, such as development in areas prone to flooding. Additional hazards are entirely human-made, including airport crash hazards, exposure to hazardous materials, and noise.

This Chapter includes the following topics:

- 4.1 Hazards and Hazardous Materials
- 4.2 Air Traffic
- 4.3 Fire Hazards
- 4.4 Flooding
- 4.5 Noise





## 4.0 HAZARDS, SAFETY, AND NOISE

Issues and topics related to hazards, safety, and noise within the Planning Area are addressed in this chapter. Some of these hazards may be naturally induced, such as wildfire hazards. Other hazards may be the result of natural hazards, which are exacerbated by human activity, such as development in areas prone to flooding. Additional hazards are entirely human-made, including airport crash hazards and exposure to hazardous materials. For topics related to emergency response see Section 3.6 (Public Safety Services).

This chapter is divided into the following sections:

- 4.1 Hazards and Hazardous Materials
- 4.2 Air Traffic
- 4.3 Fire Hazards
- 4.4 Flooding
- 4.5 Noise

### 4.1 HAZARDS AND HAZARDOUS MATERIALS

A hazardous material is 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 irreversible illness; or (2) pose a substantial present or potential hazard to human health and safety or the environment when improperly treated, stored, transported, or disposed of. Hazardous materials are mainly present because of industries involving chemical byproducts from manufacturing, petrochemicals, and hazardous building materials.

Hazardous waste is the subset of hazardous materials that has been abandoned, discarded, or recycled and is not properly contained, including contaminated soil or groundwater with concentrations of chemicals, infectious agents, or toxic elements sufficiently high to increase human mortality or to destroy the ecological environment. If a hazardous material is spilled and cannot be effectively picked up and used as a product, it is considered to be hazardous waste. If a hazardous material site is unused, and it is obvious there is no realistic intent to use the material, it is also considered to be a hazardous waste. Examples of hazardous materials include flammable and combustible materials, corrosives, explosives, oxidizers, poisons, materials that react violently with water, radioactive materials, and chemicals.

## REGULATORY FRAMEWORK

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### *FEDERAL*

#### **Comprehensive Environmental Response, Compensation & Liability Act (CERCLA)**

This act, commonly associated with the term “Superfund,” established:

- Regulations concerning closed and abandoned hazardous waste sites
- Liability of parties responsible for any releases of hazardous waste at these sites
- Funding for cleanup when responsible parties cannot be identified

### **Resource Conservation and Recovery Act (RCRA)**

This act established EPA’s “cradle to grave” control (generation, transportation, treatment, storage, and disposal) over hazardous materials and wastes. In California, the Department of Toxic Substances Control (DTSC) has RCRA authorization.

### **Clean Air Act**

In according with the Clean Air Act, the EPA has established National Emissions Standards for Hazardous Air Pollutants. Exceeding the emissions standard for a given air pollutant may cause an increase in illnesses and/or fatalities.

### **Clean Water Act (CWA)**

The CWA, which amended the WPCA of 1972, sets forth the Section 404 program to regulate the discharge of dredged and fill material into Waters of the U.S. and the Section 402 National Pollutant Discharge Elimination System (NPDES) to regulate the discharge of pollutants into Waters of the U.S. The Section 401 Water Quality Certification program establishes a framework of water quality protection for activities requiring a variety of Federal permits and approvals (including CWA Section 404, CWA Section 402, FERC Hydropower and Section 10 Rivers and Harbors).

### *STATE*

### **California Health & Safety Code**

Division 20 of the Health and Safety Code establishes Department of Toxic Substances Control (DTSC) authority and sets forth hazardous waste and underground storage tank regulations. In addition, the division creates a State superfund framework that mirrors the Federal program.

Division 26 of the Health and Safety Code establishes California Air Resources Board (CARB) authority. The division designates CARB as the air pollution control agency per Federal regulations and charges the Board with meeting Clean Air Act requirements.

### **Food and Agriculture Code**

Division 6 of the California Food and Agricultural Code (FAC) establishes pesticide application regulations. The division establishes training standards for pilots conducting aerial applications as well as permitting and certification requirements.

### **Water Code**

Division 7 of the California Water Code, commonly referred to as the Porter-Cologne Water Quality Control Act, created the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB). In addition, water quality responsibilities are established for the SWRCB and RWQCBs.

### **California Code of Regulations**

Title 3 of the CCR pertains to the application of pesticides and related chemicals. Parties applying regulated substances must continuously evaluate application equipment, the weather, the treated lands and all surrounding properties. Title 3 prohibits any application that would:

- Contaminate persons not involved in the application
- Damage non-target crops or animals or any other public or private property
- Contaminate public or private property or create health hazards on said property

Title 8 of the CCR establishes California Occupational Safety and Health Administration (Cal OSHA) requirements related to public and worker protection. Topics addressed in Title 8 include materials exposure limits, equipment requirements, protective clothing, hazardous materials, and accident prevention. Construction safety and exposure standards for lead and asbestos are set forth in Title 8.

Title 14 of the CCR establishes minimum standards for solid waste handling and disposal.

Title 17 of the CCR establishes regulations relating to the use and disturbance of materials containing naturally occurring asbestos.

Title 22 of the CCR sets forth definitions of hazardous waste and special waste. The section also identifies hazardous waste criteria and establishes regulations pertaining to the storage, transport, and disposal of hazardous waste.

Title 26 of the CCR is a medley of State regulations pertaining to hazardous materials and waste that are presented in other regulatory sections. Title 26 mandates specific management criteria related to hazardous materials identification, packaging, and disposal. In addition, Title 26 establishes requirements for hazardous materials transport, containment, treatment, and disposal. Finally, staff training standards are set forth in Title 26.

Title 27 of the CCR sets forth a variety of regulations relating to the construction, operation and maintenance of the State's landfills. The title establishes a landfill classification system and categories of waste. Each class of landfill is constructed to contain specific types of waste (household, inert, special, and hazardous).

### *LOCAL*

#### **Glenn County General Plan**

The current Glenn County General Plan's Public Safety Element identifies the following goals and policies related to hazardous materials and waste:

#### GOALS:

**PSG-6 Protection and enhancement of water quality.**

**PSG-8 Reduce the County's reliance on landfilling, reduce the volume of the solid waste stream, and increase recovery of materials, and dispose of remaining waste in the most environmentally and fiscally responsible manner available.**

#### POLICIES:

PSP-43 Support ongoing regulatory and compliance efforts at the federal and State level for the protection of water quality.

PSP-44 Support the Rice Herbicide Action Plan and encourage other agricultural practices which reduce the threat of surface water pollution from agricultural chemical use.

PSP-45 Zone floodways and stream channels in a manner that promotes protection of water quality.

PSP-46 Discourage on-site sewage disposal systems on small lots in areas containing gravelly soils.

- PSP-47 Support the preparation of area groundwater studies to ensure the protection of groundwater and to ensure that the holding capacity of the area is not exceeded.
- PSP-48 Support education programs which increase the public awareness of the proper disposal of hazardous wastes in order to protect groundwater quality.
- PSP-57 Achieve maximum waste diversion through the expansion and/or development of cost-effective recycling and source reduction programs tailored for both rural and urbanized jurisdictions in the county.
- PSP-58 Extend the useful life of the existing landfill site.
- PSP-59 Formulate alternatives to the current facilities for the collection and disposal of solid waste based on capacity and use of transfer stations.
- PSP-60 Establish compatibility standards for landfill, recycling, and composting facilities.
- PSP-61 Develop an effective public information program aimed at achieving maximum participation, diversion of materials and preservation of landfill space.
- PSP-62 Promote reduction of the amount of packaging material generated by local businesses through use of alternative materials.
- PSP-63 Support State and national efforts that establish incentives for packaging to meet certain recycled content or post-consumer percentage.
- PSP-64 Investigate the types of local incentives that can be implemented to promote business/industry source reduction and recycling activities.
- PSP-65 Assure that local plans and ordinances accommodate and facilitate the siting of recycling facilities, composting facilities, transfer stations, and pyrolysis facilities.
- PSP-66 Encourage the establishment of commercial recycling activities within the county.
- PSP-67 Develop a regional plan, with the cities of Willows and Orland, for the siting and development of a private sector-operated yard and leaf material composting facility.
- PSP-68 Expand leaf collection programs to the agricultural and farming sector.
- PSP-69 Reduce the volume of used tires disposed of in Glenn County.
- PSP-70 Retain all existing Glenn County solid waste disposal facilities during the short-term and medium-term planning periods for the Source Reduction and Recycling Elements.
- PSP-71 Increase the recovery rate for cans and bottles that have redemption value.
- PSP-72 Increase recovery of corrugated paper and newspaper currently in the waste stream.
- PSP-73 Identify potential sites for septage disposal, and gas well drilling mud disposal.

## ENVIRONMENTAL SETTING

### Envirostor Data Management System

The Department of Toxic Substances Control (DTSC) maintains the *Envirostor Data Management System*, which provides information on hazardous waste facilities (both permitted and corrective action) as well as any available site cleanup information. This site cleanup information includes: Federal Superfund Sites (NPL), State Response Sites, Voluntary Cleanup Sites, School Cleanup Sites, Corrective Action Sites, Tiered Permit Sites, and Evaluation / Investigation Sites. The hazardous waste facilities include: Permitted–Operating, Post-Closure Permitted, and Historical Non-Operating.

There are 17 locations listed within the county (including the incorporated cities of Orland and Willows) address that are listed in the Envirostor database. Four sites are listed as school investigation sites with no action required, two sites are listed as certified (one State Response and one voluntary cleanup), one school investigation site is currently listed as active, six sites are referred to other agencies and the RWQCB for evaluation, three sites are listed as a military evaluation with no further action, and the Willows Glenn County Airport is listed as corrective action project with no further action required. Table 4.1-1 lists the Envirostor sites identified within Glenn County.

**TABLE 4.1-1: GLENN COUNTY SITE CLEANUP AND HAZARDOUS FACILITIES LIST (ENVIROSTOR)**

NAME	STATUS	PROJECT TYPE	ADDRESS	LISTED CITY OR AREA
Hamilton Union High School Expansion	Active	School Investigation	North Of 620 Canal Street And East Of SR 45/Canal Street	Hamilton City
Orland Cleaners	Certified / Operation & Maintenance	State Response	726 Fifth Street	Orland
PG&E, Willows	Certified / Operation & Maintenance	Voluntary Cleanup	310 E. Wood Street	Willows
Capay Joint Union Elementary School	No Action Required	School Investigation	7504 Cutting Avenue	Orland
Orland Community School	No Action Required	School Investigation	State Route 32/Walker Street/County Road M.5	Orland
Willows Community School	No Action Required	School Investigation	Birch Street/Villa Avenue	Willows
Willows Glenn County Airport	No Further Action	Corrective Action	Hwy 162 & I-5	Willows
Kirkwood Auxiliary Field #2 (J09ca0840)	No Further Action	Military Evaluation	6th Avenue, Orland	Orland
Orland Auxiliary Field No. 1 (J09ca0889)	No Further Action	Military Evaluation		Orland
Willows Auxiliary Field (J09ca1002)	No Further Action	Military Evaluation		Willows
Lake Elementary School Expansion	No Further Action	School Investigation	4672 County Road N	Orland
Burrows Oil Company	Refer: Other Agency	Evaluation	245 Garden	Willows
Richfield Oil Corp	Refer: Other Agency	Evaluation	545 North Colusa	Willows

NAME	STATUS	PROJECT TYPE	ADDRESS	LISTED CITY OR AREA
North State Ag Service	Refer: RWQCB	Evaluation	234 East Tehema	Orland
Orland Airport	Refer: RWQCB	Evaluation	County Road P	Orland
Shell Oil	Refer: RWQCB	Evaluation	630 Eureka	Willows
Vereschagin Oil Company	Refer: RWQCB	Evaluation	517 6th Street	Orland

SOURCE: CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL, ENVIROSTOR DATABASE, 2019.

There are 7 locations listed within Willows that are listed in the Envirostor database. One site is listed as school investigation site with no action required, one site is listed as certified/ Operation & Maintenance, three sites are referred to other agencies and the RWQCB for evaluation, one site is listed as a military evaluation with no further action, and the Willows Glenn County Airport is listed as corrective action project with no further action required. Table 4.1-1 lists the Envirostor sites within the City of Willows.

### Cortese List

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies, and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. Government Code Section 65962.5 requires the California Environmental Protection Agency to develop at least annually an updated Cortese List. California Department of Toxic Substances Control (DTSC) is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List. There is one site within Glenn County that is listed on the Cortese List and the site is located within the City of Orland. Table 4.1-2 includes the Cortese list site within the county. Additional information regarding this site is included below.

**TABLE 4.1-2: GLENN COUNTY SITE CLEANUP AND HAZARDOUS FACILITIES LIST (ENVIROSTOR)**

SITE / FACILITY NAME	ESTOR / EPA ID	PROGRAM TYPE	STATUS	ADDRESS
Orland Cleaners	11720001	State Response	Certified / Operation & Maintenance	726 Fifth Street Orland

SOURCE: STATE OF CALIFORNIA DTSC LIST CORTESE 2019

**Site History:** The Orland dry cleaner site is a single building, occupying approximately 2,000 square feet. Dry-cleaning operations were conducted on Site from the 1940s to 1988. From 1988 through 1992, the dry-cleaning operations were contracted off site. In May 1992, dry-cleaning operations resumed on site, using a fully self-contained dry-cleaning machine. Prior to 1988, spent solvent, PCE was discharged into a sump located within the building. A soil sample collected in August 1994 from the bottom of the dry well inside the center of the facility detected PCE at concentration of 62,600 milligrams per kilogram (mg/kg).

Orland is an agriculturally based rural community consisting of approximately 6,000 residents. Many rural residences rely on shallow residential water wells for domestic use. These wells are usually screened to depths ranging from approximately 60 to 120 feet below ground surface. Most residents rely on a public water supply system consisting of a blended well system from eight (8) public water wells screened at depths ranging from 65 to 360 feet below ground surface.

The PCE plume extends from the Orland Dry Cleaners facility approximately 1.8 miles to the southeast. The plume moves deeper in the downgradient direction, reaching a maximum depth of approximately 120 feet below ground surface (bgs). The plume is approximately 2,100 feet wide. Groundwater contamination consists of perchloroethylene (PCE), also referred to as tetrachloroethene, from activities related to the Orland Dry Cleaners. The highest reported concentration of PCE from groundwater monitoring wells is 47 micrograms per liter at the source, at approximately 25 feet bgs.

A Removal Action Workplan (RAW) was approved in March 2008 to remedy groundwater impacts. Implementation of the RAW was completed in January 31, 2011. RAW activities include additional groundwater investigation, installation of six (6) monitoring wells, injection of 5,000 gallons of diluted emulsified soybean oil substrate into 20 borings within the depth interval of 30 and 60 feet below groundwater surface and long-term monitoring of groundwater. In June 2013, DTSC certified the completion of the removal action and the remaining activities at the Site are long-term monitoring of the PCE plume. DTSC is currently conducting annual long-term groundwater monitoring (information last updated on 10/24/2018).

### **GeoTracker**

GeoTracker is the California Water Resource Control Board's data management system for managing sites that impact groundwater, especially those that require groundwater cleanup (Underground Storage Tanks, Department of Defense, Site Cleanup Program) as well as permitted facilities such as operating USTs and land disposal sites.

#### *LEAKING UNDERGROUND STORAGE TANKS (LUST)*

There are 52 locations identified within Glenn County (including the cities of Willows and Orland) that are listed in the GeoTracker database for Leaking Underground Storage Tanks (LUST). Of these, 49 locations have undergone LUST cleanup and the State has closed the cases, two are OPEN cases for site assessments, and one is an open case for verification monitoring. Table 4.1-3 lists the location of open and closed cases for LUSTs in Glenn County.

**TABLE 4.1-3: GLENN COUNTY LUST CLEANUP SITES**

NAME	ACTIVITY	ADDRESS
<i>CLOSED CASES (CLEANUP COMPLETED)</i>		
Rosalia Ranch+A2:A43	Completed - Case Closed	Co Rd F Artois
Codora Orchards	Completed - Case Closed	Hwy 162 & Hwy 45 Butte City
Griswold Property	Completed - Case Closed	1074 Hwy 99w Corning
Benjamin's Service, Inc.	Completed - Case Closed	601 6th St Hamilton City
Cal-Farm Supply	Completed - Case Closed	470 Hwy 32 Hamilton City
Double E Market	Completed - Case Closed	575 Sacramento St Hamilton City
Drobny Brothers Farm	Completed - Case Closed	Co Rd 102 & Co Rd 203 Hamilton City
Jackpot Food Mart	Completed - Case Closed	585 Sierra St Hamilton City
Kaplan Almond Farm	Completed - Case Closed	1st St & Sacramento Hamilton City
Main Pumping Plant	Completed - Case Closed	Co Rd 203 Hamilton City
Agri Sales, Inc	Completed - Case Closed	3058 Hwy 45 Ordbend
Beacon #3609	Completed - Case Closed	1021 South St Orland
Beacon #3680 (Former)	Completed - Case Closed	506 6th St Orland
Black Butte Lake	Completed - Case Closed	Star Route Box 30 Orland
Cfn Cardlock	Completed - Case Closed	1005 South St Orland
D Bridges Oil/Lube	Completed - Case Closed	507 6th St Orland
Fred's Automotive	Completed - Case Closed	625 6th St Orland
Glenn Co Service Ctr - Orland	Completed - Case Closed	821 South St E Orland
Jackpot Food Mart Ss	Completed - Case Closed	848 Newville Rd Orland
Orland Corporation Yard	Completed - Case Closed	615 South St E Orland
Orland Livestock Comm. Yard	Completed - Case Closed	Co Rd 99 W Orland
Orland Shell	Completed - Case Closed	902 Newville Rd Orland
R & M Truck Stop	Completed - Case Closed	6412 Co Rd 27 Orland
Southern Pacific	Completed - Case Closed	524 Yolo St Orland
Sportsman's Market Ss	Completed - Case Closed	6378 Co Rd 200 Orland
Super Shopper	Completed - Case Closed	1233 East St Orland
Vereschagin Co	Completed - Case Closed	517 6th St Orland
Private Residence	Completed - Case Closed	Private Residence Princeton
Ca Water Service Co	Completed - Case Closed	420 Cedar St
Caltrans Willows Maintenance Stn	Completed - Case Closed	939 Humboldt N Willows
Chevron #9-0256	Completed - Case Closed	104 Tehama St N Willows
Fitzpatrick Chevrolet	Completed - Case Closed	201 Tehama St S Willows
Former Ss	Completed - Case Closed	1401 Wood St W Willows
Gandy-Staley Oil Co. Inc.	Completed - Case Closed	630 Eureka St Willows
Glenn County Service Center	Completed - Case Closed	453 Co Rd 49 1/2 Willows
Glenn General Hospital	Completed - Case Closed	1133 Sycamore St Willows
I.G. Zumwalt Company	Completed - Case Closed	311 Butte St N Willows
Kampschmidt Trucking	Completed - Case Closed	895 North Tehama Street Willows
Kelleher Facility (Former)	Completed - Case Closed	710 South Tehama Street Willows
Knudsen/Foremost	Completed - Case Closed	121 Cedar St E Willows
Mendocino Forest	Completed - Case Closed	420 Laurel St E Willows



NAME	ACTIVITY	ADDRESS
Meryl Stokes	Completed - Case Closed	200 Garden Willows
Pg&E Willows Maintenance Stn.	Completed - Case Closed	631 Colusa St N Willows
Sehorn Property	Completed - Case Closed	315 Tehama St Willows
Shell Ss	Completed - Case Closed	1300 Wood St W Willows
Unocal #6033	Completed - Case Closed	1502 Wood St W Willows
Willows Cardlock	Completed - Case Closed	900 South Tehama Street Willows
Willows O&M Facility	Completed - Case Closed	Hwy 162 Willows
Willows Plant	Completed - Case Closed	Co Rd 49 Willows
<i>OPEN - VERIFICATION MONITORING</i>		
ARCO #2094	Open - Verification Monitoring	1399 Wood St W Willows
<i>OPEN - SITE ASSESSMENT</i>		
Former Gas Station/Jaco Oil Company Property	Open - Site Assessment	410 N. Tehama Street Willows
Willows Motor Supply	Open - Site Assessment	112 West Wood Street Willows

SOURCE: CALIFORNIA WATER RESOURCES CONTROL BOARD GeOTRACKER DATABASE, 2019.

#### PERMITTED UNDERGROUND STORAGE TANK (UST)

There are 19 locations within Glenn County (including the cities of Orland and Willows) that have permitted Underground Storage Tanks (UST) that are permitted through the California Water Resources Control Board. Table 4.1-4 lists the location of the permitted USTs in Glenn County.

**TABLE 4.1-4: GLENN COUNTY PERMITTED UST SITES**

NAME	ADDRESS	CITY/AREA
7 Lucky Food Mart	585 Sierra Ave	Hamilton City
Double EE Market	575 Sacramento Ave	Hamilton City
Hamilton Gas And Food	601 6th St	Hamilton City
Hamilton Shell And Subway	601 6th St.	Hamilton City
Mehrokee LLC ARCO Am/Pm	902 Newville Rd	Orland
Orland CFN	1005 South St	Orland
Orland Chevron	848 Newville Rd	Orland
Orland Liberty Gas & Food	506 6th Street	Orland
Orland Stop & Shop	10 Walker St	Orland
Pilot Travel Center #1019	4444 Commerce Ln	Orland
Sportsman's Market And Gas	6378 County Road 200	Orland
Super Shopper	1233 East St	Orland
Tesoro (Shell) #68179 (WRR 6286)	1021 South St	Orland
Tesoro (Shell) #68180 (WRR 6285)	1185 Hoff Way	Orland
Westside Card Lock	512 South St	Orland
Chevron Station #95266	1250 W Wood St	Willows
Russell M Morgan Inc. DbA Bud's Am/Pm	1399 W Wood St	Willows
Willows Shell	1300 W Wood St	Willows
Willows Travel Plaza LLC	1481 County Road 99w	Willows

SOURCE: CALIFORNIA WATER RESOURCES CONTROL BOARD GeOTRACKER DATABASE, 2019.

## Solid Waste Information System (SWIS)

### *FACILITY/SITE LISTING*

The Solid Waste Information System (SWIS) is a database of solid waste facilities that is maintained by the California Integrated Waste Management Board (CIWMB). The SWIS database contains information on solid waste facilities, operations, and disposal sites throughout the State of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For each facility, the database contains information about location, owner, operator, facility type, regulatory and operational status, authorized waste types, local enforcement agency and inspection and enforcement records.

Within Glenn County (including the cities of Willows and Orland) there are 23 listed solid waste facilities. Of these facilities listed in the SWIS database facilities 7 are currently active, 13 are closed sites/facilities, and three sites/facilities are planned. The site details are listed in Table 4.1-5 below.

**TABLE 4.1-5: CIWMB FACILITIES/SITES – GLENN COUNTY**

NUMBER	NAME	ACTIVITY	REGULATORY	STATUS
11-AA-0001	Glenn County Landfill Site	Solid Waste Landfill	Permitted	Active
11-AA-0003	Lp Elk Creek Woodwaste Site	Wood Waste Disposal Site	Permitted	Closed
11-AA-0004	Holly Sugar Lime Disposal Site	Solid Waste Disposal Site	Pre-regulations	Closed
11-AA-0019	Valley Gold Compost	Composting Operation (Ag)	Notification	Active
11-AA-0034	Compost Solutions, Inc.	Composting Facility (Mixed)	Permitted	Active
11-AA-0035	Caltrans Maintenance	Limited Volume Transfer Operation	Notification	Active
11-AA-0036	Glenn County Transfer Station	Large Volume Transfer/Proc Facility	Permitted	Planned
11-AA-0036	Glenn County Transfer Station	Inert Debris Type A Disposal Fac.	Permitted	Planned
11-AA-0037	California Olive Ranch Composting Trial	Composting Operation (Research)	Notification	Active
11-AA-0038	K & S Spreading	Composting Operation (Ag)	Notification	Active
11-AA-0039	California Olive Ranch Compost Facility	Composting Facility (Other)	Proposed	Planned
11-CR-0001	Butte City Dump	Solid Waste Disposal Site	Pre-regulations	Closed
11-CR-0002	Elk Creek Dump	Solid Waste Disposal Site	Pre-regulations	Closed
11-CR-0003	Orland City Dump	Solid Waste Disposal Site	Pre-regulations	Closed
11-CR-0004	Orland-Hamilton City County Dump	Solid Waste Disposal Site	Pre-regulations	Closed
11-CR-0005	Willows City Dump	Solid Waste Disposal Site	Pre-regulations	Closed
11-CR-0006	Willows County Dump	Solid Waste Disposal Site	Pre-regulations	Closed
11-CR-0007	Job Corps Site	Solid Waste Disposal Site	Pre-regulations	Closed
11-CR-0008	Alder Station Site	Solid Waste Disposal Site	Pre-regulations	Closed
11-CR-0009	Plaskett Site	Solid Waste Disposal Site	Pre-regulations	Closed
11-CR-0010	Alder Hotel Site	Solid Waste Disposal Site	Pre-regulations	Closed

<i>NUMBER</i>	<i>NAME</i>	<i>ACTIVITY</i>	<i>REGULATORY</i>	<i>STATUS</i>
11-CR-0011	Ice Springs Site	Solid Waste Disposal Site	Pre-regulations	Closed
11-CR-0014	Sacramento National Wildlife Refuge DS	Solid Waste Disposal Site	Unpermitted	Active

*SOURCE: CALIFORNIA DEPARTMENT OF RESOURCES RECYCLING AND RECOVERY, 2019.*

## REFERENCES

California Department of Resources Recycling and Recovery. 2019.

<http://www.calrecycle.ca.gov/SWFacilities/Directory/Search.aspx>.

California Department of Toxic Substances Control. 2019. Envirostor Database.

<http://www.envirostor.dtsc.ca.gov/public/>.

California Water Resources Control Board. 2019. <https://geotracker.waterboards.ca.gov/>.

## 4.2 AIR TRAFFIC

The State Division of Aeronautics has compiled extensive data regarding aircraft accidents around airports in California. According to the California Airport Land Use Planning Handbook (2002), prepared by the State Division of Aeronautics, 18.2% of general aviation accidents occur during takeoff and initial climb and 44.2% of general aviation accidents occur during approach and landing. The State Division of Aeronautics has plotted accidents during these phases at airports across the country and has determined certain theoretical areas of high accident probability.

### Approach and Landing Accidents

As nearly half of all general aviation accidents occur in the approach and landing phases of flight, considerable work has been done to determine the approximate probability of such accidents. Nearly 77% of accidents during this phase of flight occur during touchdown onto the runway or during the roll-out. These accidents typically consist of hard or long landings, ground loops (where the aircraft spins out on the ground), departures from the runway surface, etc. These types of accidents are rarely fatal and often do not involve other aircraft or structures. Commonly these accidents occur due to loss of control on the part of the pilot and, to some extent, weather conditions. (California Division of Aeronautics, 2002).

The remaining 23% of accidents during the approach and landing phase of flight occur as the aircraft is maneuvered towards the runway for landing, in a portion of the airspace around the airport commonly called the traffic pattern. Common causes of approach accidents include the pilot's misjudging of the rate of descent, poor visibility, unexpected downdrafts, or tall objects beneath the final approach course. Improper use of rudder on an aircraft during the last turn toward the runway can sometimes result in a stall (a cross-control stall) and resultant spin, causing the aircraft to strike the ground directly below the aircraft. The types of events that lead to approach accidents tend to place the accident site fairly close to the extended runway centerline. The probability of accidents increases as the flight path nears the approach end of the runway. (California Division of Aeronautics, 2002).

According to aircraft accident plotting provided by the State Division of Aeronautics, most accidents that occur during the approach and landing phase of flight occur on the airport surface itself. The remainder of accidents that occur during this phase of flight are generally clustered along the extended centerline of the runway, where the aircraft is flying closest to the ground and with the lowest airspeed. (California Division of Aeronautics, 2002).

### Takeoff and Departure Accidents

According to data collected by the State Division of Aeronautics, nearly 65% of all accidents during the takeoff and departure phase of flight occur during the initial climb phase, immediately after takeoff. This data is correlated by two physical constraints of general aviation aircraft:

- The takeoff and initial climb phase are times when the aircraft engine(s) is under maximum stress and is thus more susceptible to mechanical problems than at other phases of flight; and
- Average general aviation runways are not typically long enough to allow an aircraft that experiences a loss of power shortly after takeoff to land again and stop before the end of the runway.

While the majority of approach and landing accidents occur on or near to the centerline of the runway, accidents that occur during initial climb are more dispersed in their location as pilots are not attempting to get to any one specific point (such as a runway). Additionally, aircraft vary widely in payload, engine

power, glide ratio, and several other factors that affect glide distance, handling characteristics after engine loss, and general response to engine failure. This further disperses the accident pattern. However, while the pattern is more dispersed than that seen for approach and landing accidents, the departure pattern is still generally localized in the direction of departure and within proximity of the centerline. This is partially due to the fact that pilots are trained to fly straight ahead and avoid turns when experiencing a loss of power or engine failure. Turning flight causes the aircraft to sink faster and flying straight allows for more time to attempt to fix the problem. (California Division of Aeronautics, 2002).

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## REGULATORY FRAMEWORK

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### *FEDERAL*

#### **Aviation Act of 1958**

The Federal Aviation Act resulted in the creation of the Federal Aviation Administration (FAA). The FAA was charged with the creation and maintenance of a National Airspace System.

#### **Federal Aviation Regulations (CFR, Title 14)**

The Federal Aviation Regulations (FAR) establish regulations related to aircraft, aeronautics, and inspections and permitting.

### *STATE*

#### **Aeronautics Act (Public Utilities Code §21001)**

The Caltrans Division of Aeronautics bases the majority of its aviation policies on the Aeronautics Act. Policies include permits and annual inspections for public airports and hospital heliports and recommendations for schools proposed within two miles of airport runways.

#### **Airport Land Use Commission Law (Public Utilities Code §21670 et seq.)**

The law, passed in 1967, authorized the creation of Airport Land Use Commissions (ALUC) in California. Per the Public Utilities Code, the purpose of an ALUC is to protect *public health, safety, and welfare by encouraging orderly expansion of airports and the adoption of land use measures that minimizes exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses* (§21670). Furthermore, each ALUC must prepare an Airport Land Use Compatibility Plan (ALUCP). Each ALUCP, which must be based on a twenty-year planning horizon, should focus on broadly defined noise and safety impacts.

The Glenn County Airport Land Use Commission is established according the Chapter 22.10 of the Glenn County Code which was adopted by the Glenn County Board of Supervisors in 1985 (Ordinance No. 830).

The 7 member Glenn County Airport Land Use Commission ensures compatible land uses in vicinity of all airport facilities. The Airport Land Use Commission review plans, regulations, & other actions of local agencies & airport operators.

#### *ORLAND AND WILLOWS AIRPORT ALUCP*

The overall goal for the Orland and Willows Airport Comprehensive Land Use Plan is to provide for the orderly growth of the Airport facilities and from the areas surrounding the airports, to safeguard the general welfare of the inhabitants within the vicinity of the airport and the public in general.

## ENVIRONMENTAL SETTING

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### Local Airport Facilities

There are two airport facilities located within the Glenn County geographical area each are described below.

**Orland Haigh Field Airport:** The Orland Haigh Field Airport is located on 390 acres owned by the County of Glenn on County Road "P" approximately 0.6 miles east of the City of Orland. The Airport Master Plan was prepared in 1989.

The Orland Airport has a 3,000 foot square asphalt mat on which most of the facilities are located. Runway #15/33 is 4500 feet long, 60 feet wide, paved, and lighted. In 1990 a new overlay was added to this Runway and a parallel taxi-way was constructed.

**Willows Glenn County Airport:** The Willows Glenn County Airport has 254 Acres of land and an intersecting V-type runway system located adjacent to Interstate 5 west of Willows. The Airport Master plan was prepared in 1979.

The Primary runway, # 16-34, is 150 feet wide, 150 feet wide, and 4500 feet with pavement strength of 38,000 pounds single gear configuration loading. Runway #13-31 is 100 feet wide and 4500 feet long.

### Domestic airports near Glenn County, CA

- 37 miles: Chico, CA (CIC / KCIC) Chico Municipal Airport
- 68 miles: Redding, CA (RDD / KRDD) Redding Municipal Airport

### Local airports near Glenn County, CA

- 13 miles: Willows, CA (WLW / KWLW) Willows-Glenn County Airport
- 44 miles: Red Bluff, CA (RBL) Red Bluff Municipal Airport
- 47 miles: Paradise, CA (ZXW) Skypark
- 48 miles: Colusa, CA (DQI) Colusa Airport
- 48 miles: Colusa, CA (FVL) Colusa Airport
- 53 miles: Oroville, CA (OVE / KOVE) Oroville Municipal Airport

### Major Regional Airport Facilities

**Sacramento International Airport (SMF):** The Sacramento Airport (approximately 90 mile south of Glenn County) serves approximately 9 million passengers a day. SMF serves the Greater Sacramento Area, and it is run by the Sacramento County Airport System. The Airport covers approximately 6,000 acres (24 km<sup>2</sup>) and has two parallel runways, oriented north–south to align with prevailing winds. The airport has two terminals, terminal A and terminal B, with 32 gates.

### National Transportation Safety Board Aviation Accident Database

The National Transportation Safety Board Aviation Accident Database identifies 11 aircraft accidents and 8 fatalities within Glenn County (National Transportation Safety Board, 2019). Table 4.2-1 below details each identified aircraft incidents listed by the database within Glenn County.

**TABLE 4.2-1: NATIONAL TRANSPORTATION SAFETY BOARD AVIATION ACCIDENTS WITHIN GLENN COUNTY**

<i>EVENT DATE</i>	<i>LOCATION</i>	<i>MAKE/MODEL</i>	<i>EVENT SEVERITY</i>
05/18/2010	Glenn, CA	AYRES S2R	Nonfatal
02/21/1999	Glenn, CA	Bell UH-1H	Fatal(1)
08/27/2009	Orland, CA	James B. Taplin RV-6	Fatal(2)
09/17/1994	Orland, CA	Alon A2	Fatal(1)
11/25/2017	Willows, CA	Doshier Wilbert A Gt-500	Nonfatal
12/27/2016	Willows, CA	Air Tractor Inc At 602	Nonfatal
04/28/2006	Willows, CA	Cirrus SR-20	Nonfatal
08/21/2002	Willows, CA	Cessna 195	Nonfatal
04/11/2002	Willows, CA	Beech G35	Fatal(2)
06/16/2000	Willows, CA	Maule M4-210C	Fatal(2)
05/21/1999	Willows, CA	Beech A36	Nonfatal

*SOURCE: NATIONAL TRANSPORTATION SAFETY BOARD ACCIDENT DATABASE 2019*

## REFERENCES

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- Glenn County. 1990. Comprehensive Airport Land Use Plan Willows Glenn Airport. Adopted June 30 1990. Glenn County Land Use Commission.
- Glenn County. 1991. Comprehensive Airport Land Use Plan Orland Haigh Field Airport. Adopted February 27 1991. Glenn County Land Use Commission.
- National Transportation Safety Board. Accessed August 14, 2019. Available at:  
[http://www.nts.gov/\\_layouts/ntsb.aviation/index.aspx](http://www.nts.gov/_layouts/ntsb.aviation/index.aspx).

### **4.3 FIRE HAZARDS**

This section addresses the hazards associated with wildfires in the Planning Area. The discussion of fire suppression resources is located in the Community Services and Facilities section of this report.

#### **REGULATORY SETTING**

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##### *FEDERAL*

##### **FY 2001 Appropriations Act**

Title IV of the Appropriations Act required the identification of “Urban Wildland Interface Communities in the Vicinity of Federal Lands that are at High Risk from Wildfire” by the U.S. Departments of the Interior and Agriculture.

##### *STATE*

##### **California Government Code Section 65302**

This section, which establishes standards for developing and updating General Plans, includes fire hazard assessment and Safety Element content requirements.

##### **Assembly Bill 337**

Per AB 337, local fire prevention authorities and the California Department of Forestry and Fire Protection (CalFire) are required to identify “Very High Fire Hazard Severity Zones (VHFHSZ) in Local Responsibility Areas (LRA). Standards related to brush clearance and the use of fire resistant materials in fire hazard severity zones are also established.

##### **California Public Resources Code**

The State’s Fire Safe Regulations are set forth in Public Resources Code §4290, which include the establishment of State Responsibility Areas (SRA).

Public Resources Code §4291 sets forth defensible space requirements, which are applicable to anyone that *...owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material (§4291(a)).*

##### **Uniform Fire Code**

The Uniform Fire Code (UFC) establishes standards related to the design, construction, and maintenance of buildings. The standards set forth in the UFC range from designing for access by firefighters and equipment and minimum requirements for automatic sprinklers and fire hydrants to the appropriate storage and use of combustible materials.

##### **CA Code of Regulations Title 8**

In accordance with CCR, Title 8, §1270 and §6773 (*Fire Prevention and Fire Protection and Fire Equipment*), the Occupational Safety and Health Administration (Cal OSHA) establishes fire suppression service standards. The standards range from fire hose size requirements to the design of emergency access roads.



### **CA Code of Regulations Title 14 (Natural Resources)**

Division 1.5 (Department of Forestry and Fire Protection), Title 14 of the CCR establishes a variety of wildfire preparedness, prevention, and response regulations.

### **CA Code of Regulations Title 19 (Public Safety)**

Title 19 of the CCR establishes a variety of emergency fire response, fire prevention, and construction and construction materials standards.

### **CA Code of Regulations Title 24 (CA Building Standards Code)**

The California Fire Code is set forth in Part 9 of the Building Standards Code. The CA Fire Code, which is pre-assembled with the International Fire Code by the ICC, contains fire-safety building standards referenced in other parts of Title 24.

### **CA Health and Safety Code and UBC Section 13000 et seq.**

State fire regulations are set forth in §13000 *et seq.* of the California Health and Safety Code, which is divided into “Fires and Fire Protection” and “Buildings Used by the Public.” The regulations provide for the enforcement of the UBC and mandate the abatement of fire hazards.

The code establishes broadly applicable regulations, such as standards for buildings and fire protection devices, in addition to regulations for specific land uses, such as childcare facilities and high-rise structures.

### **CA Health and Safety Code Division 11 (Explosives)**

Division 11 of the Health and Safety Code establishes regulations related to a variety of explosive substances and devices, including high explosives and fireworks. Section 12000 *et seq.* establishes regulations related to explosives and explosive devices, including permitting, handling, storage, and transport (in quantities greater than 1,000 pounds).

### **CA Health and Safety Code Division 12.5 (Buildings Used by the Public)**

This Division establishes requirements for buildings used by the public, including essential services buildings, earthquake hazard mitigation technologies, school buildings, and postsecondary buildings.

### **CA Vehicle Code §31600 (Transportation of Explosives)**

Establishes requirements related to the transportation of explosives in quantities greater than 1,000 pounds, including licensing and route identification.

#### *LOCAL*

### **Glenn County General Plan**

The existing Glenn County General Plan identifies the following service standard for Glenn County

- Fire Protection: ISO rating of no less than eight for rural areas. ISO rating of no less than five for areas within urban limit lines.

The existing Glenn County General Plan identifies the following goals and policies related to fire protection services:

GOALS:

**PSG-2. Protection and enhancement of the quality of life by reducing the loss of life and personal property due to fire.**

POLICIES:

PSP-9 Continue to support the County's volunteer fire forces and offer incentives for continued participation.

PSP-10 Maintain existing fire service levels and not allow their deterioration.

PSP-11 Determine the impact proposed development will have on the provision of fire protection services, and ensure that the established level of service is maintained.

PSP-12 Regularly review and evaluate fire district boundaries to determine if the existing service areas are the most efficient and cost-effective.

PSP-13 Establish as a priority adequate funding and firefighting personnel for those areas targeted for growth.

PSP-14 Encourage fire districts to work with the County to require new development to pay its fair share for the provision of new fire stations, equipment, personnel and fire suppression improvements necessary to provide adequate fire protection services.

PSP-15 Actively involve fire protection personnel in land use planning decisions.

PSP-16 Require new development to be designed with fire protection and prevention in mind.

PSP-17 Apply contemporary fire prevention standards to all development.

PSP-18 Evaluate the creation of urban area fire departments for the Willows and Orland areas which would serve both the developed areas and developing areas within established urban limit lines.

PSP-19 Study the use of mutual aid agreements or memoranda of understanding for structural as well as wildland fire protection in areas currently under California Department of Forestry and U.S. Forest Service jurisdiction.

PSP-20 Consider fire risk and hazard zones when approving residential development in areas subject to potential wildland fires.

PSP-21 Require that all community water systems serving new development meet or exceed Glenn County minimum standards for provision of water for peakload demands and required fire flows.

PSP-22 Comply with the State of California Fire Safety Regulations for the State Responsibility Area located within Glenn County.

PSP-23 Assign house numbers for all structures within the county.

PSP-24 Communicate the Emergency Response Plan to all public safety agencies when reviewing future development proposals throughout the county.

PSP-25 Encourage development of educational programs that will increase public awareness of fire safety and emergency response planning.

PSP-26 Periodically update the Emergency Response Plan.

PSP-27 Recognize the autonomy of individual fire districts within the county.

CDP-130 Site future fire and police stations to enable minimum acceptable response times to service calls.

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## IDENTIFYING FIRE HAZARDS

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### **Fuel Rank**

Fuel rank is a ranking system developed by CalFire that incorporates four wildfire factors: fuel model, slope, ladder index, and crown index.

The U.S. Forest Service has developed a series of fuel models, which categorize fuels based on burn characteristics. These fuel models help predict fire behavior. In addition to fuel characteristics, slope is an important contributor to fire hazard levels. A surface ranking system has been developed by CalFire, which incorporates the applicable fuel models and slope data. The model categorizes slope into six ranges: 0-10%, 11-25%, 26-40%, 41-55%, 56-75% and >75%. The combined fuel model and slope data are organized into three categories, referred to as surface rank. Thus, surface rank is a reflection of the quantity and burn characteristics of the fuels and the topography in a given area.

The ladder index reflects the distance from the ground to the lowest leafy vegetation for tree and plant species. The crown index reflects the quantity of leafy vegetation present within individual specimens of a given species.

The surface rank, ladder index, and crown index for a given area are combined in order to establish a fuel rank of medium, high, or very high. Fuel rank is used by CalFire to identify areas in the California Fire Plan where large, catastrophic fires are most likely.

Glenn County contains areas with “moderate” “High” “Very High” and “non-wildland fuel” ranks. Generally the more developed areas within the county near the I-5 corridor are considered non-wildland with the fuel rank increasing in the western foothill areas of the county. The areas warranting “moderate” to “Very High” fuel ranks possess combustible material in sufficient quantities combined with topographic characteristics that pose a wildfire risk.

### **Fire Threat**

The fuel rank data are used by CalFire to delineate fire threat based on a system of ordinal ranking. Thus, the Fire Threat model creates discrete regions, which reflect fire probability and predicted fire behavior. The four classes of fire threat range from moderate to extreme.

### **Fire Hazard Severity Zones**

The state has charged CalFire with the identification of Fire Hazard Severity Zones (FHSZ) within State Responsibility Areas. In addition, CalFire must recommend Very High Fire Hazard Severity Zones (VHFHSZ) identified within any Local Responsibility Areas. The FHSZ maps are used by the State Fire Marshall as a basis for the adoption of applicable building code standards.

#### *LOCAL RESPONSIBILITY AREAS*

The majority of the developed portions of the Planning Area (east and west of the Interstate 5 corridor) is located within a Local Responsibility Area (LRA). CalFire has determined that Glenn County has no Very High Fire Hazard Severity Zones (VHFHSZ) within Local Responsibility Areas. Figure 4.3-1 shows Fire Hazard Severity Zones for Local, State, and Federal Responsibility Areas.

#### *STATE RESPONSIBILITY AREAS*

State Responsibility Areas (SRAs) within the Planning Area generally bisect the county from north to south beginning roughly 5 miles west of Interstate 5 moving west through the foothill region. FHSZ within the SRAs range from “Moderate” to “Very High”. Figure 4.3-1 shows Fire Hazard Severity Zones for State Responsibility Areas.

#### *FEDERAL RESPONSIBILITY AREAS*

As shown on Figure 4.3-1 there are several areas designated as Federal Responsibility Areas (FRA) within the Planning Area. The majority of FRA’s are located on the western side of the foothill region and include the Dogtown, Alder Springs, Fiddlers Green, and Copper City areas.

### **REFERENCES**

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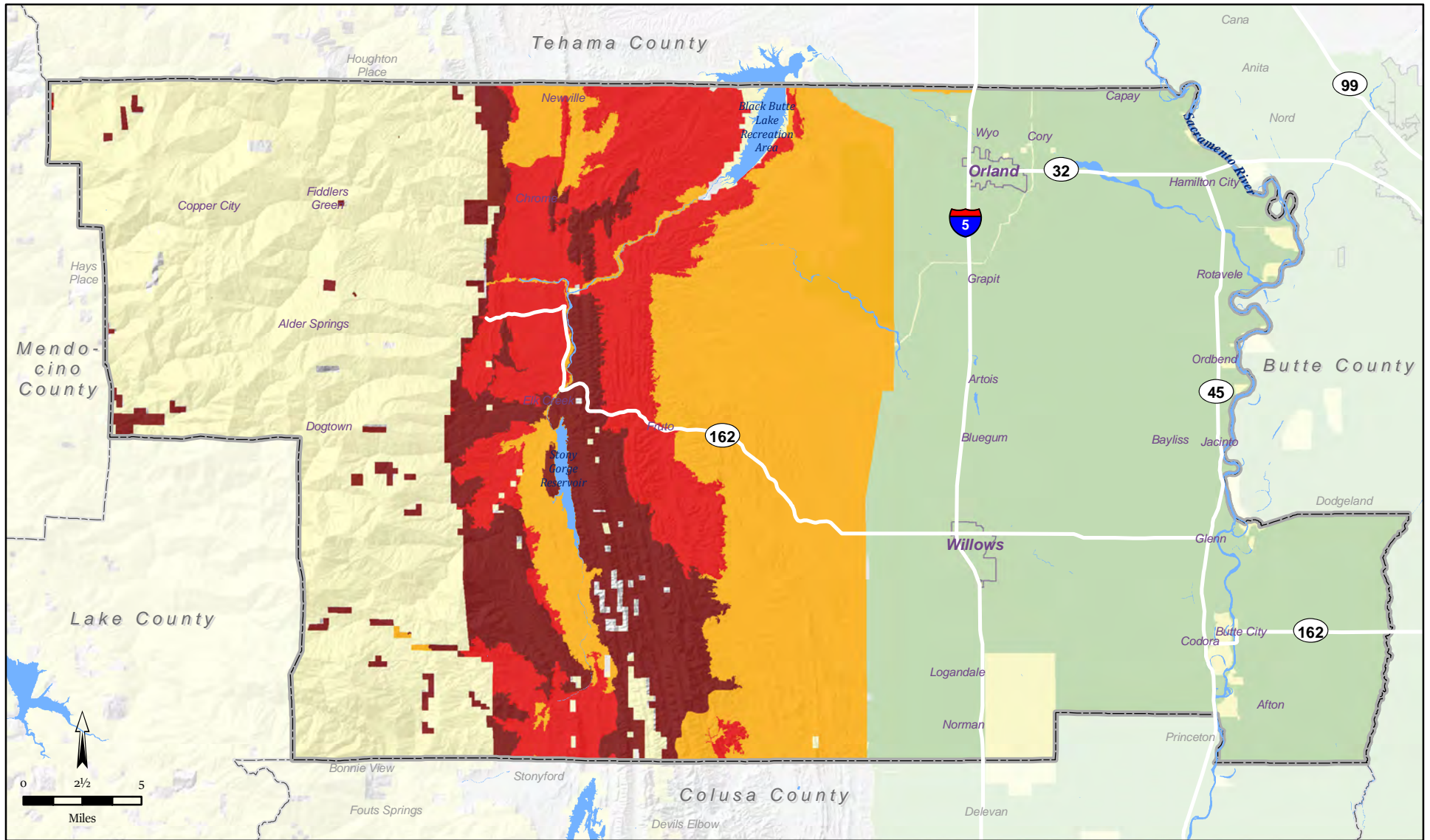
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Sources: Cal Fire - FRAP, Fire Hazard Severity Zones in SRA, adopted 11-7-2007. Map date: July 22, 2019.

**Legend**

**Fire Hazard Severity Zones in State Responsibility Areas**

- Moderate
- High
- Very High

**Responsibility Areas**

- Federal Responsibility Area
- Local Responsibility Area\*

\* CAL FIRE has determined that Glenn County has no Very High Fire Hazard Severity Zones (VHFHSZ) within Local Responsibility Areas.

COUNTY OF GLENN, CALIFORNIA

**FIGURE 4.3-1. FIRE HAZARD SEVERITY ZONES IN STATE RESPONSIBILITY AREAS**

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## 4.4 FLOODING

This section addresses the hazards associated with flooding in the Planning Area. The discussion of storm drainage and infrastructure is located in Chapter 3.0 (Community Services and Facilities) of this report.

### REGULATORY FRAMEWORK

#### *FEDERAL*

#### **Federal Emergency Management Agency (FEMA)**

FEMA operates the National Flood Insurance Program (NFIP). Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 has adopted as a desired level of protection, an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of occurrence on the order of once in 100 years, although such a flood may occur in any given year. Communities are occasionally audited by the California Department of Water Resources to insure the proper implementation of FEMA floodplain management regulations.

#### **Rivers and Harbors Appropriation Act of 1899**

One of the country's first environmental laws, this Act established a regulatory program to address activities that could affect navigation in Waters of the United States.

#### **Water Pollution Control Act of 1972**

The Water Pollution Control Act (WPCA) established a program to regulate activities that result in the discharge of pollutants to waters of the United States

#### **Clean Water Act of 1977**

The CWA, which amended the WPCA of 1972, sets forth the §404 program to regulate the discharge of dredged and fill material into Waters of the U.S. and the §402 National Pollutant Discharge Elimination System (NPDES) to regulate the discharge of pollutants into Waters of the U.S. The §401 Water Quality Certification program establishes a framework of water quality protection for activities requiring a variety of Federal permits and approvals (including CWA §404, CWA §402, FERC Hydropower and §10 Rivers and Harbors).

#### **Flood Control Act**

The Flood Control Act (1917) established survey and cost estimate requirements for flood hazards in the Sacramento Valley. All levees and structures constructed per the Act were to be maintained locally but controlled federally. All rights of way necessary for the construction of flood control infrastructure were to be provided to the Federal government at no cost.

Federal involvement in the construction of flood control infrastructure, primarily dams and levees, became more pronounced upon passage of the Flood Control Act of 1936.

#### **National Flood Insurance Program (NFIP)**

Per the National Flood Insurance Act of 1968, the NFIP has three fundamental purposes:

*Better indemnify individuals for flood losses through insurance; Reduce future flood damages through State and community floodplain management regulations; and Reduce Federal expenditures for disaster assistance and flood control.*

While the Act provided for subsidized flood insurance for existing structures, the provision of flood insurance by FEMA became contingent on the adoption of floodplain regulations at the local level.

### **Flood Disaster Protection Act (FDPA)**

The FDPA of 1973 was a response to the shortcomings of the NFIP, which were experienced during the flood season of 1972. The FDPA prohibited Federal assistance, including acquisition, construction, and financial assistance, within delineated floodplains in non-participating NFIP communities. Furthermore, all Federal agencies and/or federally insured and federally regulated lenders must require flood insurance for all acquisitions or developments in designated Special Flood Hazard Areas (SFHAs) in communities that participate in the NFIP.

Improvements, construction, and developments within SFHAs are generally subject to the following standards:

- All new construction and substantial improvements of residential buildings must have the lowest floor (including basement) elevated to or above the base flood elevation (BFE).
- All new construction and substantial improvements of non-residential buildings must either have the lowest floor (including basement) elevated to or above the BFE or dry-floodproofed to the BFE.
- Buildings can be elevated to or above the BFE using fill, or they can be elevated on extended foundation walls or other enclosure walls, on piles, or on columns.
- Extended foundation or other enclosure walls must be designed and constructed to withstand hydrostatic pressure and be constructed with flood-resistant materials and contain openings that will permit the automatic entry and exit of floodwaters. Any enclosed area below the BFE can only be used for the parking of vehicles, building access, or storage.

### *STATE*

#### **Assembly Bill 162**

This bill requires a general plan's land use element to identify and annually review those areas covered by the general plan that are subject to flooding as identified by flood plain mapping prepared by the Federal Emergency Management Agency (FEMA) or the Department of Water Resources (DWR). The bill also requires, upon the next revision of the housing element, on or after January 1, 2009, the conservation element of the general plan to identify rivers, creeks, streams, flood corridors, riparian habitat, and land that may accommodate floodwater for purposes of groundwater recharge and stormwater management. By imposing new duties on local public officials, the bill creates a State-mandated local program.

This bill also requires, upon the next revision of the housing element, on or after January 1, 2009, the safety element to identify, among other things, information regarding flood hazards and to establish a set of comprehensive goals, policies, and objectives, based on specified information for the protection of the community from, among other things, the unreasonable risks of flooding.



### **Assembly Bill 70**

This bill provides that a city or county may be required to contribute its fair and reasonable share of the property damage caused by a flood to the extent that it has increased the State's exposure to liability for property damage by unreasonably approving, as defined, new development in a previously undeveloped area, as defined, that is protected by a State flood control project, unless the city or county meets specified requirements.

### **Senate Bill 5**

Both State policy and recently enacted State legislation (Senate Bill 5) call for 200-year (0.5% annual chance) flood protection to be the minimum level of protection for urban and urbanizing areas in the Central Valley. Senate Bill 5 (SB5) requires that the 200-year protection be consistent with criteria used or developed by the Department of Water Resources. SB 5 requires all urban and urbanizing areas in the Sacramento and San Joaquin Valleys to achieve 200-year Urban Level of flood protection (or a finding of adequate progress toward 200-year flood protection) in order to approve development.

"Urban area" means a developed area in which there are 10,000 residents or more.

"Urbanizing area" means a developed area or an area outside a developed area that is planned or anticipated to have 10,000 residents or more within the next 10 years.

### **CA Government Code**

The Senate and Assembly bills identified above have resulted in various changes and additions to the California Government Code. Key sections related to the above referenced bills are identified below.

#### *SECTION 65302*

Revised safety elements must include maps of any 200-year flood plains and levee protection zones within the Planning Area.

#### *SECTION 65584.04*

Any land having inadequate flood protection, as determined by FEMA or DWR, must be excluded from land identified as suitable for urban development within the planning area.

#### *SECTION 8589.4*

California Government Code §8589.4, commonly referred to as the Potential Flooding-Dam Inundation Act, requires owners of dams to prepare maps showing potential inundation areas in the event of dam failure. A dam failure inundation zone is different from a flood hazard zone under the National Flood Insurance Program (NFIP). NFIP flood zones are areas along streams or coasts where storm flooding is possible from a "100-year flood." In contrast, a dam failure inundation zone is the area downstream from a dam that could be flooded in the event of dam failure due to an earthquake or other catastrophe. Dam failure inundation maps are reviewed and approved by the California Office of Emergency Services (OES). Sellers of real estate within inundation zones are required to disclose this information to prospective buyers.

#### *SECTION 8609*

The State Central Valley Flood Protection Board, under Section 8609 of the Water Code, has the authority to designate floodways in the Central Valley. California Code of Regulations, Title 23, Waters,

provide further details of the Board’s regulatory authority. Specifically, Title 23, Article 5, Section 107 regulates uses in Designated Floodways.

*LOCAL*

**Glenn County General Plan**

The existing Glenn County General Plan identifies the following goals and policies related to flooding:

GOALS:

**PSG-5 Protection and reduction of loss of life and personal property due to flooding.**

POLICIES:

PSP-38 Recognize the special status of lands located within the designated floodways adopted by the State Reclamation Board.

PSP-39 Support efforts to revise the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for the areas around Hamilton City, Willows and Orland in order to improve their accuracy.

PSP-40 Endeavor to avoid areas subject to flooding when considering approval of new development.

PSP-41 Require the installation of storm drain and other flood protection/prevention improvements as a condition of all new development approvals.

PSP-42 Encourage the formation of a countywide service area or individual storm drain maintenance districts to finance and construct needed flood control improvements.

**ENVIRONMENTAL SETTING**

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Glenn County’s primary drainages include Stony Creek, Willow Creek, Walker Creek and the Sacramento River. Stony Creek flows from the mountainous uplands, through the foothills, and enters the Sacramento Valley just west of the Orland Buttes. It runs southwesterly into the Sacramento River about five miles southeast of Hamilton City. Draining foothill areas west of Stony Creek are Willow and Walker Creeks. Most northerly is Walker Creek which flows southeasterly, joining Willow Creek east of Willows. Willow Creek continues into Colusa County, eventually entering the Colusa Basin Drain. The Sacramento River, which is the chief source of surface irrigation water in the county, flows southward through the center of the Sacramento Valley, joins the San Joaquin River in the Delta, and then flows into the San Francisco Bay and the Pacific Ocean. Other streams draining Glenn County include Wilson Creek, French Creek, Logan Creek and Hunter Creek. For additional information related to water resources see Chapter 5.0 (Conservation) of this report. For additional information related local drainage and flood infrastructure see Chapter 3.0 (Community Services and Facilities) of this report.

Some areas of the county adjacent to local waterways are subject to flooding during heavy rainfall. The largest floodplain consists of a narrow area parallel to the Sacramento River. Many old meander scars and oxbow lakes are found in the areas adjacent to the river.

Dams control the flow of Stony Creek and the Sacramento River, preventing severe flooding. Annual flooding occurs within the levee system that borders the river.

There are two main basin areas within the county, the Colusa Basin and the Butte Sink, which lies east of the river. Both areas experience occasionally flooding in winter because their terrain is nearly level and the soils are poorly drained. In many places they contain excess salts and alkali and have an intermittent high water table. In large areas, drainage ditches have been constructed and the soils partly reclaimed. Additionally drainage modifications due to agricultural activities and modifications to local drainage may also increase localized flooding in the county.

Most of the mountains and foothills drain well, but parts of the intervening valleys drain poorly. The Black Butte River, Corbin Creek, and many other streams drain the area west of the crest of the Coast Ranges. These streams flow into the Eel River, one of the major streams draining the northern part of the Coast Ranges.

Small creeks drain the mountains east of the crest of the Coast Range. These creeks empty into Stony Creek, which flows northeast through the foothills into the Sacramento Valley drainage basin. Drainage in the foothills is by intermittent streams that flow only during the wet winter and spring months. Among the minor streams that drain the foothills are French, Hunter, Logan, Walker, Willow and Wilson Creeks. These streams flow east and southward into the Colusa Basin and rarely reach the Sacramento River.

The Glenn County Public Works Agency manages many special districts. These special districts are for Flood Control, Stream Cleaning and Street Lighting. The districts are designed to provide for the control of the flood and storm water flows within the designated areas of the special districts as well as countywide to protect the land, properties, facilities, and people within the county from damage caused by storm and flood waters.

## **Climate**

Glenn's climate is generally Mediterranean with hot dry summers and moderate to cool wet winters. Average daily maximum temperatures range from the mid-fifties in January to the mid-nineties in July. Nearly 90 percent of the County's annual rainfall occurs between November and April with January generally being the wettest month usually from frontal systems from the west. During the winter, snowfall in the valley is infrequent however, snowfall increase to the west on the upper and lower slopes of the mountains. Normal annual precipitation across the county varies from east to west and by elevation, but the county averages approximately 24 inches per year.

## **FEMA Flood Zones**

FEMA mapping provides important guidance for cities and counties planning for flooding events and regulating development within identified flood hazard areas. FEMA's National Flood Insurance Program (NFIP) is intended to encourage State and local governments to adopt responsible floodplain management programs and flood measures. As part of the program, the NFIP defines floodplain and floodway boundaries that are shown on Flood Insurance Rate Maps (FIRMs). The FEMA FIRM for the Planning Area is shown on Figure 4.4-1.

The Planning Area is subject to flooding problems along the natural creeks and drainages that traverse the area. The primary flood hazard is the Sacramento River and its tributaries.

The 100-year flood plain is largely confined to the southern and eastern portions of the County and along local Sacramento river tributaries. Additionally, the 500-year flood plain is generally mapped near several developed portions of the county including near the Willows, Orland, Artois, Bluegum, and Hamilton City Planning areas.

Table 4.4-1 FEMA Flood Zone Designations - Glenn County

**TABLE 4.4-1 FEMA FLOOD ZONE ACREAGE BY DESIGNATIONS - GLENN COUNTY**

FEMA DESIGNATION	ACRES (GIS)
100-yr	132,733
500-yr	4,801
Minimal	477,898
Regulated Floodway	2,664
Undetermined	231,455

SOURCES: FEMA MAP SERVICE CENTER, NFHL\_06021C, LATEST STUDY EFFECTIVE DATA 8/5/2010, LATEST LOMR EFFECTIVE DATA 1/11/2011. MAP DATE: JULY 22, 2019.

Glenn County entered the NFIP on September 3, 1980. As a participant in the NFIP, the County is dedicated to regulating development in the FEMA regulated floodplain areas in accordance with NFIP criteria. Before a permit to build in a floodplain area is issued, Glenn County ensures that two basic criteria are met:

All new buildings and developments undergoing substantial improvements must, at a minimum, be elevated to protect against damage by the 100-year flood. New floodplain developments must not aggravate existing flood problems or increase damage to other properties.

## SB 5 Flood Zones

SB 5 requires all urban and urbanizing areas in the Sacramento and San Joaquin Valleys to achieve 200-year Urban Level of flood protection (or a finding of adequate progress toward 200-year flood protection) in order to approve development. Currently the County does not have communities or regions that meet the standard to be considered an urban and urbanizing area. Detailed base flood 200-year flood mapping has not been developed for Glenn County. The Department of Water Resources Best Available Mapping (BAM) shows 200-year flood risk throughout the Central Valley including Glenn County. Figure 4.4-2 shows DWR's 200-Year flood mapping within the county. As shown on Figure 4.4-2, generally the 200-year flood is associated with areas east and west of the Sacramento River in the eastern portions of Glenn County.

## Dam Inundation

A major dam failure event has not occurred in Glenn County. A catastrophic failure of various dams in the region would have a significant impact on Glenn County. Devastation could occur in and along creeks and rivers to several hundred feet beyond normal reaches. Water levels could be many times higher than those recorded in the worst floods. Figure 4.4-3, shows dam failure inundation areas within the Planning Area that would be subject to inundation in the event of dam failure.

Earthquakes centered close to a dam are typically the most likely cause of dam failure. Dam Inundation maps have been required in California since 1972, following the 1971 San Fernando Earthquake and near failure of the Lower Van Norman Dam. The Planning Area has the potential to be inundated by several dams. According to CalOES, there are six dams in Glenn County. In addition to dams in Glenn County, there are four dams identified outside the county that have the potential to inundate portions of the county in the event of a dam failure. As listed below, these dams are in Tehama, Colusa, Shasta,

and Butte Counties. The dam inundation area for each dam is shown in Figure 4.4-3. Each dam is identified in Table 4.4-2 below:

**TABLE 4.4-2: DAMS WITH THE POTENTIAL TO IMPACT GLENN COUNTY**

NAME	COUNTY/COMMUNITY	RIVER	OWNER TYPE	HEIGHT (FT)	STORAGE (ACRE FT)
<i>DAMS WITHIN COUNTY LIMITS</i>					
Upper Plaskett	Glenn/Elk Creek	Plaskett Creek	Public - Federal	28	21
Stony Gorge	Glenn/Elk Creek	Stony Creek	Public – Federal	119	50,350
Stony Creek Gravel	Glenn/Elk Creek	Stony Creek	Public Utility	10	100
E A Wright	Glenn/Grindstone	Small Creek	Private	38	650
Sanhedrin Ranch	Glenn/Copper City	TR Stony Creek	Private	27	210
Hamilton	Glenn/Grindstone	TR Watson Creek	Private	28	111
<i>DAMS OUTSIDE COUNTY LIMITS</i>					
Black Butte	Tehama / Glenn Tehama Counties	Stony Creek	Public - Federal	156	143,700
Shasta	Shasta /Shasta Lake	Sacramento River	Public – Federal	602	4,661,860
East Park	Colusa/Colusa	Little Stony Creek	Public-Federal	139	54,300
Oroville	Butte/Oroville	Feather River	Public - State	770	3,540,000

*GLENN COUNTY, CA MULTI-JURISDICTION HAZARD MITIGATION PLAN 2018*

Of the dams identified above, Black Butte, and Stony Gorge (southeast of Elk Creek) have the greatest potential for causing loss of life and damage to the Glenn County region. Based on inundation zone mapping models of the dams, the dam failure hazard to Glenn County and the City of Willows is low; however, the severity of this hazard in the City of Orland is more severe.

Section 8589.5 of the California Government Code requires local jurisdictions to adopt emergency procedures for the evacuation of populated inundation areas identified by dam owners. The local Office of Emergency Services has prepared a Dam Failure Plan. This plan includes a description of dams, direction of floodwaters, responsibilities of local jurisdictions, and evacuation plans.

## Floodways

Designated Floodway refers to the channel of the stream and that portion of the adjoining floodplain reasonably required providing for the passage of a design flood; it is also the floodway between existing levees as adopted by the Central Valley Flood Protection Board (formerly the Reclamation Board) or the Legislature. The State Central Valley Flood Protection Board (CVFPB), under Section 8609 of the Water

Code, designates floodways in the Central Valley. Within Glenn County the CVFPB has designated three areas as floodways.

Designated Floodways within Glenn County include:

- Sacramento River - From Glenn/Tehama/Butte County line south to the community of Glenn
- Stony Creek - From Black Butte Dam to the Sacramento River
- Colusa Drain - From just east of Willows south through Colusa to Knights Landing in Yolo County

### **Regional Flood Control**

**Central Valley Flood Protection Plan (2012/2017 Update).** The Central Valley Flood Protection Plan (CVFPP) was adopted by the Central Valley Flood Protection Board in 2012 and updated in 2017. The CVFPP is a guide to managing flood risk in the Central Valley and it will be updated every five years. The goal of the CVFPP is to improve flood risk management with the following supporting goals:

- Improve operations and maintenance
- Promote ecosystem functions
- Improve institutional support
- Promote multi-benefit projects

Flood infrastructure is to be planned and managed centrally, but O&M, flood response, and infrastructure implementation can be implemented either regionally or locally. The CVFPP promotes regional governance via local consolidation and collaboration among partnering agencies.

**Reclamation Districts.** Reclamation districts are governed by a board of trustees that are appointed by the County Board of Supervisors or are elected directly from the populations they serve (§50650). The board of trustees can consist of three, five or seven members and have the power to do all things necessary or convenient for accomplishing the purposes for which the reclamation district was formed (50900). The owners of the majority of acreage in the district may vote to adopt governing bylaws (§50370). A district may, by resolution of the board, provide a procedure for the collection charges and fees, by way of the tax bills of the county or counties in which such district is located (§50904).

There are four reclamation districts in Glenn County, which are:

- Reclamation District No. 2047
- Reclamation District No. 2106
- Reclamation District No. 2140
- Reclamation District No. 1004

Reclamation District No. 2106 is a multicounty district, extending into Butte County. The District is approximately 49,549 acres in size, with approximately 35,507 acres located in Glenn County and approximately 14,402 acres located in Butte County. The District consists of approximately 439 parcels, 408 of which are found in Glenn County and 31 of which are located in Butte County. The Glenn Local Agency Formation Commission is the principal county LAFCo for Reclamation District No. 2106 as the majority of the parcels, along with the majority of the land value, lies within Glenn County.

Reclamation Districts 1004 and 2047 are also multicounty districts. Only a small portion of Reclamation District No. 1004, consisting of six parcels, totaling approximately 468 acres in area, is located within Glenn County. The remaining portion of Reclamation District No. 1004 is within Colusa County. As the majority of the assessed land value of Reclamation District No. 1004 is within Colusa County, the Colusa Local Agency Formation Commission is the principal county LAFCo for this District. As the principal county LAFCo, Colusa LAFCo is the agency that would act on annexations, detachments, SOI modifications and SOI Plans, and municipal services reviews for Reclamation District No. 1004. Likewise, a large portion of Reclamation District No. 2047, consisting of approximately 1,569 parcels totaling approximately 95,605 acres in size, is located within Glenn County. Even though a large portion of Reclamation District No. 2047 is within Glenn County, Colusa LAFCo is the principal county LAFCo for this district.

**Levee Districts.** Levee districts are governed by a three-member board of directors that are appointed by the County Board of Supervisors or are elected directly from the populations they serve. Levee districts may acquire by purchase, condemnation, gift or other action, drains, canals, sluices, bulkheads, watergates, levees, embankments, pumping plants and pipelines and to purchase, construct or otherwise acquire, maintain and keep in repair all things reasonable or convenient for the protection of the lands of the district from overflow and for the purpose of conserving or adding water to the sloughs and drains in the district. The district may co-operate and contract with the United States, the State of California, or any department or agency of either, in order to accomplish any of the purposes of the district.

There are three levee districts in Glenn County, which are:

- Levee District No. 1
- Levee District No. 2
- Levee District No. 3

**Levee District No. 1** is located north and south of the unincorporated community of Glenn along the west side of the Sacramento River. The District consists of approximately 207 parcels and totals approximately 9,630 acres in size. The predominant land use within the District boundaries is agricultural, along with some agricultural processing facilities and scattered residential uses. The majority of the district is zoned for agricultural uses. The District has an estimated population of 300. The District is responsible for maintenance of the levee located on the west side of the Sacramento River, from the north border of Levee District No. 2 northwards for approximately 12 miles.

**Levee District No. 2** is located in the Four Corners area of southeast Glenn County, along the west side of the Sacramento River. The District consists of approximately 130 parcels and totals approximately 5,620 acres in size. The predominant land use within the District boundaries is agricultural, along with some agricultural processing facilities and scattered residential uses. The majority of the district is zoned for agricultural uses. The District has an estimated population of 115. The District is responsible for maintenance of the levee located on the west side of the Sacramento River, from the Colusa County border northwards for approximately 4.9 miles.

**Levee District No. 3** is located in the southeast Glenn County area, east of the Sacramento River, and includes the unincorporated community of Butte City. The District consists of approximately 247 parcels and totals approximately 12,820 acres in size. The predominant land use within the District

boundaries is agricultural, along with some agricultural processing facilities. The unincorporated community of Butte City, which is developed with approximately 40 dwellings, is located within the District. The majority of the district is zoned for agricultural uses, although the Butte City area is zoned for single-family residential uses. The District has an estimated population of 115. The District is responsible for maintenance of the levee located on the east side of the Sacramento River, from the Colusa County border northwards for a distance of approximately 12 miles.

### **Levee Failure - Past Occurrences**

Breaching of levees along the Sacramento River in various locales could have potentially catastrophic impacts on areas of Glenn County, most significantly along the west bank of the Sacramento River.

Additional levees in Glenn County are located along Butte Creek, Elk Creek, French Creek, Grindstone Creek, Hambright Creek, Logan Creek, Stony Creek, Walker Creek, Wilson Creek, and Willow Creek, as well as smaller tributaries. Additionally, the Glenn-Colusa Canal and Tehama-Colusa Canal are sites where levees could potentially fail and impact surrounding communities.

Portions of Hamilton City and the surrounding area flooded in 1974. Extensive flood fighting has been necessary in 1983, 1986, 1995, 1997, and 1998 to avoid failure of the private 100 year-old 'J' levee. Residents of the town were evacuated six times in the past 20 years: 1983, 1986, twice in 1995, 1997, and 1998 (Sacramento River Conservation Area Forum 2003).

A catastrophic failure of various levees along the Sacramento River in the region would have a significant impact on portions of Glenn County. Various historical crests (water overtopping levee) have occurred along the Sacramento River in Hamilton City:

- 150.92 ft. on 01/02/1997
- 150.80 ft. on 01/24/1970
- 150.77 ft. on 03/01/1983
- 150.65 ft. on 01/10/1995
- 150.53 ft. on 02/18/1986

Additional historical crests have occurred along the Sacramento River at Butte City:

- 96.87 ft. on 02/07/1942
- 96.70 ft. on 02/20/1958
- 95.89 ft. on 03/02/1983
- 95.17 ft. on 02/12/1941
- 95.15 ft. on 02/04/1998

And, historical crests along the Sacramento River at Ord Ferry include:

- 121.70 ft. on 02/28/1940
- 121.20 ft. on 02/06/1942
- 121.10 ft. on 12/11/1937
- 120.10 ft. on 02/25/1958
- 119.79 ft. on 01/24/1970



### **Recent Flood Control Improvements**

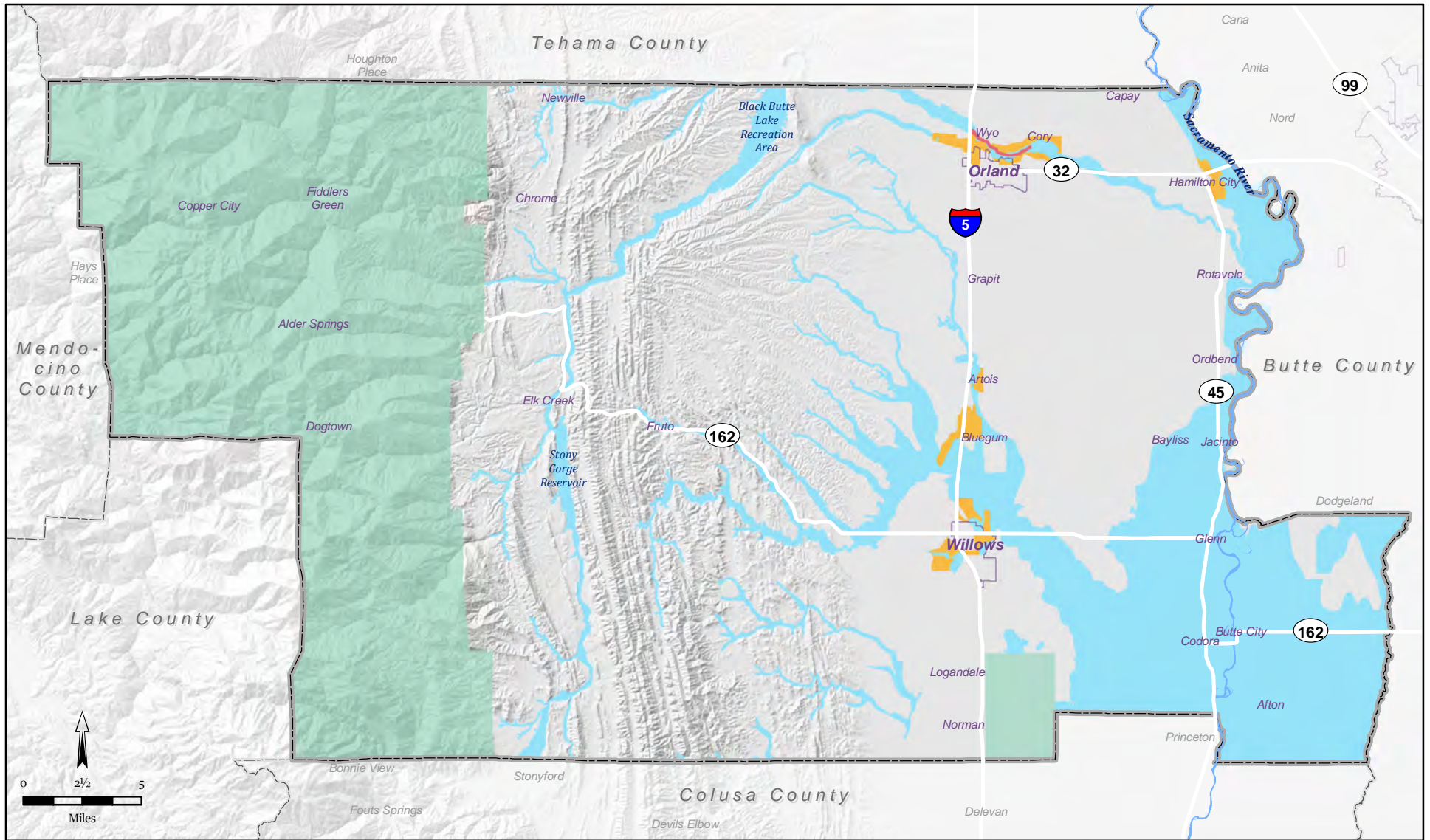
Flood protection for Hamilton City and surrounding agricultural lands was recently increased from less than a 10-year level to a 75-year level. Key features of this project included removing the degraded J Levee and replacing it with 6.8 miles of setback levee, and restoring approximately 1,400 acres of Sacramento River floodplain. The project was authorized in the Water Resources Development Act of 2007.

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Sources: FEMA Map Service Center, NFHL\_06021C, latest study effective data 8/5/2010, latest LOMR effective data 1/11/2011. Map date: July 22, 2019.

**Legend**

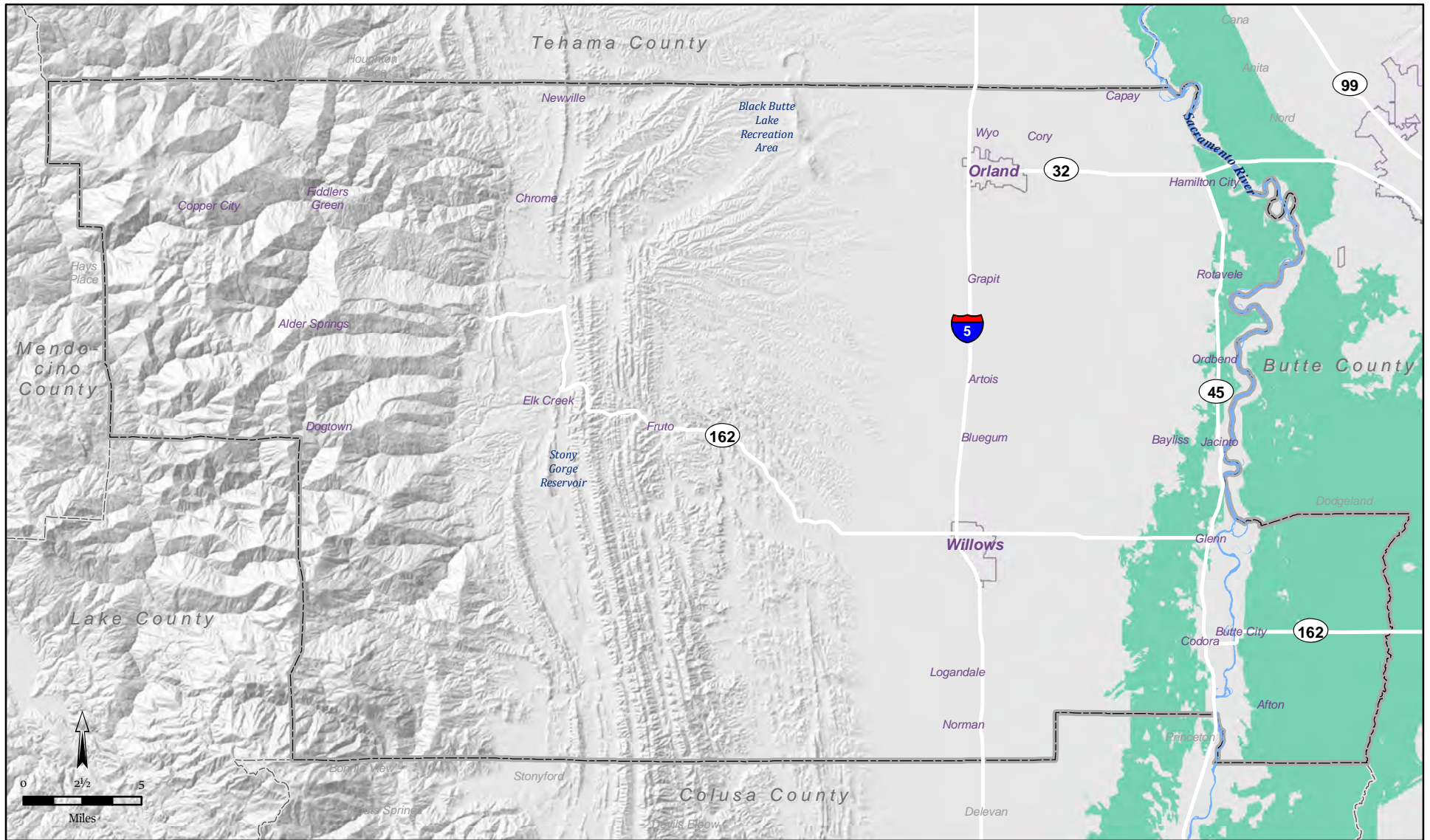
- 1% Annual Chance Flood Hazard (100-year Flood Zone) - 135,114 acres
- 0.2% Annual Chance Flood Hazard (500-year Flood Zone) - 4,801 acres
- Regulatory Floodway - 283 acres
- Area of Minimal Flood Hazard - 477,898 acres
- Area of Undetermined Flood Hazard - 231,455 acres

COUNTY OF GLENN, CALIFORNIA

**FIGURE 4.4-1. FEMA FLOOD ZONE DESIGNATIONS**

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Sources: California Department of Water Resources, Best Available Maps (BAM) Map date: July 22, 2019.

COUNTY OF GLENN, CALIFORNIA

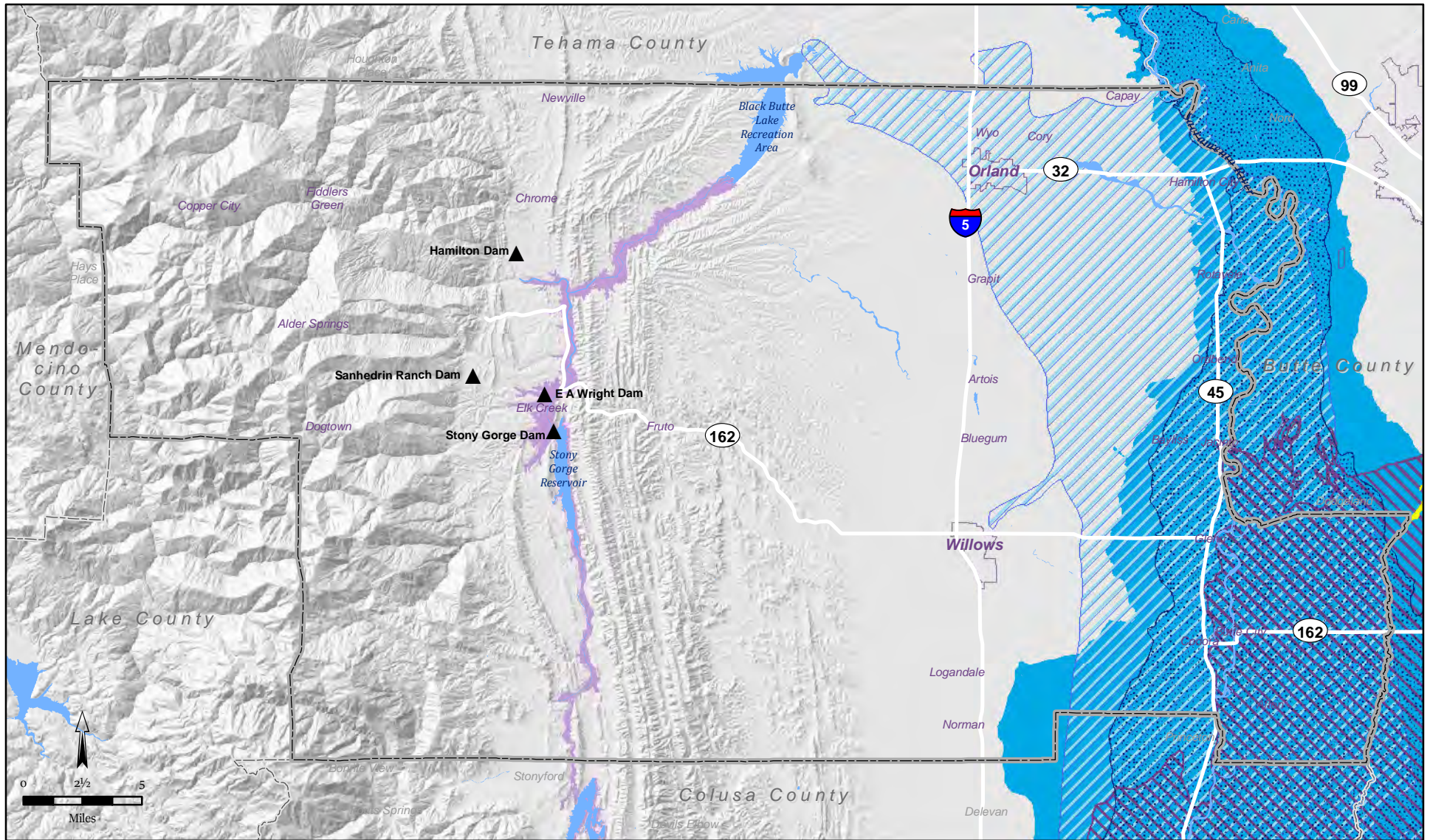
FIGURE 4.4-2. USACE COMPREHENSIVE STUDY  
200-YEAR FLOOD PLAIN

**Legend**

200-Year Floodplain









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Sources: ArcGIS Online Statewide Dam Inundation Areas, accessed 8/30/2019; California Department of Water Resources. Map date: August 31, 2019.

**Legend**

-  Glenn County Boundary
-  City Areas - Orland and Willows
- Dam Failure Inundation Areas**
-  Black Butte
-  Oroville
-  Shasta
-  Whiskytown
-  East Park
-  Magalia/Paradise

COUNTY OF GLENN, CALIFORNIA

FIGURE 4.4-3. DAM INUNDATION AREAS



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## 4.5 NOISE

This section provides a discussion of the regulatory setting and a general description of existing noise sources in Glenn County. The analysis in this section was prepared with assistance from Saxelby Acoustics.

### KEY TERMS

<b>Acoustics</b>	The science of sound.
<b>Ambient Noise</b>	The distinctive acoustical characteristics of a given area consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
<b>Attenuation</b>	The reduction of noise.
<b>A-Weighting</b>	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
<b>CNEL</b>	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 p.m. - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
<b>Decibel or dB</b>	Fundamental unit of sound, defined as ten times the logarithm of the ratio of the sound pressure squared over the reference pressure squared.
<b>Frequency</b>	The measure of the rapidity of alterations of a periodic acoustic signal, expressed in cycles per second or Hertz.
<b>Impulsive</b>	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
<b>L<sub>dn</sub></b>	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
<b>L<sub>eq</sub></b>	Equivalent or energy-averaged sound level.
<b>L<sub>max</sub></b>	The highest root-mean-square (RMS) sound level measured over a given period of time.
<b>L<sub>(n)</sub></b>	The sound level exceeded as a described percentile over a measurement period. For instance, an hourly L <sub>50</sub> is the sound level exceeded 50 percent of the time during the one-hour period.
<b>Loudness</b>	A subjective term for the sensation of the magnitude of sound.
<b>Noise</b>	Unwanted sound.
<b>SEL</b>	A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy into a one-second event

### FUNDAMENTALS OF ACOUSTICS

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound.

The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected, or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals) as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level ( $L_{eq}$ ), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The  $L_{eq}$  is the foundation of the composite noise descriptor,  $L_{dn}$ , and shows very good correlation with community response to noise.

The day/night average level ( $L_{dn}$ ) is based upon the average noise level over a 24-hour day, with a +10 decibel weighting applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because  $L_{dn}$  represents a 24-hour average, it tends to disguise short-term variations in the noise environment. CNEL is similar to  $L_{dn}$ , but includes a +3 dB penalty for evening noise. Table 4.5-1 lists several examples of the noise levels associated with common situations.

**TABLE 4.5-1: TYPICAL NOISE LEVELS**

<i>COMMON OUTDOOR ACTIVITIES</i>	<i>NOISE LEVEL (DBA)</i>	<i>COMMON INDOOR ACTIVITIES</i>
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft)	--100--	
Gas Lawn Mower at 1 m (3 ft)	--90--	
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	--80--	Food Blender at 1 m (3 ft) Garbage Disposal at 1 m (3 ft)

COMMON OUTDOOR ACTIVITIES	NOISE LEVEL (DBA)	COMMON INDOOR ACTIVITIES
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft)	--70--	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	--60--	Normal Speech at 1 m (3 ft)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

SOURCE: CALTRANS, TECHNICAL NOISE SUPPLEMENT, TRAFFIC NOISE ANALYSIS PROTOCOL. SEPTEMBER 2013.

## EFFECTS OF NOISE ON PEOPLE

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction;
- Interference with activities such as speech, sleep, and learning; and
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 dB per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

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## REGULATORY FRAMEWORK

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### *FEDERAL*

#### **Federal Highway Administration (FHWA)**

The FHWA has developed noise abatement criteria that are used for Federally funded roadway projects or projects that require Federal review. These criteria are discussed in detail in Title 23 Part 772 of the Federal Code of Regulations (23CFR772).

#### **Environmental Protection Agency (EPA)**

The EPA has identified the relationship between noise levels and human response. The EPA has determined that over a 24-hour period, an  $L_{eq}$  of 70 dBA will result in some hearing loss. Interference with activity and annoyance will not occur if exterior levels are maintained at an  $L_{eq}$  of 55 dBA and interior levels at or below 45 dBA. Although these levels are relevant for planning and design and useful for informational purposes, they are not land use planning criteria because they do not consider economic cost, technical feasibility, or the needs of the community.

The EPA has set 55 dBA  $L_{dn}$  as the basic goal for residential environments. However, other Federal agencies, in consideration of their own program requirements and goals, as well as difficulty of actually achieving a goal of 55 dBA  $L_{dn}$ , have generally agreed on the 65 dBA  $L_{dn}$  level as being appropriate for residential uses. At 65 dBA  $L_{dn}$  activity interference is kept to a minimum, and annoyance levels are still low. It is also a level that can realistically be achieved.

The U.S. Department of Housing and Urban Development (HUD) was established in response to the Urban Development Act of 1965 (Public Law 90-448). HUD was tasked by the Act (Public Law 89-117) “to determine feasible methods of reducing the economic loss and hardships suffered by homeowners as a result of the depreciation in the value of their properties following the construction of airports in the vicinity of their homes.”

HUD first issued formal requirements related specifically to noise in 1971 (HUD Circular 1390.2). These requirements contained standards for exterior noise levels along with policies for approving HUD-supported or assisted housing projects in high noise areas. In general, these requirements established the following three zones:

- 65 dBA  $L_{dn}$  or less - an acceptable zone where all projects could be approved.
- Exceeding 65 dBA  $L_{dn}$  but not exceeding 75 dBA  $L_{dn}$  - a normally unacceptable zone where mitigation measures would be required and each project would have to be individually evaluated for approval or denial. These measures must provide 5 dBA of attenuation above the attenuation provided by standard construction required in a 65 to 70 dBA  $L_{dn}$  area and 10 dBA of attenuation in a 70 to 75 dBA  $L_{dn}$  area.
- Exceeding 75 dBA  $L_{dn}$  - an unacceptable zone in which projects would not, as a rule, be approved.

HUD’s regulations do not include interior noise standards. Rather a goal of 45 dBA  $L_{dn}$  is set forth and attenuation requirements are geared towards achieving that goal. HUD assumes that using standard construction techniques, any building will provide sufficient attenuation so that if the exterior level is 65 dBA  $L_{dn}$  or less, the interior level will be 45 dBA  $L_{dn}$  or less. Thus, structural attenuation is assumed at 20

dba. However, HUD regulations were promulgated solely for residential development requiring government funding and are not related to the operation of schools or churches.

The Federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA) under the EPA. Noise exposure of this type is dependent on work conditions and is addressed through a facility's or construction contractor's health and safety plan. With the exception of construction workers involved in facility construction, occupational noise is irrelevant to this study and is not addressed further in this document.

#### *STATE*

##### **California Department of Transportation (Caltrans)**

Caltrans has adopted policy and guidelines relating to traffic noise as outlined in the Traffic Noise Analysis Protocol (Caltrans 1998b). The noise abatement criteria specified in the protocol are the same as those specified by FHWA.

##### **Governor's Office of Planning and Research (OPR)**

OPR has developed guidelines for the preparation of general plans. The guidelines include land use compatibility guidelines for noise exposure.

#### *LOCAL*

##### **Glenn County General Plan**

The Glenn County General Plan Noise Element establishes goals and policies, as well as criteria for evaluating the compatibility of individual land uses with respect to noise exposure.

#### **6.10 NOISE/LAND USE COMPATIBILITY GUIDELINES AND NOISE LEVEL STANDARDS**

- Development of noise-sensitive receptors shall not be allowed where the noise level due to non-transportation noise sources will exceed the noise level standards contained in Table 6-1, as measured immediately within the property line of the new development, unless effective noise mitigation measures have been incorporated into the development design to achieve the standards specified in Table 6-1.
- Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 6-1 as measured immediately within the property line of lands designated for noise-sensitive uses. This standard does not apply to mobile noise sources associated with agricultural operations on lands zoned for agricultural uses.
- Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 6-1 at existing or planned noise-sensitive uses, an acoustical analysis meeting the requirements of Section 6.12 shall be required as part of the environmental review process so that noise mitigation may be included in the project design.
- The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to Figure 6-1. Transportation noise sources are defined as traffic on public roadways, railroad line operations, and aircraft in flight.

- New development of noise-sensitive land uses will not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in Table 6-2, unless the project design includes effective mitigation measures to reduce noise in outdoor activity areas and interior spaces to the levels specified in Table 6-2. See Tables 6-3 and 6-4 and Figures 6-2, 6-3 and 6-4 for noise contour data of known transportation noise sources.
- Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 6-2 at outdoor activity areas or interior spaces of existing noise-sensitive land uses.
- Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 6-2 or the performance standards of Table 6-1, an acoustical analysis meeting the requirements of Section 6.12 shall be required as part of the environmental review process so that noise mitigation may be included in the project design.
- Where noise mitigation measures are required to achieve the standards of Tables 6-2 and 6-1, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.


<b>TABLE 6-1</b>		
<b>NOISE LEVEL PERFORMANCE STANDARDS FOR NEW PROJECTS AFFECTED BY OR INCLUDING NON-TRANSPORTATION SOURCES</b>		
Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly $L_{eq}$ , dB	50	45
Maximum level, dB	70	65
<p>Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses e.g., caretaker dwellings.</p>		

Source: Brown-Buntin Associates, Inc., 1992.


### LAND USE COMPATIBILITY GUIDELINES FOR DEVELOPMENT

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE L <sub>dn</sub> OR DIEL. dB					
	55	60	65	70	75	80
RESIDENTIAL, THEATERS, AUDITORIUMS, MUSIC HALLS, MEETING HALLS, CHURCHES	Acceptable	Acceptable	Conditionally Acceptable	Unacceptable	Unacceptable	Unacceptable
TRANSIENT LODGING - HOTELS, HOTELS	Acceptable	Acceptable	Conditionally Acceptable	Conditionally Acceptable	Unacceptable	Unacceptable
SCHOOLS, LIBRARIES, MUSEUMS, HOSPITALS, NURSING HOMES	Acceptable	Acceptable	Conditionally Acceptable	Conditionally Acceptable	Unacceptable	Unacceptable
PLAYGROUNDS, NEIGHBORHOOD PARKS	Acceptable	Acceptable	Conditionally Acceptable	Conditionally Acceptable	Unacceptable	Unacceptable
OFFICE BUILDINGS	Acceptable	Acceptable	Conditionally Acceptable	Conditionally Acceptable	Unacceptable	Unacceptable

INTERPRETATION

 ACCEPTABLE

Specified land use is satisfactory. No noise mitigation measures are required.

 CONDITIONALLY ACCEPTABLE

Use should be permitted only after careful study and inclusion of protective measures as needed to satisfy the policies of the Noise Element.

 UNACCEPTABLE

Development is usually not feasible in accordance with the goals of the Noise Element.

Source: Brown-Buntin Associates, Inc.



LAND USE COMPATIBILITY GUIDELINES  
FOR DEVELOPMENT

Figure  
6-1



<b>TABLE 6-2 MAXIMUM ALLOWABLE NOISE EXPOSURE TRANSPORTATION NOISE SOURCES</b>			
Land Use	Outdoor Activity Areas <sup>1</sup>	Interior Spaces	
	$L_{dn}/CNEL, dB$	$L_{dn}/CNEL, dB$	$L_{eq}, dB^2$
Residential	60 <sup>3</sup>	45	-
Transient Lodging	60 <sup>3</sup>	45	-
Hospitals, - Nursing Homes	60 <sup>3</sup>	45	-
Theaters, Auditoriums, Music Halls	-	-	35
Churches, Meeting Halls	60 <sup>3</sup>	-	40
Office Buildings	60 <sup>3</sup>	-	45
Schools, Libraries	-	-	45
Playgrounds, Neighborhood Parks	70	-	-
<p><sup>1</sup> Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.</p> <p><sup>2</sup> As determined for a typical worst-case hour during periods of use.</p> <p><sup>3</sup> Where it is not possible to reduce noise in outdoor activity areas to 60 dB <math>L_{dn}/CNEL</math> or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB <math>L_{dn}/CNEL</math> may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.</p>			

Source: Brown-Buntin Associates, Inc., 1992.

GOALS:

**PSG-7 Protection of county residents from the harmful and annoying effects of exposure to excessive noise and preservation of the rural noise environment in Glenn County.**

POLICIES:

PSP-49 Regulate fixed noise sources within the county through the adoption of a local Noise Control Ordinance.

PSP-50 Allow new development in compliance with the land use compatibility guidelines and noise level standards contained in this General Plan.

PSP-51 Require acoustical analyses for any development proposal which does not meet the recommended noise level standards, subject to the requirements contained in this General Plan.

PSP-52 Require that noise mitigation measures necessary to achieve compliance with land use compatibility guidelines and noise level standards be incorporated into site planning and project design.

PSP-53 Encourage the separation of noise sensitive uses and high noise generating uses.

PSP-54 Encourage the use of standard operating procedures for aerial application aircraft as a means of minimizing noise associated impacts to residential development.

PSP-55 Plan land uses around airports with aircraft noise in mind.

PSP-56 Maintain CNEL (Community Noise Equivalent Level) lines around the Orland Haigh Field Airport and the Willows Glenn County Airport.

## EXISTING SETTING

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### Traffic Noise Levels

The FHWA Highway Traffic Noise Prediction Model (FHWA-RD 77-108) was used to develop  $L_{dn}$  (24-hour average) noise contours for all highways and major roadways in the Planning Area. The model is based upon the CALVENO noise emission factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver and the acoustical characteristics of the site. The FHWA Model predicts hourly  $L_{eq}$  values for free-flowing traffic conditions, and is generally considered to be accurate within 1.5 dB. To predict  $L_{dn}$  values, it is necessary to determine the hourly distribution of traffic for a typical 24-hour period.

Existing traffic volumes were obtained from the traffic modeling performed for the Planning Area. Day/night traffic distributions were based upon continuous hourly noise measurement data and Saxelby Acoustics file data for similar roadways. Caltrans vehicle truck counts were obtained for SR 32, SR 45, SR 162, and Interstate 5. Using these data sources and the FHWA traffic noise prediction methodology, traffic noise levels were calculated for existing conditions. Table 4.5-2 shows the results of this analysis.

**TABLE 4.5-2: PREDICTED EXISTING TRAFFIC NOISE LEVELS**

ROADWAY	SEGMENT	NOISE LEVEL AT CLOSEST RECEPTORS (DB, L <sub>DN</sub> ) <sup>1</sup>	DISTANCES TO TRAFFIC NOISE CONTOURS, L <sub>DN</sub> (FEET)		
			70 DB	65 DB	60 DB
Road 200	Road 306 to Tehama Co	39.0	3	6	12
Road 206	Road 200 to Black Butte Lake	40.1	4	8	16
Road D	Road 48 to Road 33	37.9	7	15	33
Road D	Road 57 to Colusa County Line	49.9	5	11	23
Road 200	Road FF to Road G	56.7	8	18	39
SR 162	Washington St to Murdock Ave	63.2	16	34	73
Road 99W	Orland City Limit to Tehama County Line	61.4	15	32	68
Road 99W	Road 39 to Road 48	43.4	9	20	44
Road 99W	French St to SR 162	60.7	13	29	61
Road 99W	Road 60 to Colusa County Line	51.0	10	21	45
Road 9	Road 99W to Road KK	60.5	15	33	70
Road 39	Road 99W to Road P	44.0	8	18	38
SR 32	Linwood Dr to Road N	72.2	63	136	292
SR 162	1 <sup>st</sup> St to Road O	59.1	27	59	127
Road P	SR 32 to Road 18	59.4	13	28	59
Road P	Road 48 to Willow Creek	51.2	7	16	33
Road 45	Road P to Road S	39.3	5	10	21
Road S	Road 30 to Road 25	49.6	5	10	21
Road S	Road 45 to Road 44	42.6	3	7	15
Road 60	Road P to Road SS	54.7	10	23	49
Road V	State Hwy 162 to Road 57	37.7	2	4	8
Road 24	State Hwy 45 to Road VV	46.5	7	16	34
SR 32	Sacramento Ave to Gianella Rd	53.5	14	30	65
SR 45	SR 24 to Road 29	54.4	20	44	95
SR 162	n/o Road 52	63.1	35	75	162
SR 162	McDougal St to Road V	67.0	28	61	131
Road 48	Road Z to Butte County Line	58.3	23	50	108
Road Z	State Hwy 162 to Road 48	46.9	26	56	120
Road Z	Road 67 to State Hwy 162	65.1	28	61	131
I-5	Road 57 to State Hwy 162	76.1	281	605	1303

NOTES: DISTANCES TO TRAFFIC NOISE CONTOURS ARE MEASURED IN FEET FROM THE CENTERLINES OF THE ROADWAYS.

<sup>1</sup> TRAFFIC NOISE LEVELS ARE PREDICTED AT THE CLOSEST SENSITIVE RECEPTORS OR AT A DISTANCE OF 100 FEET IN COMMERCIAL/RETAIL AREAS.

SOURCE: FEHR & PEERS, CALTRANS, SAXELBY ACOUSTICS., 2019.

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each Planning Area roadway segment. In some locations, sensitive receptors may be located at distances which vary from the assumed calculation distance and may experience shielding from intervening barriers or sound walls. However, the traffic noise analysis is believed to be representative of the majority of sensitive receptors located closest to the Planning Area roadway segments analyzed in the noise analysis.

The actual distances to noise level contours may vary from the distances predicted by the FHWA model due to roadway curvature, grade, shielding from local topography or structures, elevated roadways, or elevated receivers. The distances reported in Table 4.5-2 are generally considered to be conservative estimates of noise exposure along roadways in the Planning Area.

### Railroad Noise Levels

Railroad activity in Glenn County occurs along the California Northern Railroad Company (CFNR) line which parallels the Interstate 5 corridor through the communities of Willows, Artois, and Orland. The line extends from the Union Pacific Railroad (UPRR) junction in Davis to the UPRR junction in Tehama. The CFNR line is used to haul lumber, beverage products, food products, steel pipe, agricultural products, and construction materials.

In order to quantify noise exposure from existing train operations, continuous (24-hour) noise level measurement surveys were conducted along the CFNR railroad lines.

The purpose of the noise level measurements was to determine typical sound exposure levels (SEL) for railroad line operations, while accounting for the effects of travel speed, warning horns and other factors which may affect noise generation. In addition, the noise measurement equipment was programmed to identify individual train events so that the typical number of train operations could be determined.

Table 4.5-3 shows a summary of the continuous noise measurement results for railroad activity.

**TABLE 4.5-3: RAILROAD NOISE MEASUREMENT RESULTS**

MEASUREMENT LOCATION	RAILROAD TRACK	GRADE CROSSING / WARNING HORN	TRAIN EVENTS PER 24-HOUR PERIOD	DISTANCE TO CL	AVERAGE SEL
LT-3	CFNR	Yes	2	70	103 dBA
LT-6	CFNR	Yes	2	50	107 dBA

SOURCE: SAXELBY ACOUSTICS, 2019.

Noise measurement equipment consisted of Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters equipped with LDL ½" microphones. The measurement systems were calibrated using a LDL Model CAL200 acoustical calibrator before and after testing. The measurement equipment meets all of the pertinent requirements of the American National Standards Institute (ANSI) for Type 1 (precision) sound level meters.

To determine the distances to the day/night average ( $L_{dn}$ ) railroad contours, it is necessary to calculate the  $L_{dn}$  for typical train operations. This was done using the SEL values and above-described number and distribution of daily train operations. The  $L_{dn}$  may be calculated as follows:

$$L_{dn} = SEL + 10 \log N_{eq} - 49.4 \text{ dB, where:}$$

SEL is the mean Sound Exposure Level of the event,  $N_{eq}$  is the sum of the number of daytime events (7 a.m. to 10 p.m.) per day, plus 10 times the number of nighttime events (10 p.m. to 7 a.m.) per day, and 49.4 is ten times the logarithm of the number of seconds per day. Based upon the above-described noise level data, number of operations and methods of calculation, the  $L_{dn}$  value for railroad line operations have been calculated, and the distances to the  $L_{dn}$  noise level contours are shown in Table 4.5-4.

**TABLE 4.5-4: APPROXIMATE DISTANCES TO THE RAILROAD NOISE CONTOURS**

MEASUREMENT LOCATION	EXTERIOR NOISE LEVEL AT 100 FEET, $L_{DN}$	DISTANCE TO EXTERIOR NOISE LEVEL CONTOURS, FEET		
		60 DB $L_{DN}$	65 DB $L_{DN}$	70 DB $L_{DN}$
<i>CFNR LINE WITH WARNING HORNS</i>				
LT-3	56 dB	39'	18'	8'
LT-6	54 dB	55'	25'	12'

SOURCE: SAXELBY ACOUSTICS, 2019.

### Aviation Noise Levels

Orland Haigh Field Airport and Willows-Glenn County Airport are the two main aviation facilities in the County. Haigh Field Airport is located at 4115 Co Rd P, Orland, CA 95963, southeast of the City of Orland. Willows-Glenn County Airport is located at 353 Co Rd G, Willows, CA 95988, west of Willows. Both airports are owned and operated by Glenn County. The Orland Haigh Field Airport's runway measures 4500 ft. long by 60 ft. wide. The Willows-Glenn County Airport measures 4125 ft. long by 100 ft. wide.

The most recent estimate of annual operations for Orland Haigh Field Airport is approximately 20,000 flights per year. Willows-Glenn County Airport hosts approximately 30,000 flights per year. A major portion of airport operations are a result of agricultural aircraft involved in crop dusting activities.

Noise Impacts and contours associated with the Orland Haigh Field Airport are addressed in the Orland Airport Land Use Plan, adopted by the Glenn County Airport Land Use Commission on February 27, 1991. Noise impacts and contours for Willows-Glenn County Airport are addressed in Willows Airport Land Use Plan, adopted by the Glenn County Airport Land Use Commission on June 30, 1990. Figures 4.5-2 and 4.5-3 show the most recent noise contours developed for the airports.

### Fixed Noise Sources

The production of noise is a result of many industrial processes, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by Federal and State employee health and safety regulations (OSHA and Cal-OSHA), but exterior noise levels may exceed locally acceptable standards. Commercial, recreational, and public service facility activities can also produce noise which affects adjacent sensitive land uses. These noise sources can be continuous and may contain tonal components which have a potential to annoy individuals who live nearby. In addition, noise generation from fixed noise sources may vary based upon climatic conditions, time of day, and existing ambient noise levels.

In the Planning Area, fixed noise sources typically include parking lots, loading docks, parks, schools, and other ag industrial, and commercial/retail use noise sources (HVAC, exhaust fans, etc.)

From a land use planning perspective, fixed-source noise control issues focus upon two goals:

1. To prevent the introduction of new noise-producing uses in noise-sensitive areas, and
2. To prevent encroachment of noise sensitive uses upon existing noise-producing facilities.

The first goal can be achieved by applying noise level performance standards to proposed new noise-producing uses. The second goal can be met by requiring that new noise-sensitive uses in near proximity to noise-producing facilities include mitigation measures that would ensure compliance with noise performance standards.

Fixed noise sources which are typically of concern include but are not limited to the following:

- HVAC Systems
- Pump Stations
- Steam Valves
- Generators
- Air Compressors
- Conveyor Systems
- Pile Drivers
- Drill Rigs
- Welders
- Outdoor Speakers
- Chippers
- Loading Docks
- Cooling Towers/Evaporative Condensers
- Lift Stations
- Steam Turbines
- Fans
- Heavy Equipment
- Transformers
- Grinders
- Gas or Diesel Motors
- Cutting Equipment
- Blowers
- Cutting Equipment
- Amplified Music and Voice

The types of uses which may typically produce the noise sources described above include, but are not limited to: wood processing facilities, pump stations, industrial/agricultural facilities, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and special events such as concerts and athletic fields. Typical noise levels associated with various types of stationary noise sources are shown in Table 4.5-5.

**TABLE 4.5-5: TYPICAL STATIONARY SOURCE NOISE LEVELS**

USE	NOISE LEVEL AT 100 FEET, $L_{EQ}^1$	DISTANCE TO NOISE CONTOURS, FEET			
		50 DB $L_{EQ}$ (NO SHIELDING)	45 DB $L_{EQ}$ (NO SHIELDING)	50 DB $L_{EQ}$ (WITH 5 DB SHIELDING)	45 DB $L_{EQ}$ (WITH 5 DB SHIELDING)
Auto Body Shop	56 dB	200	355	112	200
Auto Repair (Light)	53 dB	141	251	79	141
Busy Parking Lot	54 dB	158	281	89	158
Cabinet Shop	62 dB	398	708	224	398
Car Wash	63 dB	446	792	251	446
Cooling Tower	69 dB	889	1,581	500	889
Loading Dock	66 dB	596	1,059	335	596
Lumber Yard	68 dB	794	1,413	447	794
Maintenance Yard	68 dB	794	1,413	447	794
Outdoor Music Venue	90 dB	10,000	17,783	5,623	10,000

USE	NOISE LEVEL AT 100 FEET, $L_{EQ}^1$	DISTANCE TO NOISE CONTOURS, FEET			
		50 DB $L_{EQ}$ (NO SHIELDING)	45 DB $L_{EQ}$ (NO SHIELDING)	50 DB $L_{EQ}$ (WITH 5 DB SHIELDING)	45 DB $L_{EQ}$ (WITH 5 DB SHIELDING)
Paint Booth Exhaust	61 dB	355	631	200	355
School Playground / Neighborhood Park	54 dB	158	281	89	158
Skate Park	60 dB	316	562	178	316
Truck Circulation	48 dB	84	149	47	84
Vendor Deliveries	58 dB	251	446	141	251

<sup>1</sup> ANALYSIS ASSUMES A SOURCE-RECEIVER DISTANCE OF APPROXIMATELY 100 FEET, NO SHIELDING, AND FLAT TOPOGRAPHY. ACTUAL NOISE LEVELS WILL VARY DEPENDING ON SITE CONDITIONS AND INTENSITY OF THE USE. THIS INFORMATION IS INTENDED AS A GENERAL RULE ONLY, AND IS NOT SUITABLE FOR FINAL SITE-SPECIFIC NOISE STUDIES.

SOURCE: J.C. BRENNAN & ASSOCIATES, INC. 2017.

### Community Noise Survey

A community noise survey was conducted to document ambient noise levels at various locations throughout the County. Short-term noise measurements were conducted at thirteen locations throughout the County on July 17-19, 2019. In addition, seven continuous 24-hour noise monitoring sites were also conducted to record day-night statistical noise level trends. The data collected included the hourly average ( $L_{eq}$ ), median ( $L_{50}$ ), and the maximum level ( $L_{max}$ ) during the measurement period. Noise monitoring sites and the measured noise levels at each site are summarized in Table 4.5-6 and Table 4.5-7. Figure 4.5-1 shows the locations of the noise monitoring sites.

**TABLE 4.5-6: EXISTING CONTINUOUS 24-HOUR AMBIENT NOISE MONITORING RESULTS**

SITE	LOCATION	$L_{DN}$ (DBA)	MEASURED HOURLY NOISE LEVELS, DBA LOW-HIGH (AVERAGE)					
			DAYTIME (7:00 AM - 10:00 PM)			NIGHTTIME (10:00 PM - 7:00 AM)		
			$L_{EQ}$	$L_{50}$	$L_{MAX}$	$L_{EQ}$	$L_{50}$	$L_{MAX}$
LT-1	Road 200 - Northern Glenn County	65	62	50	84	58	50	79
LT-2	Road 32 – Northern Glenn County	75	72	67	87	68	48	85
LT-3	Artois Feed	66	67	52	82	53	47	70
LT-4	Highway 162 – Willows	72	69	52	86	65	47	84
LT-5	South Humboldt Avenue at I-5	71	68	64	82	64	58	80
LT-6	Railroad – Willows	65	66	52	79	52	42	67
LT-7	Highway 162 – Eastern Glenn County	64	61	47	78	57	46	76

SOURCE: SAXELBY ACOUSTICS, 2019.

**TABLE 4.5-7: EXISTING SHORT-TERM COMMUNITY NOISE MONITORING RESULTS**

SITE	LOCATION	TIME <sup>1</sup>	MEASURED SOUND LEVEL, DB			Notes
			<i>L<sub>eq</sub></i>	<i>L<sub>50</sub></i>	<i>L<sub>max</sub></i>	
ST-1	Elk Creek High School	12:39 PM	50	42	68	Primary noise source is traffic on Sanhedrin Blvd. Secondary noise source includes HVAC noise from Elk Creek High School. Lmax caused by passing autos.
ST-2	Hwy 162 near Thunderhill Raceway Park	1:15 PM	63	39	80	Primary noise source is traffic on Highway 162. Secondary noise source is activity from Thunderhill Raceway Park. Lmax caused by passing heavy trucks.
ST-3	Road HH / Road 7	3:21 PM	61	58	76	Primary noise source is traffic on Interstate 5. Secondary noise source is traffic traveling south on Road HH turning left onto Road 7. Lmax caused by passing autos.
ST-4	Road 12 / Road 200	3:03 PM	67	57	81	Primary noise source is traffic on Road 200. Secondary noise source is activity from residents in adjacent neighborhood to the south. Lmax caused by passing autos.
ST-5	Road 19 / Road 200	12:04 PM	62	38	80	Primary noise source is traffic on Road 200. Lmax caused by passing heavy trucks.
ST-6	Road 23 Near I-5	11:41 AM	66	64	73	Primary noise source is traffic on I-5. Lmax caused by passing heavy trucks.
ST-7	Park Avenue	12:32 PM	44	40	55	Primary noise source is traffic on Sacramento Ave. Secondary noise sources include activity from neighbors. Lmax caused by passing autos.
ST-8	East Glenn County on Hwy 162	11:15 AM	64	47	79	Primary noise source is traffic on Hwy 162. Secondary noise source is crop duster spraying nearby fields. Lmax caused by passing heavy trucks.
ST-9	Southeast Glenn County on Hwy 45	10:47 AM	71	49	87	Primary noise source is traffic on Hwy 45. Lmax caused by passing heavy trucks.
ST-10	Southeast Glenn County - Road 60	10:23 AM	65	37	82	Primary noise source is traffic on Road 60. Lmax caused by passing heavy trucks.
ST-11	Glennwood Lane / Pacific Avenue	2:14 PM	56	42	75	Primary noise source is traffic on Pacific Avenue. Secondary noise sources include activity from neighbors. Lmax caused by passing autos.
ST-12	Willows High School	9:39 AM	58	56	68	Primary noise source is traffic on West Wood Street. Secondary noise sources include activity from neighbors. Lmax caused by passing autos.
ST-13	Sycamore Park	2:51 PM	48	44	64	Primary noise source is traffic on South Culver Street. Secondary noise sources

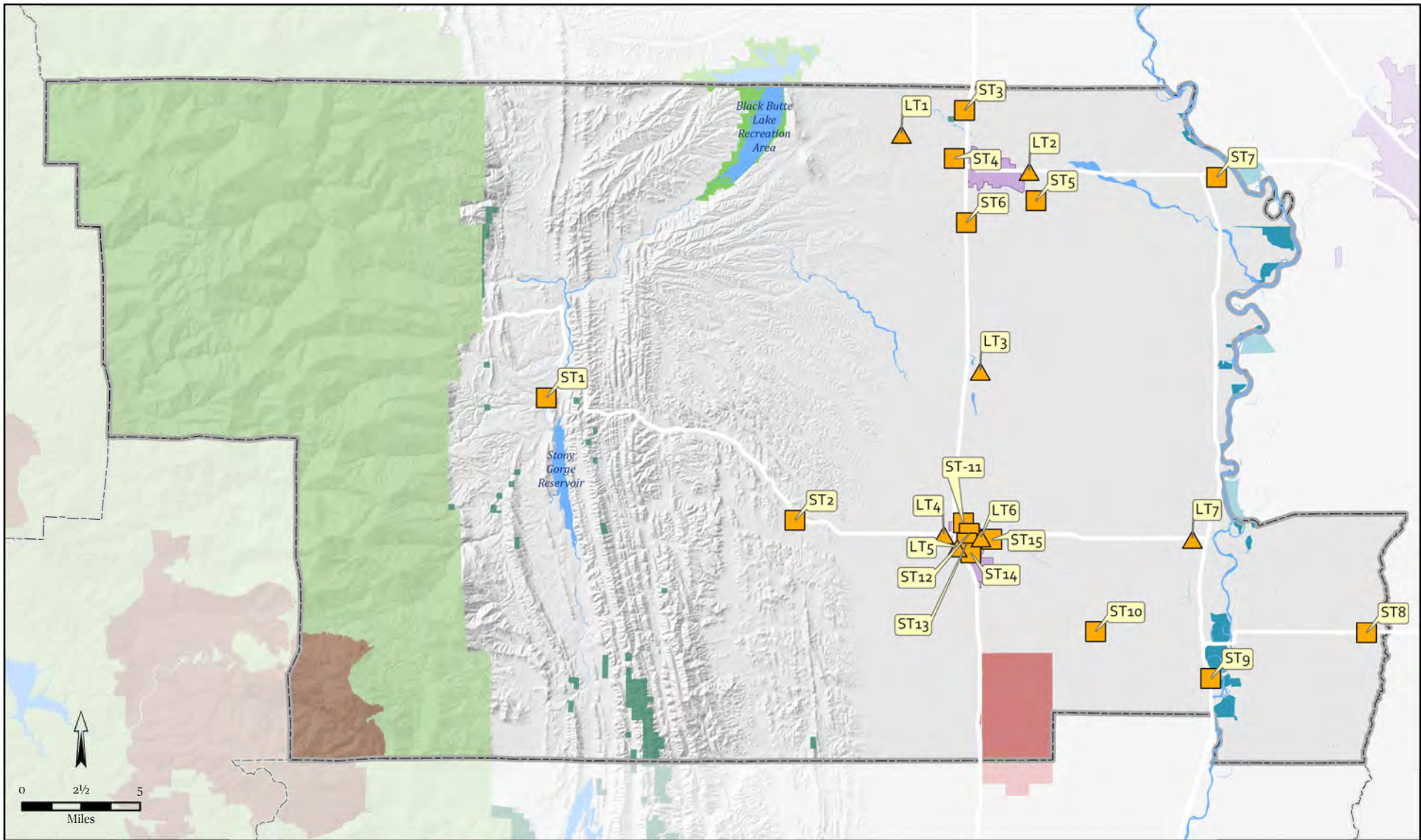


SITE	LOCATION	TIME <sup>1</sup>	MEASURED SOUND LEVEL, DB			Notes
			<i>L<sub>eq</sub></i>	<i>L<sub>50</sub></i>	<i>L<sub>max</sub></i>	
						include activity from park-goers. Lmax caused by passing autos.
ST-14	Jensen Park	3:10 PM	52	46	70	Primary noise source is traffic on Elm Street. Secondary noise sources include activity from park-goers. Lmax caused by passing autos.
ST-15	East Willows	9:58 AM	45	43	56	Primary noise source is auto traffic on Sierra St. Secondary noise sources include local wildlife and distant train horn. Lmax caused by passing autos.

*1 - ALL COMMUNITY NOISE MEASUREMENT SITES HAVE TEST DURATIONS OF 10:00 MINUTES.  
SOURCE: SAXELBY ACOUSTICS, 2019.*

Community noise monitoring equipment included Larson Davis Laboratories (LDL) Model 812, 820, and 831 precision integrating sound level meters equipped with LDL ½" microphones. The measurement systems were calibrated using a LDL Model CAL200 acoustical calibrator before and after testing. The measurement equipment meets all of the pertinent requirements of the American National Standards Institute (ANSI) for Type 1 (precision) sound level meters.

The results of the community noise survey shown in Tables 4.5-6 and 4.5-7 indicate that existing transportation noise sources were the major contributor of noise observed during daytime hours, especially during vehicle passbys.



Sources: USGS National Map; USGS Protected Areas Database; CalAtlas. Map date: March 29, 2019.

**Legend**

**Public Lands**

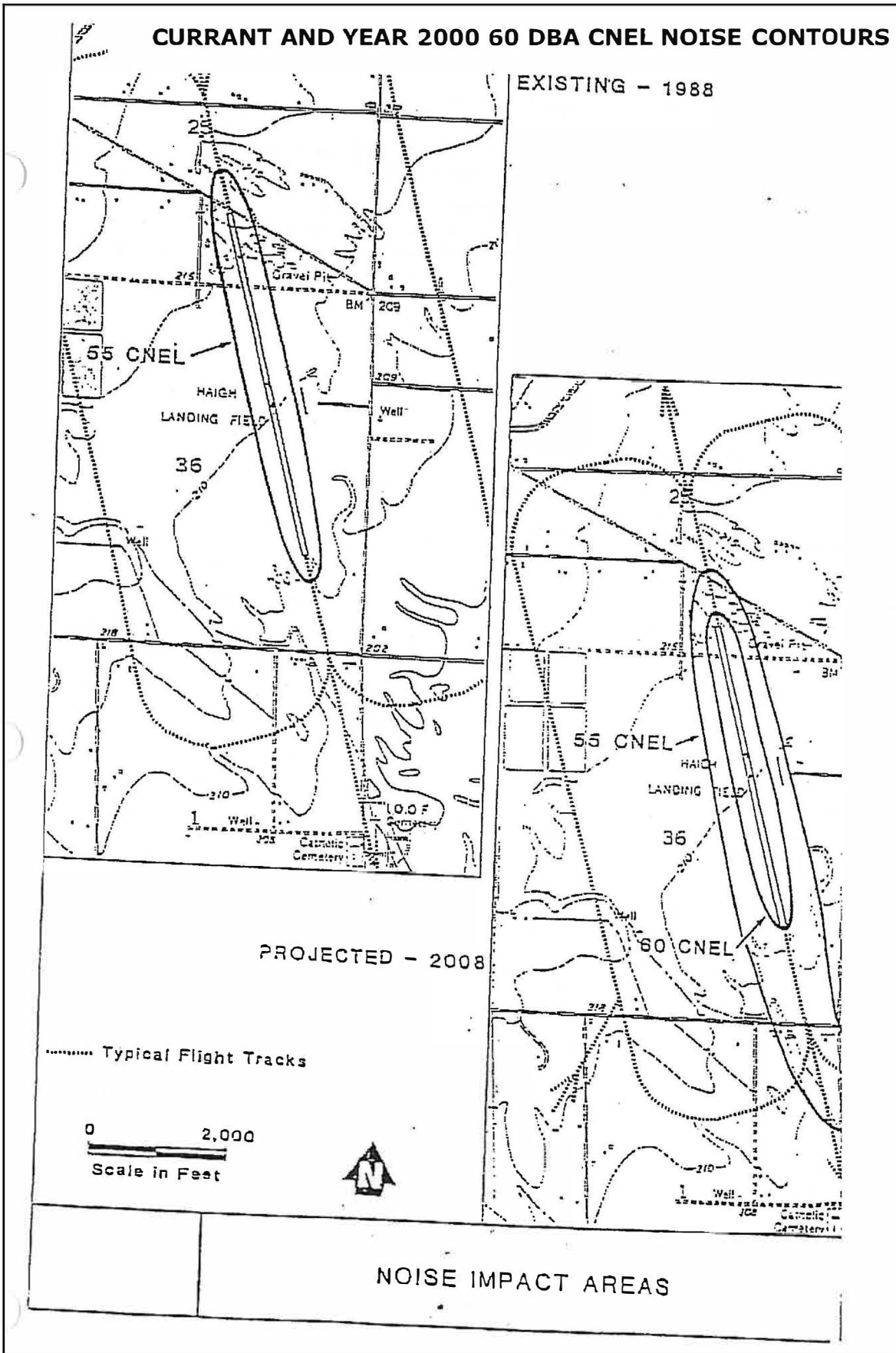
- Mendocino National Forest
- Wilderness Area
- USFWS Sacramento National Wildlife Refuge
- USFWS Sacramento River National Wildlife Refuge
- BLM Lands
- Noise Measurement Sites - Long Term
- Noise Measurement Location - Short Term

COUNTY OF GLENN, CALIFORNIA

FIGURE 4.5-1 Noise Measurement Locations

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# CURRENT AND YEAR 2000 60 DBA CNEL NOISE CONTOURS



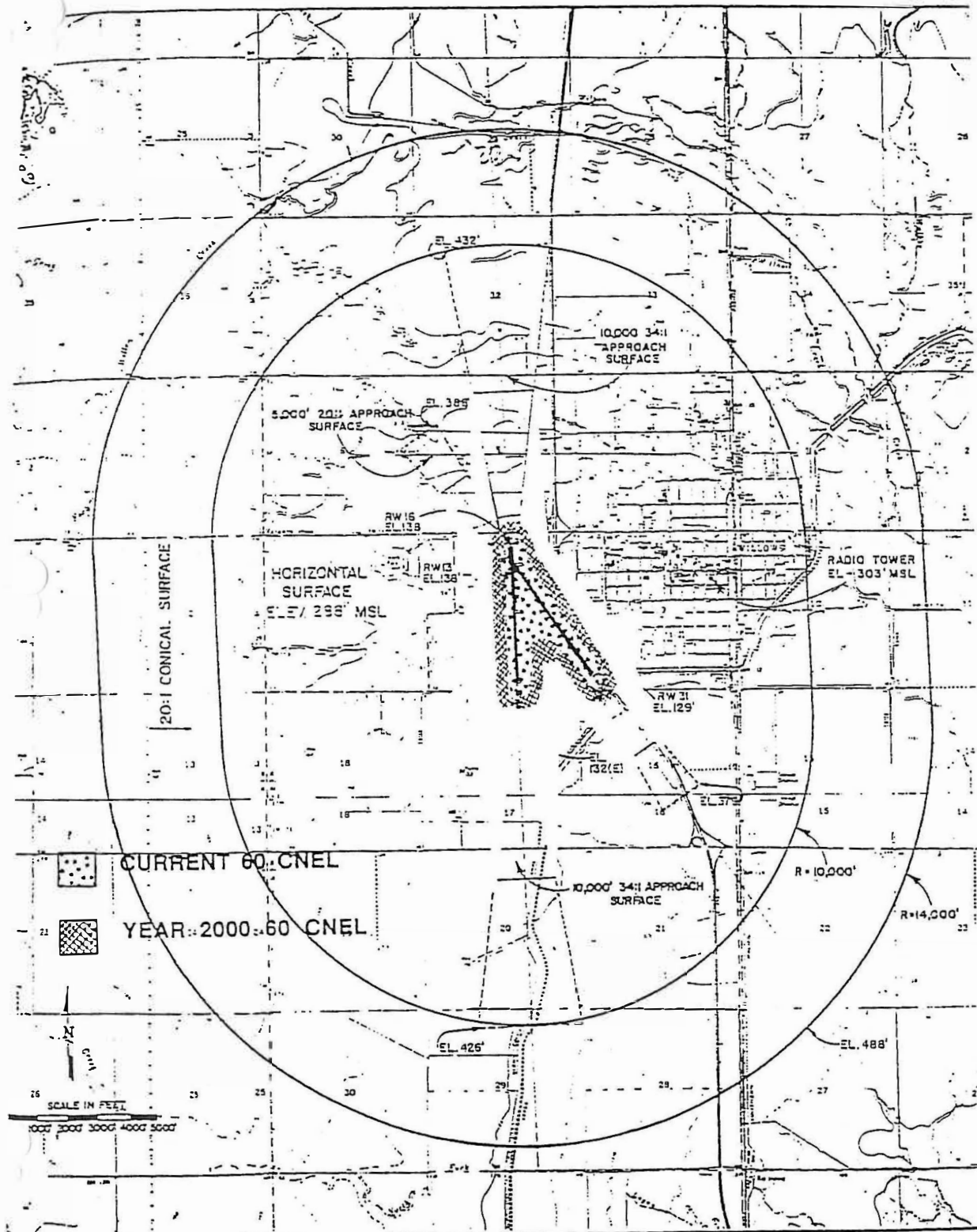
COUNTY OF GLENN, CALIFORNIA

FIGURE 4.5-2 Orland Haigh Field Airport Noise Contours

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MAP #3

CURRENT AND YEAR 2000 60dBA CNEL NOISE CONTOURS



WADELL ENGINEERING CORPORATION

COUNTY OF GLENN, CALIFORNIA

FIGURE 4.5-3 Willows-Glenn County Airport Noise Contours

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# Chapter 5

## Conservation and Natural Resources



The County's natural resources form an important part of its unique character and quality of life. In Glenn County, these resources include the County's biological resources, geology and soils, mineral and energy resources, hydrology and water quality, visual resources, and cultural resources.

This Chapter includes the following topics:

- 5.1 Cultural and Historic Resources
- 5.2 Biological Resources
- 5.3 Air Quality
- 5.4 Greenhouse Gases and Climate Change
- 5.5 Geology, Soils and Seismicity
- 5.6 Mineral and Energy Resources
- 5.7 Hydrology and Water Quality
- 5.8 Agricultural Resources
- 5.9 Aesthetics and Visual Resources





## 5.0 CONSERVATION AND NATURAL RESOURCES

The natural resources within the county and surrounding areas are an important part of the county's unique character and quality of life. In an effort to identify and understand the key natural resources of the county, this chapter is divided into the following sections:

- 5.1 Cultural and Historic Resources
- 5.2 Biological Resources
- 5.3 Air Quality
- 5.4 Greenhouse Gases and Climate Change
- 5.5 Geology, Soils and Seismicity
- 5.6 Mineral and Energy Resources
- 5.7 Hydrology and Water Quality
- 5.8 Agricultural Resources
- 5.9 Aesthetics And Visual Resources

### 5.1 CULTURAL RESOURCES

Cultural Resources are defined as buildings, sites, structures, or objects that may have historical, architectural, archaeological, cultural, or scientific importance. Preservation of the County's cultural heritage should be considered when planning for the future.

#### KEY TERMS

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**Archaeology.** The study of historic or prehistoric peoples and their cultures by analysis of their artifacts and monuments.

**Paleontology.** The science of the forms of life existing in former geologic periods, as represented by their fossils.

**Ethnography.** The study of contemporary human cultures.

**Complex.** A patterned grouping of similar artifact assemblages from two or more sites, presumed to represent an archaeological culture.

**Midden.** A deposit marking a former habitation site and containing such materials as discarded artifacts, bone and shell fragments, food refuse, charcoal, ash, rock, human remains, structural remnants, and other cultural leavings

#### REGULATORY FRAMEWORK

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##### *FEDERAL*

##### **National Historic Preservation Act**

Most regulations at the federal level stem from the National Environmental Policy Act (NEPA) and historic preservation legislation such as the National Historic Preservation Act (NHPA) of 1966, as amended. NHPA established guidelines to "preserve important historic, cultural, and natural aspects of our national heritage, and to maintain, wherever possible, an environment that supports diversity and a variety of individual choice." The NHPA includes regulations specifically for federal land-holding agencies, but also includes regulations

(Section 106) which pertain to all projects that are funded, permitted, or approved by any federal agency and which have the potential to affect cultural resources. All projects that are subject to NEPA are also subject to compliance with Section 106 of the NHPA and NEPA requirements concerning cultural resources. Provisions of NHPA establish a National Register of Historic Places (The National Register) maintained by the National Park Service, the Advisory Councils on Historic Preservation, State Historic Preservation Offices, and grants-in-aid programs.

### **American Indian Religious Freedom Act and Native American Graves and Repatriation Act**

The American Indian Religious Freedom Act recognizes that Native American religious practices, sacred sites, and sacred objects have not been properly protected under other statutes. It establishes as national policy that traditional practices and beliefs, sites (including right of access), and the use of sacred objects shall be protected and preserved. Additionally, Native American remains are protected by the Native American Graves and Repatriation Act of 1990.

### **Other Federal Legislation**

Historic preservation legislation was initiated by the Antiquities Act of 1966, which aimed to protect important historic and archaeological sites. It established a system of permits for conducting archaeological studies on Federal land, as well as setting penalties for noncompliance. This permit process controls the disturbance of archaeological sites on Federal land. New permits are currently issued under the Archeological Resources Protection Act (ARPA) of 1979. The purpose of ARPA is to enhance preservation and protection of archaeological resources on public and Native American lands. The Historic Sites Act of 1935 declared that it is national policy to “Preserve for public use historic sites, buildings, and objects of national significance.”

#### *STATE*

### **California Register of Historic Resources (CRHR)**

California State law also provides for the protection of cultural resources by requiring evaluations of the significance of prehistoric and historic resources identified in documents prepared pursuant to the California Environmental Quality Act (CEQA). Under CEQA, a cultural resource is considered an important historical resource if it meets any of the criteria found in Section 15064.5(a) of the CEQA Guidelines. Criteria identified in the CEQA Guidelines are similar to those described under the NHPA. The State Historic Preservation Office (SHPO) maintains the CRHR. Historic properties listed, or formally designated for eligibility to be listed, on The National Register are automatically listed on the CRHR. State Landmarks and Points of Interest are also automatically listed. The CRHR can also include properties designated under local preservation ordinances or identified through local historical resource surveys.

### **California Environmental Quality Act (CEQA)**

CEQA requires that lead agencies determine whether projects may have a significant effect on archaeological and historical resources. This determination applies to those resources which meet significance criteria qualifying them as “unique,” “important,” listed on the California Register of Historic Resources (CRHR), or eligible for listing on the CRHR. If the agency determines that a project may have a significant effect on a significant resource, the project is determined to have a significant effect on the environment, and these effects must be addressed. If a cultural resource is found not to be significant under the qualifying criteria, it need not be considered further in the planning process.

CEQA emphasizes avoidance of archaeological and historical resources as the preferred means of reducing potential significant environmental effects resulting from projects. If avoidance is not feasible, an excavation program or some other form of mitigation must be developed to mitigate the impacts. In order to adequately address the level of potential impacts, and thereby design appropriate mitigation measures, the significance

and nature of the cultural resources must be determined. The following are steps typically taken to assess and mitigate potential impacts to cultural resources for the purposes of CEQA:

- identify cultural resources,
- evaluate the significance of the cultural resources found,
- evaluate the effects of the project on cultural resources, and
- develop and implement measures to mitigate the effects of the project on cultural resources that would be significantly affected.

Treatment of paleontological resources under CEQA is generally similar to treatment of cultural resources, requiring evaluation of resources in a project's area of potential affect, assessment of potential impacts on significant or unique resources, and development of mitigation measures for potentially significant impacts, which may include monitoring combined with data recovery and/or avoidance.

### **State Laws Pertaining to Human Remains**

Section 7050.5 of the California Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the county coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission. CEQA Guidelines (Section 15064.5) specify the procedures to be followed in case of the discovery of human remains on non-Federal land. The disposition of Native American burials falls within the jurisdiction of the Native American Heritage Commission.

Several sections of the California Public Resources Code protect paleontological resources.

Section 5097.5 prohibits "knowing and willful" excavation, removal, destruction, injury, and defacement of any "vertebrate paleontological site, including fossilized footprints," on public lands, except where the agency with jurisdiction has granted express permission. "As used in this section, 'public lands' means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof."

California Public Resources Code, Section 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands.

The sections of the California Administrative Code relating to the State Division of Beaches and Parks afford protection to geologic features and "paleontological materials" but grant the director of the State park system authority to issue permits for specific activities that may result in damage to such resources, if the activities are in the interest of the State park system and for State park purposes (California Administrative Code, Title 14, Section 4307–4309).

### **Senate Bill 18 (Burton, Chapter 905, Statutes 2004)**

SB 18, authored by Senator John Burton and signed into law by Governor Arnold Schwarzenegger in September 2004, requires local (city and county) governments to consult with California Native American tribes to aid in the protection of traditional tribal cultural places ("cultural places") through local land use planning. This legislation, which amended §65040.2, §65092, §65351, §65352, and §65560, and added §65352.3, §65352.4, and §65562.5 to the Government Code; also requires the Governor's Office of Planning and Research (OPR) to include in the General Plan Guidelines advice to local governments on how to conduct these consultations. The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places. These consultation and notice requirements apply to adoption and amendment of

both general plans (defined in Government Code §65300 et seq.) and specific plans (defined in Government Code §65450 et seq.).

### **ASSEMBLY BILL 52 (CHAPTER 532, STATUTES OF 2014)**

Assembly Bill (“AB”) 52 establishes a formal consultation process for California tribes as part of CEQA and equates significant impacts on “tribal cultural resources” with significant environmental impacts (PRC Section 21084.2). AB 52 defines a “California Native American Tribe” as a Native American tribe located in California, and included on the contact list maintained by the Native American Heritage Commission. AB 52 requires formal consultation with California Native American Tribes prior to determining the level of environmental document if a tribe has requested to be informed by the lead agency of proposed projects. AB 52 also requires that the consultation address project alternatives and mitigation measures, for significant effects, if requested by the California Native American Tribe, and that consultation be considered concluded when either the parties agree to measures to mitigate or avoid a significant effect, or the agency concludes that mutual agreement cannot be reached.

#### *LOCAL*

### **Glenn County General Plan**

The existing Glenn County General Plan contains the following policies related to the protection of cultural and historical resources:

#### *POLICIES:*

NRP-78 Protect identified areas of unique historical or cultural value within the county and preserve those sites for educational, scientific and aesthetic purposes.

NRP-79 Recognize the following historic sites in future planning and decision making:

- Monroeville Cemetery Historical Site
- Will S. Green Monument
- Swift Adobe Monument
- Kanawha Cemetery Monument
- Monroeville and Ide Monument
- Willows Monument
- Jacinto Landing
- Historic School Sites

NRP-80 Consider preparation of an historic preservation plan.

NRP-81 Require proper evaluation and protection of archaeological resources discovered in the course of construction and development.

CDP-44 Discourage urban growth in floodplains, aquifer recharge areas, scenic and historic sites, or other sensitive areas as specified in this General Plan.

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## EXISTING SETTING

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### Prehistory

Glenn County has not had large scale archeological excavations that would have provided a clear picture into the prehistoric period. The closest such excavation occurred just south of the Glenn County line. Archeology tells us that by at least 6,000 years ago, about 4,000 B.C., Native Americans were living along the Sacramento River in Colusa County and likely Glenn County too. Ten to twelve feet below the modern surface was a “buried midden” dated to 4020 B.C. that was discovered and dated, but not further investigated (White 2003a, 2003b). Midden is the remains of plants and animals, like a compost pile, usually with bits of artifacts too, left by a group who generally call the place home. Village sites have midden, temporary camps normally don’t.

After 2,500 B.C., archeologists do have a record of life at this village with various artifacts recovered including stone points designed to be used with a spear-thrower (atlatl), fishing related items, bone and stone tools, and shell ornaments (Figure 10.4 in Rosenthal et al. 2007:154). By this time, archeologists feel this village site was occupied year-round (White 2003a, 2003b). Colusa County, and no doubt Glenn County as well, looks to have had its first ‘town’ about 4,500 years ago.

At about 1,000 A.D., the bow and arrow were introduced into the area and new opportunities opened for the hunter. Fishing technology also continued to improve during this period, and, not surprisingly fish remains make up increasingly larger percentages of food remains found at river side villages from this period onward (Rosenthal et al. 2007:160). The collection of the local wild seed crop- supplementing the diet of acorn, a staple since about 500 B.C., also increased during this time. Over time, the size of certain types of seeds collected became larger, leading some to suggest that the foundations of horticulture were beginning to take root in California’s Central Valley (Rosenthal 2007:159).

Populations at the villages along the river continued to expand, and by the time of first written records, a village with three or four thousand residents was not uncommon, particularly at a good fishing spot where weirs could be constructed.

### Ethnology

The Wintu are the northernmost dialectical groups of the Wintun, whose territory roughly incorporates the western side of the Sacramento Valley from the Carquinez Straits north to include most of the upper Sacramento River drainage, the McCloud River, and the lower reaches of the Pit River. The Wintun, a collective name, were subdivided into three sub-groups with the Southern, Central, and the Northern dialects known respectively as Patwin, Nomlaki, and Wintu. The area surrounding Willows has been identified as belonging to the River Nomlaki (Goldschmidt 1978:341).

Although economic subsistence was heavily weighted toward the acorn, the staple of the diet, the rich riverine resources of the Sacramento River supplied a large variety of foodstuffs. Hunting of game and small mammals augmented the diet with protein. Seasonal procurement of vegetable foods and the hunting of game occurred throughout the territory held by villages.

Villages were usually situated along rivers and streams or close to springs where reliable water supplies allowed a semi-permanent occupation. Major villages were located along the riverbanks, with locations oriented to higher spots on the natural levees. Smaller villages tended to be along the tributary streams and near springs. Cultural resources surveys in the region have demonstrated that there was very heavy use of tributary streams and other areas at a distance from the main river, while early ethnographies had emphasized the concentration of population along the Sacramento.

## Historic Period background

Glenn County, named for Dr. Hugh Glenn, was organized in 1891, from the northern half of Colusa County. The earlier history of the County is that of Colusa County settlement.

In the early 1840s, Maria Josefa Soto, later the wife of Dr. James Stokes of Monterey, received the Capay Land Grant from the Mexican government. In 1846, a man named Bryant built the first house on the land, and in 1848, after Marshall's gold discovery in Coloma and the resulting gold rush, purchased the 44,388-acre grant stretching along the west side of the Sacramento River. The land soon attracted more settlers including U.P. Monroe, Martin Reager, and John McIntosh (Rogers 1891:81; Kyle 2002).

The old River Road ran along the west side of the Sacramento River between Colusa through present day Glenn County and Shasta. With up to 50 freight wagons a day leaving Colusa for the northern mines, a series of hospitality houses, aptly named Four-Mile house, or Fourteen-Mile house, depending on their distance north were set up to feed and settler both two- and four-legged travelers (Kyle 2002:48).

The stagecoach lines following the Old River Road route along the Sacramento River were expanded during the summer of 1872 to include new tri-weekly stagecoach runs from Colusa north to Newville and west towards Wilbur and Bartlett Springs (Rogers 1891:128). Competition between competing stage coach companies on the existing run between Colusa and Marysville had become so fierce by November of that year that the fare was only 25 cents and, "...no effort of horse-flesh spared by competing lines in endeavoring to arrive first at their home station" (Rogers 1891). By 1873, nine stage lines were operating out of Colusa (Rogers 1891).

At the base of the steep Coast Range, Elk Creek was established in the late 1860s as a trading center for the valleys drained by Stony Creek and its tributaries. The post office in the town opened in 1872, and the town became the stopping point for stages from Colusa to the southeast and Newville to the north. Elk Creek is the entrance to the Mendocino National Forest (Kyle 2002).

Monroe's Ranch, later Monroeville, became a popular stopping point along the Old River Road. The hotel also doubled as a courthouse built partially from the wreck of the steamer *California*, one of the first steamers to ascend the Sacramento River.

Colusa County had obvious advantages in terms of natural transportation routes. The Sacramento River was once a navigable waterway with steamships plying the river from the bay area up to Red Bluff. Water based transportation was the primary means of transporting goods cheaply when Colusa County was first settled in the early 1850s. Up until the early 1870s, steamships regularly ran as far north as Red Bluff, but then the railroad came, boats quit going higher up than Chico Landing, except during unusually high water or on special occasions.

1876 was a pivotal year for Colusa (later Glenn County) when the "Northern Railway," later Southern Pacific, tracks were completed, and the communities of Willows and Orland prospered. By 1926, the road paralleling the Southern Pacific railroad was officially designated as Highway 99W. Beginning at Sacramento at the 'I' Street Bridge, Highway 99W followed the west side of the river up to the valley to eventually meet and merge with the Highway 99E branch at Red Bluff. In the early 1960s, construction began on a new interstate highway system, Interstate 5, and when "I-5" was completed, Highway 99W was relegated to a frontage road.

In 1887, California passed the Wright Irrigation Act that authorized and regulated the formation of irrigation districts. Wasting no time, on November 22, 1887 the Central Irrigation District was formed, incorporating 156,500 acres (McComish and Lambert 1918). Upon formation of the district, its members, by a vote of five to one, approved the issuance of \$750,000 in bonds for the construction of the necessary canals and irrigation works. Using \$290,000 of these funds, the district hired construction crews who began working on the canal in October, 1889. The canal, as proposed, covered the lands from its source north of Hamilton City to about

midway between Willows and Arbuckle, where its outlet or discharge would into Willow Creek. The original estimates also called for a main canal with a depth of sixty-five feet and a length of thirty miles, tapering to a depth of twenty feet for the remainder of the canal. Lateral canals and sub-canals were also included in this original estimate (McComish and Lambert 1918).

By 1918, farmers had organized the Glenn-Colusa Irrigation District that provided water from Hamilton City south to near Willows (Eubank 1948).

Hamilton City is the newest town in Glenn County and is considered the legitimate descendant of two pioneer towns —Monroeville, about five miles south, and St. John. St. John, two miles north of Monroeville, was founded in 1856 on the banks of Stony Creek. St. John had a general merchandise store, warehouses and barns, housing freighters headed to Shasta and Weaverville. St. John began to fade, as Monroeville had done when business shifted to St. John. Hamilton City was founded in 1905 as the site of a large sugar beet factory and named for the president of the sugar company (Kyle 2002).

Agriculture has always been the primary economic activity of Glenn County. Other industries include chromite, mined briefly in this area informally during World War I and more formally during World War II. The Black Diamond Mine and Gray Eagle Mine operated between 1942-44 until supplies were exhausted. The Beehive Bend gas fields were discovered in the 1930s, about five miles east of Willows, the largest in northern California. The wells are scattered over a large area (Kyle 2002).

### **Cultural resources in the County of Glenn General Plan Study Area**

Seven-hundred and thirty-six cultural resources have been identified within the County of Glenn General Plan Study Area, according to files maintained by the Northeast Information Center (NEIC) of the California Historical Resources Information System (CHRIS). The 736 recorded cultural resources span both the prehistoric and historic periods. Prehistoric period resources included numerous permanent and temporary Native American occupation areas (villages and campsites), stone tool quarries, and stone artifact scatters and isolated artifacts. Historic period resources span early cabin and homestead sites, bridges, mines, irrigation canals, single family residences and settlements.

The Gianella Bridge, once located at Hamilton City at the Sacramento River and replaced with a modern bridge in 1987, is the only property or district currently listed on the National Register of Historic Places or California Register of Historic Places for the County of Glenn General Plan Study Area ([www.nationalregisterofhistoricplaces.com](http://www.nationalregisterofhistoricplaces.com)).

The County of Glenn General Plan Study Area has one California Historical Landmark (CHL), #831, the site of the First Posted Water Notice by Will S. Green, located at Cutler and First Avenue, Hamilton City.

### **Consultation**

Letters were sent to: the Colusi County Historical Society; The Native American Heritage Commission; Glenda Nelson, Chairperson, Estom Yumeka Maidu Tribe of the Enterprise Rancheria; Ronald Kirk, Chairperson, Grindstone Rancheria of Wintun-Wailaki; Jessica Lopez, Chairperson, KonKow Valley Band of Maidu; Dennis Ramirez, Chairperson, Mechoopda Indian Tribe; Guy Taylor, Mooretown Rancheria of Maidu Indians; Benjamin Clark, Chairperson, Mooretown Rancheria of Maidu Indians; and, Andrew Alejandro, Chairperson, Paskenta Band of Nomlaki Indians. The Native American Heritage Commission responded with a letter dated March 13, 2019 which stated the results were positive and to contact the Grindstone Rancheria.

### **Paleontological Resources**

Among the natural resources deserving conservation and preservation, and existing within the County of Glenn General Plan Study Area, are the often-unseen records of past life buried in the sediments and rocks below the



pavement, buildings, soils, and vegetation which now cover most of the area. Fossils constitute a non-renewable resource: Once lost or destroyed, the exact information they contained can never be reproduced.

Paleontology is the science that attempts to unravel the meaning of these fossils in terms of the organisms they represent, the ages and geographic distribution of those organisms, how they interacted in ancient ecosystems and responded to past climatic changes, and the changes through time of all of these aspects.

The sensitivity of a given area or body of sediment with respect to paleontologic resources is a function of both the potential for the existence of fossils and the predicted significance of any fossils which may be found there. The primary consideration in the determination of paleontologic sensitivity of a given area, body of sediment, or rock formation is its potential to include fossils. Information that can contribute to assessment of this potential includes: 1) direct observation of fossils within the project area; 2) the existence of known fossil localities or documented absence of fossils in the same geologic unit (e.g., "Formation" or one of its subunits); 3) descriptive nature of sedimentary deposits (such as size of included particles or clasts, color, and bedding type) in the area of interest compared with those of similar deposits known elsewhere to favor or disfavor inclusion of fossils; and 4) interpretation of sediment details and known geologic history of the sedimentary body of interest in terms of the ancient environments in which they were deposited, followed by assessment of the favorability of those environments for the preservation of fossils.

The most general paleontological information can be obtained from geologic maps, but geologic cross sections must be reviewed for each area in question. These usually accompany geologic maps or technical reports. Once it can be determined which formations may be present in the subsurface, the question of paleontological resources must be addressed. Even though a formation is known to contain fossils, they are not usually distributed uniformly throughout the many square miles the formation may cover. If the fossils were part of a bay environment when they died, perhaps a scattered layer of shells will be preserved over large areas. If on the other hand, a whale died in this bay, you might expect to find fossil whalebone only in one small area of less than a few hundred square feet. Other resources to be considered in the determination of paleontological potential are regional geologic reports, site records on file with paleontological repositories and site-specific field surveys.

Paleontologists consider all vertebrate fossils to be of significance. Fossils of other types are considered significant if they represent a new record, new species, an oldest occurring species, the most complete specimen of its kind, a rare species worldwide, or a species helpful in the dating of formations. However, even a previously designated low potential site may yield significant fossils.

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## 5.2 Biological and Natural Resources

The County's Planning Area contains a variety of biological communities and wildlife habitats that provide recreational opportunities and contribute to the overall functionality of valley and foothill ecosystems. This section describes biological resources in the Planning Area from both a qualitative and quantitative perspective. The results of this assessment may be used in planning and management decisions that may affect biological resources in the Planning Area.

### KEY TERMS

The following key terms are used throughout this section to describe biological resources and the framework that regulates them:

**Hydric Soils:** One of the three wetland identification parameters, according to the federal definition of a wetland, hydric soils have characteristics that indicate they were developed in conditions where soil oxygen is limited by the presence of saturated soil for long periods during the growing season. There are approximately 2,000 named soils in the United States that may occur in wetlands.

**Hydrophytic Vegetation:** Plant types that typically occur in wetland areas. Nearly 5,000 plant types in the United States may occur in wetlands. Plants are listed in regional publications of the U.S. Fish and Wildlife Service (USFWS) and include such species as cattails, bulrushes, cordgrass, sphagnum moss, bald cypress, willows, mangroves, sedges, rushes, arrowheads, and water plantains.

**Sensitive Natural Community:** A sensitive natural community is a biological community that is regionally rare, provides important habitat opportunities for wildlife, are structurally complex, or are in other ways of special concern to local, state, or federal agencies. CEQA identifies the elimination or substantial degradation of such communities as a significant impact. The California Department of Fish and Wildlife (CDFW) tracks sensitive natural communities in the California Natural Diversity Database (CNDDB). Examples of sensitive natural communities in the Planning Area include northern hardpan vernal pools.

**Special-Status Species:** Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies. Some of these species receive specific protection that is defined by federal or state endangered species legislation. Others have been designated as "sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. These species are referred to collectively as "special status species" in this report, following a convention that has developed in practice but has no official sanction. For the purposes of this assessment, the term "special status" includes those species that are:

- Federally listed or proposed for listing under the Federal Endangered Species Act (50 CFR 17.11-17.12);
- Candidates for listing under the Federal Endangered Species Act (61 FR 7596-7613);
- State listed or proposed for listing under the California Endangered Species Act (14 CCR 670.5);
- Species listed by the U.S. Fish and Wildlife Service (USFWS) or the CDFW as a species of concern (USFWS), rare (CDFW), or of special concern (CDFW);
- Fully protected animals, as defined by the State of California (California Fish and Game Code Section 3511, 4700, and 5050);
- Species that meet the definition of threatened, endangered, or rare under CEQA (CEQA Guidelines Section 15380);

- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code Section 1900 et seq.); and
- Plants listed by the California Native Plant Society (CNPS) as rare, threatened, or endangered (List 1A and List 2 status plants in Skinner and Pavlik 1994).

**Wetlands and Other Waters of the U.S:** Wetlands are ecologically complex habitats that support a variety of both plant and animal life. In a jurisdictional sense, the federal government defines wetlands in Section 404 of the Clean Water Act as “areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3[b] and 40 CFR 230.3). Under normal circumstances, the federal definition of wetlands requires three wetland identification parameters be present: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a hydrologic link to other waters of the U.S (see definition below for "other waters of the U.S."). The U.S. Army Corps of Engineers (USACE) is the responsible agency for regulating wetlands under Section 404 of the Clean Water Act, while the Environmental Protection Agency (EPA) has overall responsibility for the Act.

The CDFW does not normally have direct jurisdiction over wetlands unless they are subject to jurisdiction under Streambed Alteration Agreements or they support state-listed endangered species; however, CDFW is a trustee agency, meaning that they manage the wildlife and habitats of the state in trust pursuant to California law.

“Other waters of the U.S.” refers to those hydric features that are regulated by the Clean Water Act but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must exhibit a defined bed and bank and an ordinary high-water mark. Examples of other waters of the U.S. include rivers, creeks, intermittent and ephemeral channels, ponds, and lakes.

## REGULATORY FRAMEWORK

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There are a number of regulatory agencies whose responsibility includes the oversight of the natural resources of the state and nation including the CDFW, USFWS, USACOE, and the National Marine Fisheries Service. These agencies often respond to declines in the quantity of a particular habitat or plant or animal species by developing protective measures for those species or habitat type. Federal and state agencies are increasingly involved with projects at the local level in Glenn County. The following is an overview of the federal, state and local regulations that are applicable to implementing the General Plan.

### *FEDERAL*

#### **Federal Endangered Species Act**

The Federal Endangered Species Act, passed in 1973, defines an endangered species as any species or subspecies that is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as any species or subspecies that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Once a species is listed it is fully protected from a “take” unless a take permit is issued by the United States Fish and Wildlife Service. A take is defined as the harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such conduct, including modification of its habitat (16 USC 1532, 50 CFR 17.3). Proposed endangered or threatened species are those species for which a proposed regulation, but not a final rule, has been published in the Federal Register.

### **Migratory Bird Treaty Act**

To kill, possess, or trade a migratory bird, bird part, nest, or egg is a violation of the Federal Migratory Bird Treaty Act (FMBTA: 16 U.S.C., §703, Supp. I, 1989), unless it is in accordance with the regulations that have been set forth by the Secretary of the Interior.

### **Bald and Golden Eagle Protection Act**

The Bald and Golden Eagle Protection Act (16 USC Section 668) protect these birds from direct take and prohibits the take or commerce of any part of these species. The USFWS administers the act, and reviews federal agency actions that may affect these species.

### **Clean Water Act – Section 404**

Section 404 of the CWA regulates all discharges of dredged or fill material into waters of the U.S. Discharges of fill material includes the 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. §328.2(f)].

Waters of the U.S. include lakes, rivers, streams, intermittent drainages, mudflats, sandflats, wetlands, sloughs, and wet meadows. 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. §328.3(b)]. Waters of the U.S. exhibit a defined bed and bank and ordinary high water mark (OHWM). The OHWM is defined by the USACOE 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. §328.3(e)].

The USACOE is the agency responsible for administering the permit process for activities that affect waters of the U.S. Executive Order 11990 is a federal implementation policy, which is intended to result in no net loss of wetlands.

### **Clean Water Act – Section 401**

Section 401 of the CWA (33 U.S.C. 1341) requires an applicant who is seeking a 404 permit to first obtain a water quality certification from the Regional Water Quality Control Board. To obtain the water quality certification, the Regional Water Quality Control Board must indicate that the proposed fill would be consistent with the standards set forth by the state.

### **Department of Transportation Act - Section 4(f)**

Section 4(f) has been part of Federal law since 1966. It was enacted as Section 4(f) of the Department of Transportation (DOT) Act of 1966 and set forth in Title 49 United States Code (U.S.C.), Section 1653(f). In January 1983, as part of an overall recodification of the DOT Act, Section 4(f) was amended and codified in 49 U.S.C. Section 303. This law established policy on Lands, Wildlife and Waterfowl Refuges, and Historic Sites as follows:

*It is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. The Secretary of Transportation shall cooperate and consult with the Secretaries of the Interior, Housing and Urban Development, and Agriculture, and with the States, in developing transportation plans and programs that include measures to maintain or enhance the natural beauty of lands crossed by transportation activities or facilities. The Secretary of Transportation may approve*

*a transportation program or project (other than any project for a park road or parkway under section 204 of title 23) requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance (as determined by the Federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if: a) There is no prudent and feasible alternative to using that land; and b) The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.*

#### STATE

### **Fish and Game Code §2050-2097 - California Endangered Species Act**

The California Endangered Species Act (CESA) protects certain plant and animal species when they are of special ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the State. CESA established that it is State policy to conserve, protect, restore, and enhance endangered species and their habitats.

CESA was expanded upon the original Native Plant Protection Act and enhanced legal protection for plants. To be consistent with Federal regulations, CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the Act as threatened species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Under State law, plant and animal species may be formally designated by official listing by the California Fish and Game Commission.

### **Fish and Game Code §1900-1913 California Native Plant Protection Act**

In 1977 the State Legislature passed the Native Plant Protection Act (NPPA) in recognition of rare and endangered plants of the state. The intent of the law was to preserve, protect, and enhance endangered plants. The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare, and to require permits for collecting, transporting, or selling such plants. The NPPA includes provisions that prohibit the taking of plants designated as "rare" from the wild, and a salvage mandate for landowners, which requires notification of the CDFW 10 days in advance of approving a building site.

### **Fish and Game Code §3503, 3503.5, 3800 - Predatory Birds**

Under the California Fish and Game Code, all predatory birds in the order Falconiformes or Strigiformes in California, generally called "raptors," are protected. The law indicates that it is unlawful to take, possess, or destroy the nest or eggs of any such bird unless it is in accordance with the code. Any activity that would cause a nest to be abandoned or cause a reduction or loss in a reproductive effort is considered a take. This generally includes construction activities.

### **Fish and Game Code §1601-1603 – Streambed Alteration**

Under the California Fish and Game Code, CDFW has jurisdiction over any proposed activities that would divert or obstruct the natural flow or change the bed, channel, or bank of any lake or stream. Private landowners or project proponents must obtain a "Streambed Alteration Agreement" from CDFW prior to any alteration of a lake bed, stream channel, or their banks. Through this agreement, the CDFW may impose conditions to limit and fully mitigate impacts on fish and wildlife resources. These agreements are usually initiated through the local CDFW warden and will specify timing and construction conditions, including any mitigation necessary to protect fish and wildlife from impacts of the work.

### **Public Resources Code § 21000 - California Environmental Quality Act**

The California Environmental Quality Act (CEQA) identifies that a species that is not listed on the federal or state endangered species list may be considered rare or endangered if the species meets certain criteria.

Under CEQA public agencies must determine if a project would adversely affect a species that is not protected by FESA or CESA. Species that are not listed under FESA or CESA, but are otherwise eligible for listing (i.e. candidate, or proposed) may be protected by the local government until the opportunity to list the species arises for the responsible agency.

Species that may be considered for review are included on a list of “Species of Special Concern,” developed by the CDFW. Additionally, the California Native Plant Society (CNPS) maintains a list of plant species native to California that have low numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. List 1A contains plants that are believed to be extinct. List 1B contains plants that are rare, threatened, or endangered in California and elsewhere. List 2 contains plants that are rare, threatened, or endangered in California, but more numerous elsewhere. List 3 contains plants where additional information is needed. List 4 contains plants with a limited distribution.

### **Public Resources Code § 21083.4 - Oak woodlands conservation**

In 2004, the California legislature enacted SB 1334, which added oak woodland conservation regulations to the Public Resources Code. This new law requires a County to determine whether a project, within its jurisdiction, may result in a conversion of oak woodlands that will have a significant effect on the environment. If a County determines that there may be a significant effect to oak woodlands, the County must require oak woodland mitigation alternatives to mitigate the significant effect of the conversion of oak woodlands. Such mitigation alternatives include: conservation through the use of conservation easements; planting and maintaining an appropriate number of replacement trees; contribution of funds to the Oak Woodlands Conservation Fund for the purpose of purchasing oak woodlands conservation easements; and/or other mitigation measures developed by the County.

### **California Oak Woodland Conservation Act**

The California Legislature passed Assembly Bill 242, known as the California Oak Woodland Conservation Act, in 2001 as a result of widespread changes in land use patterns across the landscape that were fragmenting oak woodland character over extensive areas. The Act created the California Oak Woodland Conservation Program within the Wildlife Conservation Board. The legislation provides funding and incentives to ensure the future viability of California’s oak woodland resources by maintaining large scale land holdings or smaller multiple holdings that are not divided into fragmented, nonfunctioning biological units. The Act acknowledged that the conservation of oak woodlands enhances the natural scenic beauty for residents and visitors, increases real property values, promotes ecological balance, provides habitat for over 300 wildlife species, moderates temperature extremes, reduces soil erosion, sustains water quality, and aids with nutrient cycling, all of which affect and improve the health, safety, and general welfare of the residents of the state.

### **California Wetlands Conservation Policy**

In August 1993, the Governor announced the "California Wetlands Conservation Policy." The goals of the policy are to establish a framework and strategy that will:

- Ensure no overall net loss and to achieve a long-term net gain in the quantity, quality, and permanence of wetland acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property.
- Reduce procedural complexity in the administration of State and federal wetland conservation programs.
- Encourage partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetland conservation and restoration.



The Governor also signed Executive Order W-59-93, which incorporates the goals and objectives contained in the new policy and directs the Resources Agency to establish an Interagency Task Force to direct and coordinate administration and implementation of the policy.

### **Natural Community Conservation Planning Act**

The Natural Community Conservation Planning Act provides long-term protection of species and habitats through regional, multi-species planning before the special measures of the CESA become necessary.

### **Porter-Cologne Water Quality Control Act**

The Porter-Cologne Water Quality Control Act authorizes the SWRCB to regulate state water quality and protect beneficial uses.

### **Water Quality Control Plan for the Sacramento-San Joaquin River Basins**

The Water Quality Control Plan for the Sacramento-San Joaquin River Basins (Basin Plan), adopted by the CVRWQCB in 1998, identifies the beneficial uses of water bodies and provides water quality objectives and standards for waters of the Sacramento River and SJR basins, including the Delta.

State and federal laws mandate the protection of designated “beneficial uses” of water bodies. State law defines beneficial uses as “domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves” (Water Code Section 13050[f]). Additional protected beneficial uses of the SJR include groundwater recharge and fresh water replenishment.

#### *LOCAL*

### **Glenn County General Plan**

The 1993 Glenn County General Plan Natural Resources Element contains goals, policies and measures that address the preservation, management, and utilization of the County’s biological resources. The Natural Resources Element contains provisions for the conservation and protection of forests, water, rivers, soils, minerals, and air, as well as the preservation of agricultural uses, wildlife and fisheries. The Natural Resources Element identifies the types of uses which are compatible with resource utilization, specifies measures necessary for the protection of human life and ecological values, and provides for recreational uses and the preservation of the County’s scenery.

#### GOALS:

**NRP-3 Preservation and enhancement of the county's biological resources in a manner compatible with a sound local economy.**

#### **NRG-1: Preservation of Agricultural land**

#### POLICIES:

NRP-1: Maintain agriculture as a primary, extensive land use, not only in recognition of the economic importance of agriculture, but also in terms of agriculture’s contribution to the preservation of open space and wildlife habitat.

NRP-39 Approach the retention and enhancement of important habitat by preserving areas or systems which will benefit a variety of species or resources rather than focusing on individual species, resources or properties

- NRP-40 Consider sponsoring habitat conservation plans pursuant to the Federal Endangered Species Act when sensitive species are encountered in areas proposed for development.
- NRP-41 Preserve natural riparian habitat, especially along Stony Creek and the Sacramento River and Butte Creek.
- NRP-42 Eliminate the E-M (Extractive Industrial) Zone from areas containing natural riparian vegetation/habitat and replace it with a category affording greater protection to streamcourses and riparian habitats.
- NRP-43 Support programs that expand public hunting and outdoor educational opportunities in Glenn County, including beneficial agricultural practices and pay-to-hunt enterprises.
- NRP-44 Recognize that retention of natural areas is important to maintaining adequate populations of wildlife which is, in turn, important to the local economy.
- NRP-45 Encourage development of hunting opportunities in the county in an effort to offset the costs of natural habitat preservation while assuring that such activities are consistent with the public health and safety.
- NRP-46 Promote protection of native biological habitats of local importance such as riparian forests, foothill oak woodlands, Stony Gorge and Black Butte Reservoirs.
- NRP-47 Recognize and protect areas of unique biological importance as identified on Figure 3-14 when reviewing development related proposals.
- NRP-48 Study the feasibility of establishing buffer areas separating incompatible residential and commercial development from the Sacramento National Wildlife Refuge and other areas of unique biological importance.
- NRP-49 Coordinate with State and federal agencies, private landowners, and private preservation/conservation groups in habitat preservation and protection of rare, endangered, threatened and special concern species, to ensure consistency in efforts and to encourage joint planning and development of areas to be preserved.
- NRP-50 Recognize the Sacramento River corridor, the Sacramento National Wildlife Refuge, migratory deer herd areas, naturally occurring wetlands, and stream courses such as Butte and Stony Creeks as areas of significant biological importance.
- NRP-51 Coordinate with wildlife agencies, the Army Corps of Engineers and the State Lands Commission during review of development permits. Utilize the Sacramento River Marina Carrying Capacity Study findings when reviewing proposals for development along the Sacramento River.
- NRP-52 Direct development away from naturally occurring wetlands to the extent such policy is consistent with the concept of compact and contiguous development.
- NRP-53 Coordinate closely with the Mendocino National Forest, if development proposals are forthcoming for private lands within the Forest.
- NRP-54 Seek membership on the Sacramento Valley Bioregion Regional Council proposed to be created by State and federal land management agencies

NRP-55 Provide notice to the Board of Supervisors prior to any final public or nonprofit agency decision to acquire land (fee title acquisition) or establish an easement for wildlife habitat and/or riparian habitat protection.

NRP-56 Oppose additional fee title purchases of land by State and federal land management agencies that do not provide payments in-lieu of taxes.

NRP-57 Advocate full federal funding of the federal Refuge Revenue Sharing Act.

NRP-58 Advocate a property tax replacement program applicable to lands diminished in value by easements purchased by State and federal land management agencies.

NRP-59 Work with State, federal and private agencies to ensure payment of in-lieu taxes.

NRP-60 Support efforts to improve water availability and management when the potential exists to benefit fish and wildlife in cooperation with Glenn County agricultural water users.

NRP-61 Support the coexistence of agricultural and wildlife land uses, and cooperation of persons involved in agriculture and wildlife habitat preservation, in areas of wildlife habitat potential.

### **Conservation Easements**

A conservation easement is a legal agreement between a landowner and a non-profit organization or government agency that limits certain uses of the land covered by the easement in order to protect its conservation values. It allows the landowner to continue to own and use the land and to sell it or pass it on to heirs. Each easement is individually negotiated and only certain rights to the land are purchased or donated. For example, the landowner might give up the right to build additional structures, while retaining the right to ranch or grow crops. Future owners are also bound by the easement's terms. An easement may apply to just a portion of the property, and need not require public access. If an easement is donated and it benefits the public by permanently protecting important conservation resources it may qualify as a tax-deductible charitable donation. Conservation easements can be useful for passing land on to the next generation. By removing the land's development potential, the easement lowers its market value, which in turn lowers estate tax. The landowner continues to pay property taxes that are usually assessed at a similar rate to properties protected under the Williamson Act.

## **ENVIRONMENTAL SETTING**

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Glenn County is located in the northern Sacramento Valley and the eastern foothills and mountains of the Coast Range, approximately 80 miles north of the city of Sacramento. The County encompasses approximately 1,317 square miles in north central California. The County extends from the Sacramento River west to the Coast Range. The climate varies by region, but generally the county has cool, wet winters and hot, dry summers. Precipitation is normally in the form of rain, with snow in the higher elevations, and ranges from approximately 19 to 24 inches on average per year.

### **Geomorphic Provinces**

California's geomorphic provinces are naturally defined geologic regions that display a distinct landscape or landform. Earth scientists recognize eleven provinces in California. Each region displays unique, defining features based on geology, faults, topographic relief and climate. These geomorphic provinces are remarkably diverse. They provide spectacular vistas and unique opportunities to learn about earth's geologic processes and history. Glenn County is located in portions of the Coast Range, and Great Valley geomorphic provinces of California.

**Great Valley.** The Great Valley is an alluvial plain about 50 miles wide and 400 miles long in the central part of California. Its northern part is the Sacramento Valley, drained by the Sacramento River and its southern part is the San Joaquin Valley drained by the San Joaquin River. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic (about 160 million years ago). Great oil fields have been found in southernmost San Joaquin Valley and along anticlinal uplifts on its southwestern margin. In the Sacramento Valley, the Sutter Buttes, the remnants of an isolated Pliocene volcano, rise above the valley floor.

**Coast Range (North).** The Coast Range is a northwest-trending mountain range (2,000 to 4,000, occasionally 6,000 feet elevation above sea level). The range trends northwest and subparallel to the San Andreas Fault. To the west is the Pacific Ocean and to the east is the Great Valley. The Coast Range is composed of thick Mesozoic and Cenozoic sedimentary strata that dips beneath alluvium of the Great Valley. The northern Coast Range is dominated by irregular, knobby, landslide-topography of the Franciscan Complex.

### Bioregions

The county is defined by two different bioregions including the Sacramento Valley, and Klamath/North Coast. Figure 5.2-1 illustrates the boundaries of the bioregions within Glenn County. A brief description of each bioregion is presented below.

**Sacramento Valley.** The Sacramento Valley Bioregion is a watershed of the Sierra Nevada that encompasses the northern end of the great Central Valley, stretching from Redding to the southeast corner of Sacramento County. The bioregion is generally flat, and is rich in agriculture. The eastern portion of the County falls within this bioregion, which has a climate that is characterized by hot dry summers and cool wet winters. Oak woodlands, riparian forests, vernal pools, freshwater marshes, and grasslands provide the major natural vegetation of the bioregion. This bioregion is the most prominent wintering area for waterfowl, attracting significant numbers of ducks and geese to its seasonal marshes along the Pacific Flyway. Species include northern pintails, snow geese, tundra swans, sandhill cranes, mallards, grebes, peregrine falcons, heron, egrets, and hawks. Black-tailed deer, coyotes, river otters, muskrats, beavers, ospreys, bald eagles, salmon, steelhead, and swallowtail butterflies are some of the wildlife that are common in this bioregion.

**Klamath/North Coast.** The Klamath/North Coast Bioregion in California's northwestern corner extends roughly one-quarter of the way down the 1,100-mile coast and east across the Coastal Range and into the Cascades. Much of this bioregion is covered by forest and is the state's wettest climate, with rainfall distribution varying widely from an average annual 38 to 80 or more inches. The western portion of the County falls within this bioregion, which is considered "Inland" with a climate that is drier with low rainfall in winter and hot, dry summers. Vegetation includes mixed conifer habitat of white fir, Douglas fir, ponderosa pine, Sierra lodgepole pine, incense cedar, sugar pine, red fir, Jeffrey pine, mountain hemlock, knobcone pine, western red cedar, red alder, redwood, tanoak, Pacific madrone, and chaparral. Wildlife in the bioregion includes deer, fox, black bear, mountain lion, California clapper rail, Aleutian Canada geese, elk, osprey, fisher, bank swallow, salmon, Otis blue butterfly, bald eagle, Point Arena mountain beaver, Swainson's hawk, willow flycatcher, western sandpiper, and Oregon silverspot butterfly.

### Natural and Agricultural Communities

Natural and agricultural communities both provide a variety of habitat for the biological resources in Glenn County. Sensitive habitats include those that are of special concern to resource agencies or those that are protected under federal, state, or local regulations.

Glenn County is a biologically diverse part of the state. There are 42 land cover types (wildlife habitat classification) found in Glenn County out of the 59 found in California. These include: Alpine-Dwarf Shrub, Agricultural, Annual Grassland, Barren, Blue Oak Woodland, Blue Oak-Foothill Pine, Chamise-Redshank Chaparral, Closed-Cone Pine-Cypress, Coastal Oak Woodland, Coastal Shrub, Cropland, Deciduous Orchard,

Douglas Fir, Dryland Grain Crops, Eucalyptus, Evergreen Orchard, Fresh Emergent Wetland, Irrigated Grain Crops, Irrigated Hayfield, Irrigated Row and Field Crops, Jeffrey Pine, Klamath Mixed Conifer, Lacustrine, Mixed Chaparral, Montane Chaparral, Montane Hardwood, Montane Hardwood-Conifer, Montane Riparian, Pasture, Perennial Grassland, Ponderosa Pine, Red Fir, Rice, Riverine, Sagebrush, Subalpine Conifer, Urban, Valley Foothill Riparian, Valley Oak Woodland, Water, Wet Meadow, and White Fir. Table 5.2-1 identifies the total area by acreage for each land cover type (wildlife habitat classification) found in Glenn County. Figure 5.2-2 illustrates the location of each land cover type (wildlife habitat classification) within the County. A brief description of each cover type follows.

**TABLE 5.2-1: LAND COVER TYPES – WILDLIFE HABITAT CLASSIFICATION**

<i>COVER TYPES</i>	<i>ACREAGE</i>
Alpine-Dwarf Shrub	77.39
Annual Grassland	198,758.15
Barren	4,879.53
Blue Oak Woodland	68,213.28
Blue Oak-Foothill Pine	25,795.33
Chamise-Redshank Chaparral	33,122.77
Closed-Cone Pine-Cypress	3,679.49
Coastal Oak Woodland	30.69
Coastal Shrub	389.94
Cropland	47,009.89
Deciduous Orchard	81,154.65
Douglas-Fir	20,710.32
Dryland Grain Crops	16,332.73
Eucalyptus	151.44
Evergreen Orchard	10,650.44
Freshwater Emergent Wetland	13,442.07
Irrigated Grain Crops	18,128.20
Irrigated Hayfield	19,735.92
Irrigated Row and Field Crops	2,682.33
Jeffrey Pine	219.48
Klamath Mixed Conifer	52,162.22
Lacustrine	3,419.18
Mixed Chaparral	54,375.74
Montane Chaparral	8,382.77
Montane Hardwood	28,357.01
Montane Hardwood-Conifer	5,661.38
Montane Riparian	401.09
Pasture	599.52
Perennial Grassland	4,258.10
Ponderosa Pine	3,721.37
Red Fir	3,525.07
Rice	88,514.16
Riverine	4,266.41
Sagebrush	39.36

<i>COVER TYPES</i>	<i>ACREAGE</i>
Subalpine Conifer	4.45
Urban	10,285.45
Valley Foothill Riparian	7,052.62
Valley Oak Woodland	2,261.02
Water	6,963.3
Wet Meadow	136.32
White Fir	5,478.14
<b>Total</b>	<b>849,162.78</b>

*SOURCE: SOURCE: CASIL GIS DATA, 2019*

## Natural and Agricultural Communities

**Closed-cone pine-cypress** habitats are typically found on sites that are rockier and more infertile than the surrounding soils. Many stands are found on serpentine soils. Although, typically found at low elevations, due to the coastal distribution of much of this habitat type, interior stands may be found at elevations up to 6,550 ft. Landforms are gentle to steep slopes where stands occur in interior California and coastal terraces or bluffs where distributed along coastal California.

**Douglas fir** habitat is typically found in hot, dry summers and cool, mild, wet winters. Temperatures range from 57-72 F in the summer to 32-46 F in the winter. Annual precipitation varies from 24-27 in, generally less than 15 percent falling during summer. Precipitation increases inland and at higher elevations. Snowfall ranges from 2 to 31 inches and rarely persists later than June. Topography is characterized by rugged, deeply dissected terrain and steep slopes, especially toward the south. Major soil types are sedimentary granitic, and Ultramafic parent materials of gabbro, peridotite, and serpentine.

**Eucalyptus** habitats have been extensively planted throughout the state since their introduction in 1856 with large-scale planting operations beginning in 1870. As such, they are found in locations with highly variable site characteristics. Generally, they are found on relatively flat or gently rolling terrain, occasionally in the foothills. Climatic conditions are typically referred to as Mediterranean, characterized by hot, dry summers and cool, mild winters. Precipitation ranges from approximately 30 cm (12 in) to 60 cm (24 in). Temperature regimes in areas of eucalyptus groves range from a mean monthly low of 6 C (43 F) in January to 23 C (73 F) in August, with low temperatures occasionally reaching 0 to 4 C (32 to 25 F) and high temperatures typically exceeding 38 C (100 F). Eucalyptus demonstrates the ability to withstand many temperature conditions, with the exception of prolonged cold or freezing weather.

**Jeffrey Pine** occurs in a variety of physical settings throughout its extensive range. The tolerance of its dominant species to low temperatures allows the type to occupy the borders of topographic frost pockets and high cold ridges. It is commonly found on soils developed from granite and lava flows, but can also develop as a type on ultramafic soils. Its distribution in northern California west of the Sierra-Cascade crest is limited to such soils. Jeffrey pine is not restricted by aspect or slope.

**Klamath mixed conifer** habitat occupies a complex of mountain ranges in northern California which are characterized by rugged, deeply dissected terrain with steep slopes due to extensive glaciation. This area has a considerable amount of ultramafic parent material and soils with scattered areas of serpentinitic soils; it also overlays a very old and complex geological structure. Average slopes are 60 percent or more and valleys are narrow. Climatic conditions include warm, wet winters and hot dry summers with precipitation varying from 69 inches on the western (maritime) side to 24 inches on the eastern (continental) side. Snowfall is moderate, ranging from 2 to 60 in, with large amounts of snowfall occurring at the middle and high elevations where this habitat occurs.

**Montane hardwood-conifer** habitat generally occurs on coarse, well drained mesic soils, in mountainous terrain with narrow valleys. Slopes average approximately 57 percent with all aspects encountered. Winters are cool and wet; summers are hot and dry. Northern California Montane Hardwood-Conifer sites have less rainfall and fog than Redwood or Mixed Conifer habitats. In southern California, this habitat is found at higher elevations, and in moist canyons. Average rainfall is 25 to 65 in, with some fog. The growing season is 7 to 11 months, with 200 to 300 frost-free days.

**Ponderosa pine** habitat is found on suitable mountain and foothill sites throughout California except in the immediate area of San Francisco Bay, in the north coast area, south of Kern County in the Sierra Nevada and east of the Sierra Nevada Crest. Ponderosa pine is found on all aspects, depending on soils and location within the local elevational range. Mean annual temperature is generally less than 55 F and precipitation is greater than 33 inches except in southern California. Less than one-third of the precipitation is snowfall.

**Red fir** habitats are found on frigid soils over a wide range of topography exclusive of very wet sites. Annual precipitation ranges from 40 to 50 inches per year, primarily as snow that forms packs up to 15 feet in winter. Summers are dry, limiting tree growth to seasonally available soil moisture.

**Subalpine Conifer** habitats are open forests with needle-leaved evergreen trees of low to medium stature. Stand density and tree height are typically greater at lower limits of its elevational range. In protected sites at lower elevations, tree height may exceed 30 m (100 ft), but trees on exposed sites and windy ridges near tree line are shaped into krummholz stunted, mat-like forms often only about 1 m (3 ft) tall. Shrubby vegetation and herbaceous ground cover are generally sparse or lacking. Litter accumulation is typically scanty, but fallen woody material persists for long periods in the cold climate.

**White fir** habitats are found on a variety of soils developed from different parent material, including volcanic and igneous rocks, granitics, various metamorphics, and sedimentary material. Soils are coarse textured, well-drained, have poorly developed profiles, are often rocky, and are cold, with mean annual temperatures from 32 -50 F. Cooler north- and east-facing slopes are the most common sites throughout the state. Precipitation is between 30-70 inches mostly in the form of snow. Almost all precipitation falls between October and May.

## **Hardwood Woodland**

**Blue oak-foothill pine** habitat occurs in a typically Mediterranean climate with hot, dry summers and cool, wet winters. Most precipitation falls as rain from November through April, averaging 20 to 40 inches within the primary range of blue oak. The frost-free growing season ranges from 150 to 300 days, with winter temperatures averaging 30 F and summer temperatures averaging 90 F. Soils are from a variety of generally well-drained parent materials, ranging from gravelly loam through stony clay loam, with soils commonly rich in rock fragments.

**Blue oak woodland** habitat is usually associated with shallow, rocky, infertile, well-drained soils from a variety of parent materials. The climate is Mediterranean, with mild wet winters and hot dry summers. Average annual precipitation varies from 20 to 40 inches over most of the range, although extremes are noted from 10 to 60 inches. Mean temperatures range from 75-96 F in summer to 29-42 F in winter. The growing season ranges from 6 months in the north to the entire year in the south, with 175 to 365 frost-free days.

**Valley oak woodland** habitat occurs in a wide range of physiographic settings but is best developed on deep, well-drained alluvial soils, usually in valley bottoms. Most large, healthy valley oaks are probably rooted down to permanent water supplies. Stands of valley oaks are found in deep sills on broad ridge-tops in the southern Coast Range. Where this type occurs near the coast, it is usually found away from the main fog zone. The climate is Mediterranean, with mild, wet winters and hot, dry summers.

**Valley-foothill riparian** habitats are found in valleys bordered by sloping alluvial fans, slightly dissected terraces, lower foothills, and coastal plains. They are generally associated with low velocity flows, flood plains, and gentle topography. Valleys provide deep alluvial soils and a high water table. The substrate is coarse, gravelly or rocky soils more or less permanently moist, but probably well aerated. Frost and short periods of freezing occur in winter (200 to 350 frost-free days). This habitat is characterized by hot, dry summers, mild and wet winters. Temperatures range from 75 to 102 F in the summer to 29 to 44 F in the winter. Average precipitation ranges from 6-30 inches, with little or no snow. The growing season is 7 to 11 months.

### **Hardwood Forest**

**Montane hardwood** habitat is found on a wide range of slopes, especially those that are moderate to steep. Soils are for the most part rocky, alluvial, coarse textured, poorly developed, and well drained. Soil depth ranges from shallow to deep. Summer temperatures vary between 68 and 77 F and winter vary from 37 to 45 F. Frost-free days range from 160 to 230. Annual precipitation varies from 110 inches in the northern Coast Range to 36 inches in the mountains of southern California.

**Montane Riparian** areas are found associated with montane lakes, ponds, seeps, bogs and meadows as well as rivers, streams and springs. Water may be permanent or ephemeral. The growing season extends from spring until late fall, becoming shorter at higher elevations. Most tree species flower in early spring before leafing out.

### **Shrub**

**Alpine-Dwarf Shrub** habitat is found above timberline on all aspects, slopes, and ridge lines, so the physical environment tends to be cold, dry, and windy. In the northern portion of California, this habitat is cold with a brief summer growing season. This habitat is subject to intense solar radiation and freezing nights in summer. It is subject to severe winds and very low temperatures in winter on windward slopes, which are often blown clear of snow. Protected slopes often have persistent snowdrifts until midsummer or later. The substrate is quite rocky with little soil formation and excellent drainage. Plants in this habitat are subject to desiccation by midsummer after meltwater disappears.

**Chamise-Redshank Chaparral** is found where soils are thin with little accumulation of organic. Chamise may be a dominant shrub on some serpentine sites and is most common on south and west facing slopes, while redshank is found on all aspects. Chamise-Redshank Chaparral is found in a Mediterranean climate; rainfall is 38 to 63 cm (15 to 25 in), less than 20 percent of total precipitation falls in summer, and winters are mild. The predominant land forms are steep slopes and ridges.

**Mixed Chaparral** occurs on all aspects, but at lower elevations, it generally is found on north-facing slopes. Generally, it occurs on steep slopes and ridges with relatively thin, well-drained soils. Soils can be rocky, sandy, gravelly or heavy. The Mediterranean climate is characterized by cool, wet winters and hot, dry summers. Total rainfall is 38 to 63 cm (15 to 25 in) with less than 20 percent falling during the summer.

**Montane chaparral** can be found on shallow to deep soils, on all exposures, and from gentle to relatively steep slopes. It may dominate on more xeric sites, but occurs locally throughout the coniferous forest zone. Generally, climate is like that associated with the coniferous forest zone, cold winter temperatures with substantial precipitation. Summers are typically hot and dry. In the northern portion of the state, montane chaparral is found between 914 to 2743 m (3000-9000 ft).

**Sagebrush** habitat occurs at a wide range of middle and high elevations. At lower elevations and on drier sites, it gives way to such species as saltbrush, greasewood, creosotebush, and winterfat. At mid-elevations and on more mesic sites the habitat meets bitterbrush, curleaf mountain mahogany, and western serviceberry. At high elevations it intergrades with Ponderosa Pine and even with Aspen habitat types.



## Herbaceous

**Annual Grassland** habitat occurs mostly on flat plains to gently rolling foothills. Climatic conditions are typically Mediterranean, with cool, wet winters and dry, hot summers. The length of the frost free season averages 250 to 300 days (18 to 21 fortnights). Annual precipitation is highest in northern California.

**Perennial Grassland** habitat typically occurs on ridges and south-facing slopes, alternating with forest and scrub in the valleys and on north-facing slopes. Perennial Grassland habitats are most often found on Mollisols. These soils may grade into Inceptisols to the north, with higher precipitation allowing for leaching of the mollic horizon, and into Alfisols to the south, under drier conditions.

**Wet meadows** occur where water is at or near the surface most of the growing season, following spring runoff. Hydrologically, they occupy lotic, sunken concave, and hanging sites. Lotic sites are those with main input flow (other than precipitation) from upstream sources; at least early in the growing season, water flows across them at depths of 4-8 inches. Downstream runoff is the principal output flow. Lotic sites are topographic basins but have a slight slope, which permits drainage of surface water. Percolation is nil due to the saturated or slowly permeable nature of underlying materials. Sunken concave sites also receive water input from upstream sources, but evapotranspiration is the main output flow. Percolation is slowed by heavy-textured soils and/or shallow bedrock; however, in contrast to lotic and hanging sites, soil of sunken concave sites may dry to considerable depth by fall. Hanging sites are watered by hydrostatic flows as springs or seeps. They frequently occur on rather steep slopes, and downstream runoff is the main output flow. Surface flows, although constant, are usually no more than 0.4 inches deep.

**Fresh emergent wetland** habitats occur on virtually all exposures and slopes, provided a basin or depression is saturated or at least periodically flooded. They are most common on level to gently rolling topography. They are found in various depressions or at the edge of rivers or lakes. Soils are predominantly silt and clay, although coarser sediments and organic material may be intermixed. In some areas organic soils (peat) may constitute the primary growth medium. Climatic conditions are highly variable and range from the extreme summer heat to winter temperatures well below freezing.

## Other

There are a variety of other habitat types documented with Glenn County. These include aquatic habitats such as lacustrine (water) and riverine (rivers/creeks), and agricultural habitats (deciduous orchard, dryland grain crops, evergreen orchards, irrigated grain crops, irrigated hayfields, irrigated row and field crops, pasture, rice and vineyard). Additionally, Glenn County contains areas that are barren and urban.

## Management Landscape

Land management in Glenn County can be classified into four general categories: Agricultural (Active Farming), Agricultural (Rangeland/Forestland), Wildlife/Natural Lands Reserve, and Urban. Table 5.2-2 presents a breakdown of the acreage within each category. Figure 5.2-3 provides an illustration of each management classification. The following section provides an overview of the largest federal, state, and non-profit land management/conservation organizations and their lands in Glenn County.

**TABLE 5.2-2: MANAGEMENT LANDSCAPE**

<i>MANAGEMENT CLASSIFICATION</i>	<i>ACREAGE</i>
Agricultural (Active Farming)	227,795
Wildlife/Natural Lands Reserve	27,193
Urban	6,954
Agricultural (Rangeland/Forestland)	587,300
Total	849,242

Source: CASIL GIS Data, 2019

## National Forest Lands

**Mendocino National Forest.** The Mendocino National Forest is 913,306 acres and lies in parts of six counties, including Glenn, Lake, Colusa, Mendocino, Tehama, and Trinity. Elevations in the Forest range from 750 feet to 8,092 feet, with the average elevation about 4,000 feet. An estimated 60,000 acres of old growth occur here, including forests of Douglas-fir, Ponderosa Pine, White Fir, Tanoak, and Pacific madrone. The Mendocino National Forest is the only one of California's 18 National Forests that are not crossed by a paved road or highway and it is attractive to people seeking outdoor recreation. The Forest provides resources through logging and grazing, in addition to its recreational activities.

## National Wildlife Refuges

The Sacramento National Wildlife Refuge Complex consists of five national wildlife refuges (NWR) and three wildlife management areas (WMA) that comprise over 35,000 acres of wetlands and uplands in the Sacramento Valley, California. In addition, there are over 30,000 acres of conservation easements in the Complex. The Refuges and easements are part of the USFWS; they serve as resting and feeding areas for nearly half the migratory birds on the Pacific Flyway.

**Sacramento National Wildlife Refuge Management Area.** The Sacramento National Wildlife Refuge is a 10,783-acre refuge consisting of about 7,600 acres of intensively managed wetlands, uplands, riparian habitat, and vernal pools. It typically supports wintering populations of more than 600,000 ducks and 200,000 geese. The refuge supports several endangered plants and animals, including transplanted colonies of palmate-bracted birds-beak, several species of fairy shrimp, vernal pool tadpole shrimp, giant garter snake, wintering peregrine falcon, bald eagle, and breeding tricolored blackbird. Resident wildlife includes grebe, heron, blackbird, golden eagle, beaver, muskrat, black-tailed deer, and other species typical of upland and wetland habitats. Approximately 9,000 people hunt on the refuge each year, and 73,000 people use the visitor center, auto tour route, and walking trail.

**Willow Creek-Lurline Wildlife Management Area.** The Willow Creek-Lurline Wildlife Management Area is an approximately 20,000 acre area that has been approved for acquisition of conservation easements on privately owned wetlands to protect fall/winter habitat for waterfowl. Approximately 12,000 acres of the Wildlife Management Area are privately owned for the purpose of waterfowl hunting. Conservation easements have been acquired on approximately 6,000 acres, requiring landowners to maintain land in wetlands. The area is surrounded by intensive agriculture (rice and other grains). These privately-owned lands are closed to public access.

**North Central Valley Wildlife Management Area.** The North Central Valley Wildlife Management Area was established primarily to protect wintering habitat for waterfowl. Under the North Central Valley WMA the USFWS has the authority to purchase conservation easements on up to 48,750 acres of private lands located within an 11 county area of the Sacramento Valley. Within this management area, the Service has purchased conservation easements on 11,811 acres from willing landowners to protect wildlife habitat. In exchange for

payment, the landowners agree to maintain wetlands and other habitats on their property in perpetuity. These Wildlife Management lands are privately owned and not open for public access.

### **State Recreational Areas**

**Butte City Park Property.** This property is new and may not be available for public use, pending necessary planning, facility development and staffing. The Butte City Park Property is along the Sacramento River, currently includes picnic areas, and is within the vicinity of a boat launch facility in Butte City. Day use activities and facilities currently include fishing.

### **State Wildlife Areas**

**Sacramento River Wildlife Area.** These 4,014 acres of wildlife area is located in 14 separate units along the west and east side of the Sacramento River in Butte, Glenn, and Colusa Counties. The wildlife area is a riparian forest dominated by cottonwood, willow, ash, sycamore, and box elder trees with a dense understory of wild grape, pipevine, poison oak and grasslands, oxbow lakes, and gravel bars. Common wildlife along the river includes otters, beavers, gray fox, bobcat, western pond turtles, ash-throated flycatchers, great blue herons, egrets, and a variety of birds of prey. Hunting is allowed and opportunities are mostly for deer, quail, turkey, and dove. Fishing, trapping, and bird watching are also common.

### **U.S. Reclamation Projects**

**Stony Gorge Reservoir.** Completed in 1928, is on Stony Creek about 18 miles downstream from East Park Dam and 5 miles west of Fruto in western Glenn county. The dam is a concrete slab and buttress structure with a height of 139 feet and a crest length of 868 feet. A warm-water fishery with an 18-mile shoreline. Excellent boating and shoreline accessibility. One boat ramp useable most of the summer, depending on water level. Free camping except for group camping area. Available bass species include largemouth and smallmouth bass of Texan strain that grow faster and mature earlier; A thriving bluegill and crappie population; Catfishing good year-round.

**Tehama-Colusa Canal.** The Tehama-Colusa Canal is a canal that carries diverted water from the Red Bluff Diversion Dam along a 110-miles canal. The canal initially carries 2,530 cubic feet per second, and at its terminus 1,700 cubic feet per second. The canal was built from 1965 to 1980. An 80-foot dam called Northside Division Dam controls water flow along the Tehama-Colusa Canal. Funk Reservoir backs up behind the dam Five pump plants take water from the canal and feed it into the Glenn County water distribution grid.

### **Regionally Important Habitat and Wildlife**

**Oak woodlands.** Oak woodlands are rich in wildlife and are a favored place for people to recreate, build their homes, and pursue their livelihoods. Unfortunately, oak woodlands are disappearing throughout the state. They are being lost to intensive agriculture, woodcutting, housing and other urban development, and where they remain, they have had regenerative problems.

Glenn County contains approximately 137,340 acres of oak woodlands. These oak woodlands are classified into the following eight communities: blue oak woodland, blue oak / foothill pine woodland, coastal oak woodland, montane hardwood, montane hardwood-conifer, montane riparian, valley oak woodland, and valley foothill riparian. Table 5.2-3 provides a breakdown of the acreage associated with each oak woodland community. Figure 5.2-4 provides an illustration showing the distribution of oak woodlands within Glenn County.

**TABLE 5.2-3: OAK WOODLAND COMMUNITIES**

COMMUNITY	ACREAGE
Blue Oak Woodland	68,213.3
Blue Oak-Foothill Pine	25,795.33
Montane Hardwood	28,357.0
Montane Hardwood-Conifer	5,661.38
Valley Foothill Riparian	7,052.62
Valley Oak Woodland	2,261.02
Total	137,340.7

SOURCE: CASIL GIS DATA, 2019

Oak woodlands harbor a rich diversity of native plant and wildlife species. The combination of the county's mild Mediterranean climate and the abundant food provided by acorns allow many animal species to remain here year-round. Oak woodlands also provide critical wintertime habitat to migratory species that spend their summers at higher elevations. Because of these qualities, oak woodlands are thought to have the richest wildlife species abundance of any habitat in California with estimates of 331 species according to the CDFW. Oak woodlands provide habitat for a number of threatened and endangered species. Additionally, many of the state's species of special concern are found within oak woodlands. Because oak woodlands are widely distributed, they often create a mosaic of plant communities in which other less common habitats occur such as vernal pools, wetlands, grasslands, and riparian.

As the county's population grows, there will be continuing pressure to convert oak woodlands to more intensive uses such as housing and ranchettes. The problems associated with development in oak woodlands often creates infrastructure problems and decreases wildlife habitat values. Fire safety needs increase because a greater population is at risk and because there are more opportunities for wildfire ignition by human activities.

### Tule Elk Population

Tule elk are endemic to California and the most specialized elk in North America. It is the smallest subspecies of all American elks, with the average weight of adult males only 450 - 550 pounds and adult females only at 375 - 425 pounds. In its historic range, the tule elk once occupied much of California's Central Valley. Their range spanned east of the foothills of the Sierra Nevada west to the coast line and north from the headwaters of the Sacramento River south to the Tehachapi Mountains.

Accounts in journals and diaries of early explorers indicate that approximately 500,000 tule elk inhabited the State. Between 1800 and 1840 hide and tallow hunters took large numbers of elk. In 1873 a law was passed to fully protect tule elk, although at that time it was unclear if any even remained. By the turn of the century, the population of elk had expanded and was causing extensive damage to fences, crops, and irrigated pasture. At this time, the California Academy of Science took over a tule elk relocation effort whereby they relocated 235 tule elk to 22 different locations, including Cache Creek. Tule elk at Cache Creek were allowed to expand their range and, until the summer of 1986, did not cause significant damage to private property. Currently there are 21 herds of tule elk throughout California with numbers estimated at about 3,800.

Competition with domestic stock has been shown to be a minor threat to tule elk. However, overgrazing or high intensity grazing can leave large areas with no food value for the elk for extended periods of time. Conflicts between ranchers and elk have historically posed a problem. Elk are an increasingly popular game animal, and management efforts in the last few decades have caused the population to grow. As the numbers increase so does the incidence and intensity of damage to agriculture.

Continued human development and encroachment is a threat to tule elk. A large portion of their range is on private property with no permanent protection. There is a constant threat of development or subdividing the properties into small ranches. One of the other major threats is habitat degradation and invasive noxious weeds. Exotic weed species (star thistle) is a large problem for the Cache Creek herd, as it has taken over many acres of otherwise suitable habitat.

### **Deer Population**

Columbian black-tailed deer (*Odocoileus hemionus columbianus*) are not recognized as a special-status species; however, preserving deer habitat and migration corridors is of concern to the CDFW in many foothill and mountainous regions of California. The CDFW has divided the State into 11 Deer Assessment Units (DAUs). Glenn County's is located within Unit 5 (Central Sierra) and Unit 8 (Central Coast-North). The deer herds of Unit 5 are largely migratory deer located within the west slope of the Sierra Nevada Mountain range, with smaller resident populations along the Sacramento Valley floor including Colusa County. The deer herds of Unit 8 are largely resident animals that exhibit some upslope/downslope movement with seasonal changes in weather and forage conditions.

Deer within Glenn County are common within the forest communities where common habitat includes several oak species, western mountain mahogany, chamise, riparian-wetland areas, willow/birch, ceanothus, and manzanita. Deer are also common in the foothill communities where common habitat includes oak-woodland, oak-annual grass savanna, and chaparral shrub stands. Deer are less common, but can be found in the valley floor in agricultural fields, pastures, and riparian areas.

### **Salmon and Steelhead Trout Fisheries**

Salmon and steelhead trout are anadromous fish species that are present in the Sacramento River Basin. Anadromous fish are born in freshwater rivers and streams, and then migrate to the Pacific Ocean to grow and mature before returning to their place of origin to spawn. The Sacramento River system produces most of the Chinook salmon (*Oncorhynchus tshawytscha*) and a large percentage of the steelhead trout (*Oncorhynchus mykiss*) in California.

Anadromous fish resources once flourished naturally in the Sacramento River system, but as a result of habitat destruction from water storage/diversion projects, mining, sedimentation, and bank degradation, they are protected species under the Endangered Species Act. The Sacramento River system has historically supported steelhead trout and four distinct spawning runs of Chinook salmon: fall, late fall, winter, and spring. The salmon runs have declined since the late 1800s and are now characterized as episodic. The Central Valley steelhead was federally listed as threatened in 2003. The fall/late fall-run salmon is a federal and state species of concern, and a candidate species for federal listing. The spring-run Chinook salmon population is listed as threatened by both federal and state agencies. Winter-run Chinook salmon population is listed as a federally and state endangered species. Populations of Central Valley Steelhead and Chinook salmon are supported by hatcheries within the Sacramento River Basin.

Water remaining behind the dams by the start of the spawning run in October is often warmed by summer heat. Warm water and low water elevation are harmful to most coldwater anadromous fish species. Riparian vegetation is critical for the maintenance of high quality fish habitat. It provides cover, controls temperature, stabilizes stream banks, provides food, and buffers streams from erosion and impacts of adjacent land uses. Riparian vegetation also affects stream depth, current velocity, and substrate composition. The decline of riparian communities in California is a factor contributing to the loss of high quality fish habitat.

### **Special-Status Species**

The following discussion is based on a background search of special-status species that are documented in the CNDDb, the CNPS Inventory of Rare and Endangered Plants, and the USFWS endangered and threatened

species lists. The background search was regional in scope and focused on the documented occurrences within the region.

### SPECIAL STATUS PLANTS

The search revealed documented occurrences of the 38 special status plant species within Glenn County. Table 5.2-4 provides a list of special-status plant species that are documented in the region, their habitat, and current protective status. Figure 5.2-5 illustrates the location of each documented occurrence.

**TABLE 5.2-4: SPECIAL STATUS PLANTS PRESENT OR POTENTIALLY PRESENT IN GLENN COUNTY**

SPECIES	STATUS	HABITAT
<b>PLANTS</b>		
<i>Atriplex persistens</i> Vernal pool smallscale	--;;1B	Vernal pools (alkaline). 10-115M.
<i>Centromadia parryi</i> ssp. <i>parryi</i> Pappose tarplant	--;;1B	Chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt), valley and foothill grassland (vernally mesic). 0-420M.
<i>Antirrhinum subcordatum</i> dimorphic snapdragon	--;;4	Chaparral, lower montane coniferous forest. Generally on serpentine or shale in foothill woodland or chaparral on S. and W. facing slopes. 185-800M.
<i>Brasenia schrebri</i> Watersheild	--;;2	Freshwater marshes and swamps. 30-2200M.
<i>Arctostaphylos manzanita</i> ssp. <i>elegans</i> Konocti manzanita	--;;1B	Chaparral, cismontane, lower montane coniferous forest. Volcanic soils. 395-1400M.
<i>Astragalus rattanii</i> var. <i>jepsonianus</i> Jepson's milk-vetch	--;;1B	Cismontane woodland, valley and foothill grassland, chaparral. Commonly on serpentine in grassland or openings in chaparral 320-700M.
<i>Cryptantha crinita</i> Silky cryptantha	--;;1B	Gravelly streambeds, cismontane woodland, lower montane coniferous forest, riparian forest, riparian woodland, valley and foothill grassland. 61-1215M.
<i>Atriplex cordulata</i> Heartscale	--;;1B	Chenopod scrub, meadows, seeps, Sandy soils in the valley and foothill grasslands (Dry alkaline flats)
<i>Atriplex depressa</i> Brittlescale	--;;1B	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools (Alkaline flats and clay soils)
<i>Atriplex joaquinian</i> San Joaquin spearscale	--;;1B	Chenopod scrub, alkali meadow, valley and foothill grassland. In seasonal alkali wetlands or alkali sink scrub 1-250M.
<i>Brodiaea coronaria</i> ssp. <i>rosea</i> Indian Valley brodiaea	--;CE;1B	Closed-cone coniferous forest, chaparral, cismontane woodland, valley and foothill grassland, meadows. Serpentine gravelly creek bottoms, and in meadows and swales. 335-1450M.
<i>Castilleja rubicundula</i> ssp. <i>rubicundula</i> Pink creamsacs	--;;1B	Chaparral, meadows, and seeps, valley and foothill grassland. Openings in chaparral or grasslands. Serpentine. 20-900M.
<i>Chlorogalum pomeridianum</i> var. <i>minus</i> dwarf soaproot	--;;1B	Chaparral, valley and foothill grassland. Serpentine. 240-970M.
<i>Cordylanthus palmatus</i> palmate-bracted bird's-beak	FE;CE;1B	Chenopod scrub, valley and foothill grassland. Usually on Pescadero silty clay which is alkaline, with <i>Distichilis</i> , <i>Frankenia</i> , etc. ETC. 5-155M.
<i>Epilobium nivium</i>	--;;1B	Upper montane coniferous forest, chaparral. In crevices of rocky

<i>SPECIES</i>	<i>STATUS</i>	<i>HABITAT</i>
Snow Mountain willowherb		outcrops, and dry talus and shale slopes. 785-2500M.
<i>Euphorbia hooveri</i> Hoover's spurge	FT;--;1B	Vernal Pools. 25-250M.
<i>Eriastrum tracyi</i> Tracy's eriastrum	--;CR;1B	Chaparral, cismontane woodland. Gravely shale or clay; often in open areas. 315-760M.
<i>Eriogonum nervulosum</i> Snow Mountain buckwheat	--;--;1B	Chaparral. Dry serpentine outcrops, balds, and barrens. 300-2100M.
<i>Euphorbia ocellate ssp. rattanii</i> Stony creek spurge	--;--;1B	Chaparral, Riparian scrub (streambank) Valley and foothill grassland (sandy or rocky). 65-800M.
<i>Fritillaria pluriflora</i> Adobe-lily	--;--;1B	Chaparral, cismontane woodland, foothill grassland. Usually on clay soils; sometimes serpentine. 55-820M.
<i>Hesperolinon drymarioides</i> Drymaria-like western flax	--;--;1B	Closed-cone coniferous forest, chaparral, cismontane woodland, valley and foothill grassland. Serpentine soils, mostly within chaparral. 390-1000M.
<i>Hibiscus lasiocarpus</i> Woolly rose-mallow	--;--;2	Marshes and swamps (freshwater). Moist, freshwater soaked river banks and low peat islands in sloughs; in California, known from the Delta Watershed. 0-150M.
<i>Hesperolinon tehamense</i> Tehama county western flax	--;--;1B	Serpentinite, chaparral, cismontane woodland. 100-1250M.
<i>Layia septentrionalis</i> Colusa layia	--;--;1B	Chaparral, cismontane woodland, valley and foothill grassland, scattered colonies in fields and grassy slopes in sandy or serpentine soil. 145-1095M.
<i>Lepidium latipes var. heckardii</i> Heckard's pepper-grass	--;--;1B	Valley and foothill grassland (alkaline flats). 2-200M.
<i>Lupinus antoninus</i> Anthony peak lupine	--;--;1B	Rocky, lower montane coniferous forest, upper montane coniferous forest. 1220-2285M.
<i>Navarretia leucocephala ssp. bakeri</i> Baker's navarretia	--;--;1B	Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest. Vernal pools and swales, adobe or alkaline soils. 5-950M.
<i>Neostapfia colusana</i> Colusa grass	FT;CE;1B	Vernal pools. Usually in large, or deep vernal pool bottoms; adobe soils. 5-110M.
<i>Orcuttia pilosa</i> Hairy Orcutt grass	FE;CE;1B	Vernal pools. 46-200M.
<i>Puccinellia simplex</i> California alkali grass	--;--;1B	Alkaline, vernal mesic; sinks, flats, and lake margins. Chenopod scrub, meadows and seeps, valley and foothill grassland, vernal pools. 2-920M.
<i>Sedum laxum ssp. flavidum</i> Pale yellow stonecrop	--;--;4	Serpentinite or volcanic, broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, upper montane coniferous forest. 455-2000M.
<i>Sidalcea oregana ssp. hydrophila</i> Marsh checkerbloom	--;--;1B	Meadows and seeps, riparian forest. 1100-2300M.
<i>Stellaria obtusa</i> Obtuse starwort	--;--;4	Streambanks, lower montane coniferous forest, riparian woodland, upper montane coniferous forest 150-2290M.
<i>Streptanthus hesperidis</i> Green jewelflower	--;--;1B	Serpentinite, rocky, chaparral (openings), cismontane woodland. 130-760M.
<i>Tropidocarpum capparideum</i>	--;--;1B	Valley and foothill grassland (alkaline hills). 1-455M.

SPECIES	STATUS	HABITAT
Caper-fruited tropidocarpum		
<i>Tuctoria greenei</i> Greene's tuctoria	FE;CR;1B	Vernal Pools. 30-1070M.
<i>Wolffia brasiliensis</i> Brazilian watermeal	--;--;2	Assorted shallow freshwater marshes and swamps. 20-100M.
<i>Viburnum ellipticum</i> Oval-leaved viburnum	--;--;2	Chaparral, cismontane woodland, lower montane coniferous forest. 215-1400M.

Source: DFG CNDDDB 2019

Abbreviations:

FE Federal Endangered

FT Federal Threatened

CE California Endangered Species

CT California Threatened

CR California Rare (Protected by Native Plant Protection Act)

1B CNPS - Rare, Threatened, or Endangered

2 CNPS - Rare, Threatened, or Endangered in California, But More Common Elsewhere

4 CNPS - Plants of Limited Distribution - A Watch List

### SPECIAL STATUS ANIMALS

The search revealed documented occurrences of the 35 special status animal species within Glenn County including: eight invertebrates, four amphibians/reptiles, 13 birds, 1 fish, and 9 mammals. Table 5.2-5 provides a list of the special-status animal species that are documented in Glenn County, their habitat, and current protective status. Figure 5.2-5 illustrates the location of each documented occurrence.

**TABLE 5.2-5: SPECIAL STATUS ANIMALS PRESENT OR POTENTIALLY PRESENT IN GLENN COUNTY**

SPECIES	STATUS	HABITAT
<b>INVERTEBRATES</b>		
<i>Branchinecta lynchi</i> Vernal pool fairy shrimp	FT;--	Endemic to grasslands of the central valley, central coast mtns., and south coast mtns., in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.
<i>Branchinecta conservatio</i> Conservancy fairy shrimp	FE;--	Inhabit rather large, cool-water vernal pools with moderately turbid water. The pools generally last until June.
<i>Lindieriella occidentalis</i> California lindieriella	--;--	Cold winter waters. Large, clear vernal pools. Typical in Central Valley floristic provinces below 300-m
<i>Lepidurus packardii</i> Vernal pool tadpole shrimp	FE;--	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed & highly turbid.
<i>Desmocerus californicus dimorphus</i> Valley elderberry longhorn beetle	FT;--	Found on or close to its host plant, red or blue elderberry ( <i>Sambucus</i> species), along rivers and streams. Females lay their eggs on the bark. Larvae hatch and burrow into the stems.
<i>Anthicus sacramento</i> Antioch Dunes anthicid beetle	--;--	Interior sand dunes and sand bars. Commonly collected in pitfall traps in bare, unvegetated sand.
<i>Anthicus sacramento</i> Sacramento anthicid beetle	--;--	Interior sand dunes and sand bars. Usually trapped in sandy areas with some vegetative cover.
<i>Bombus crotchii</i>	--;--	Occurs at relatively warm and dry sites, open grassland and scrub



<i>SPECIES</i>	<i>STATUS</i>	<i>HABITAT</i>
Crotch bumble bee		
<i>AMPHIBIANS/REPTILES</i>		
<i>Actinemys marmorata</i> western pond turtle	--;CSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg-laying.
<i>Rana boylei</i> foothill yellow-legged frog	--;CSC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying. Need at least 15 weeks to attain metamorphosis.
<i>Spea hammondi</i> western spadefoot toad	--;CSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.
<i>Thamnophis gigas</i> Giant garter snake	FT;CT	Freshwater marshes, sloughs, ponds, small lakes or low gradient streams with adjacent upland areas. Also has adapted to drainage canals, irrigation ditches, and agricultural wetlands especially flooded rice fields.
<i>BIRDS</i>		
<i>Accipiter gentilis</i> Northern goshawk	--; CSC	North Coast Ranges through Sierra Nevada, Klamath, Cascade, and Warner Mts., in Mt. Pinos and San Jacinto, San Bernardino, and White Mts. Prefers middle and higher elevations, and mature, dense conifer forests. Casual in winter along north coast, throughout foothills, and in northern deserts, where it may be found in pinyon-juniper and low-elevation riparian habitats.
<i>Agelaius tricolor</i> tricolored blackbird	FSC;CSC	Highly colonial species, most numerous in central valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.
<i>Adrea alba</i> Great egret	--;--	Common yearlong resident throughout California, except for high mountains and deserts.
<i>Athene cuculari</i> Burrowing owl	FSC; CSC	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.
<i>Adrea herodias</i> Great blue heron	--;--	Marshes, mangroves, swamps, lake water or edges, costal lagoons, ditches, estuaries, shorelines, coastal waters, flooded meadows, and flowing streams.
<i>Buteo swainsoni</i> Swainson's hawk	FSC; CT	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranches. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.
<i>Coccyzus americanus occidentalis</i> Western yellow-billed cuckoo	FT; CE	Nesting restricted to river bottoms and other mesic habitats where humidity is high.
<i>Egretta thula</i> snowy egret	FSC/ MBTA	Colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas; marshes, tidal flats, streams, wet meadows, and borders of lakes.
<i>Falco mexicanus</i> prairie falcon	FSC/ MBTA; Raptor	Inhabits dry, open terrain, either level or hilly breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.

<i>SPECIES</i>	<i>STATUS</i>	<i>HABITAT</i>
<i>Haliaeetus leucocephalus</i> bald eagle	FSC/FD; CE/CP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within one mile of water. Nests in large, old-growth, or dominant live three w/open branches especially ponderosa pine. Roosts communally in winter.
<i>Nycticorax</i> black-crowned night heron	MBTA;--	Colonial nester, usually in trees, occasionally in tule patches. Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.
<i>Pandion haliaetus</i> osprey	MBTA; Raptor	Ocean shore, bays, fresh water lakes, and larger streams. Large nests built in tree tops within 15 miles of a good fish producing body of water.
<i>Riparia</i> bank swallow	--;CT	Restricted to riparian areas with vertical cliffs and banks with fine-textured or sandy soils while breeding.
<i>FISH</i>		
<i>Oncorhynchus mykiss irideus</i> pop. 11 Steelhead – central valley DPS	FT;--	Primarily in cool, clear, fast-flowing waters. They typically thrive in tailwaters of large dams, but also can easily adapt to inhabiting lakes and reservoirs with ample food.
<i>MAMMALS</i>		
<i>Erethizon dorastum</i> North American porcupine	--;--	Most common in montane conifer, Douglas-fir, alpine dwarf-shrub, and wet meadow habitats. Less common in hardwood, hardwood-conifer, montane and valley-foothill riparian, aspen, pinyon-juniper, low sage, sagebrush, and bitterbrush.
<i>Lasiorycteris noctivagans</i> silver-haired bat	--;--	Primarily a coastal & montane forest dweller feeding over streams, ponds & open brushy areas. Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes & rarely under rocks. Needs drinking water.
<i>Lasiurus blossevillii</i> western red bat	FSC;CSC	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests. Prefers habitat at edges & mosaics with trees that are protected from above & open below with open areas for foraging.
<i>Lasiurus cinereus</i> hoary bat	--;--	Prefers open habitat or habitat mosaics, with access to trees for cover & open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. requires water.
<i>Martes americana</i> <i>humboldtensis</i> Humboldt marten	--;CSC	Occurs only in the coastal redwood zone from the Oregon border south to Sonoma County. Associated with late succession coniferous forests, prefer forests with low, overhead cover.
<i>Pekania pennanti</i> Fisher – west coast DPS	--;CSC	Coniferous or mixed forests that provide abundant potential den sites, rest sites, and preferred prey species. Key habitat components include relatively large diameter trees, high canopy closure, large trees (hardwood and conifer) with cavities, and large down wood.
<i>Eumops perotis californicus</i> Western mastiff bat	--;CSC	Most frequently encountered in broad open areas. Generally, this bat is found in a variety of habitats, from dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, montane meadows, and agricultural areas
<i>Myotis yumanensis</i> Yuma myotis	FSC;--	Reside in open forests and woodland habitats with sources of water over which to feed. Roost in buildings, mines, caves, and crevices.
<i>Taxidea taxus</i>	--;CSC	Most abundant in drier open stages of most shrub, forest, and

<i>SPECIES</i>	<i>STATUS</i>	<i>HABITAT</i>
American badger		herbaceous habitats, with friable soils. Need sufficient food, friable soils and open, uncultivated ground. Prey on burrowing rodents. Dig burrows.

SOURCE: DFG CNDDDB 2019

**ABBREVIATIONS:**

<i>FE</i>	<i>FEDERAL ENDANGERED</i>
<i>FT</i>	<i>FEDERAL THREATENED</i>
<i>FC</i>	<i>FEDERAL CANDIDATE</i>
<i>FSC</i>	<i>FEDERAL SPECIES OF CONCERN</i>
<i>FD</i>	<i>FEDERAL DELISTED</i>
<i>MBTA</i>	<i>PROTECTED BY MIGRATORY BIRD TREATY ACT</i>
<i>CE</i>	<i>CALIFORNIA ENDANGERED SPECIES</i>
<i>CT</i>	<i>CALIFORNIA THREATENED</i>
<i>CP</i>	<i>CALIFORNIA FULLY PROTECTED UNDER §3511, 4700, 5050 AND 5515 FG CODE</i>
<i>CSC</i>	<i>CDFW SPECIES OF SPECIAL CONCERN</i>

## Special Status Communities

The search revealed documented occurrences of the seven sensitive natural communities within Glenn County and a brief description follows. Figure 5.2-5 illustrates the location of each natural community.

### *COASTAL AND VALLEY FRESHWATER MARSH*

Coastal and Valley Freshwater Marsh is found along the coast and in coastal valleys near river mouths and around the margins of lakes and springs, and they are the most extensive in the upper portion of the Sacramento-San Joaquin River Delta. This natural community is common in the river oxbows and other areas of a flood plain. This natural community is found in areas that lack significant stream/river current and are permanently flooded by fresh water (rather than brackish, alkaline, or variable). Prolonged saturation permits accumulation of deep, peaty soils. Perennial, emergent monocots up to 4-5m tall dominate this habitat. They often form completely closed canopies.

### *GREAT VALLEY COTTONWOOD RIPARIAN FOREST*

Great Valley Cottonwood Riparian Forest is found in fine-grained alluvial soils near perennial or nearly-perennial streams that provide subsurface irrigation even when the channel is dry. These sites are inundated yearly during spring, resulting in annual input of nutrients, soil, and new germination sites. This natural community is a dense, broadleafed, winter-deciduous riparian forest dominated by Fremont's cottonwood (*Populus fremontii*) and San Joaquin willow (*Salix goodingii*). Understories are dense, with abundant vegetative reproduction of canopy dominants. California wild grape (*Vitis californica*) is the most conspicuous vine species. Scattered seedlings and saplings of shade-tolerant species such as Box elder (*Acer negundo*) or Oregon ash (*Fraxinus latifolia*) may be found, but frequent flooding prevents their reaching into the canopy.

### *GREAT VALLEY MIXED RIPARIAN FOREST*

Great Valley Mixed Riparian Forest is found on relatively fine-textured alluvium somewhat back from active river channels. These sites experience overbank flooding (with abundant alluvial deposition and groundwater recharge) but not too severe physical battering or erosion. This natural community is a tall, dense, winter-deciduous, broadleafed riparian forest with a tree canopy that is fairly well closed and moderately to densely stocked with several species including Box elder (*Acer negundo*), California black walnut (*Juglans hindsii*), California sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*) and San Joaquin willow (*Salix goodingii*), red willow (*Salix laevigata*), and shining willow (*Salix lucida*). Understories consist of these taxa plus shade-tolerant shrubs like buttonbush (*Cephalanthus occidentalis*) and Oregon ash (*Fraxinus latifolia*). Several vine species are conspicuous in both tree and shrub canopies.

*GREAT VALLEY VALLEY OAK RIPARIAN FOREST*

The Great Valley Oak Riparian Forest is the highest elevational element of the riparian complex, this community intergrades with typically upland communities at the margins of the floodplain. This community is composed of medium-to-tall broadleafed, winter-deciduous species and is dominated by the Valley oak. Associated understory vegetation includes sycamore, Oregon ash, Hind's walnut, California rose, wild grape, poison oak, blackberry, and greenbriar.

*GREAT VALLEY WILLOW SCRUB*

The Great Valley Willow Scrub are found along all of the major rivers and most of the smaller streams throughout the Great Valley watershed. This natural community is an open to dense, broadleafed, winter-deciduous shrubby streamside thicket dominated by any of several willow species (*Salix* spp.). Dense stands usually have little understory or herbaceous component, while more open stands have grassy understories, usually dominated by introduced species.

*VALLEY NEEDLEGRASS GRASSLAND*

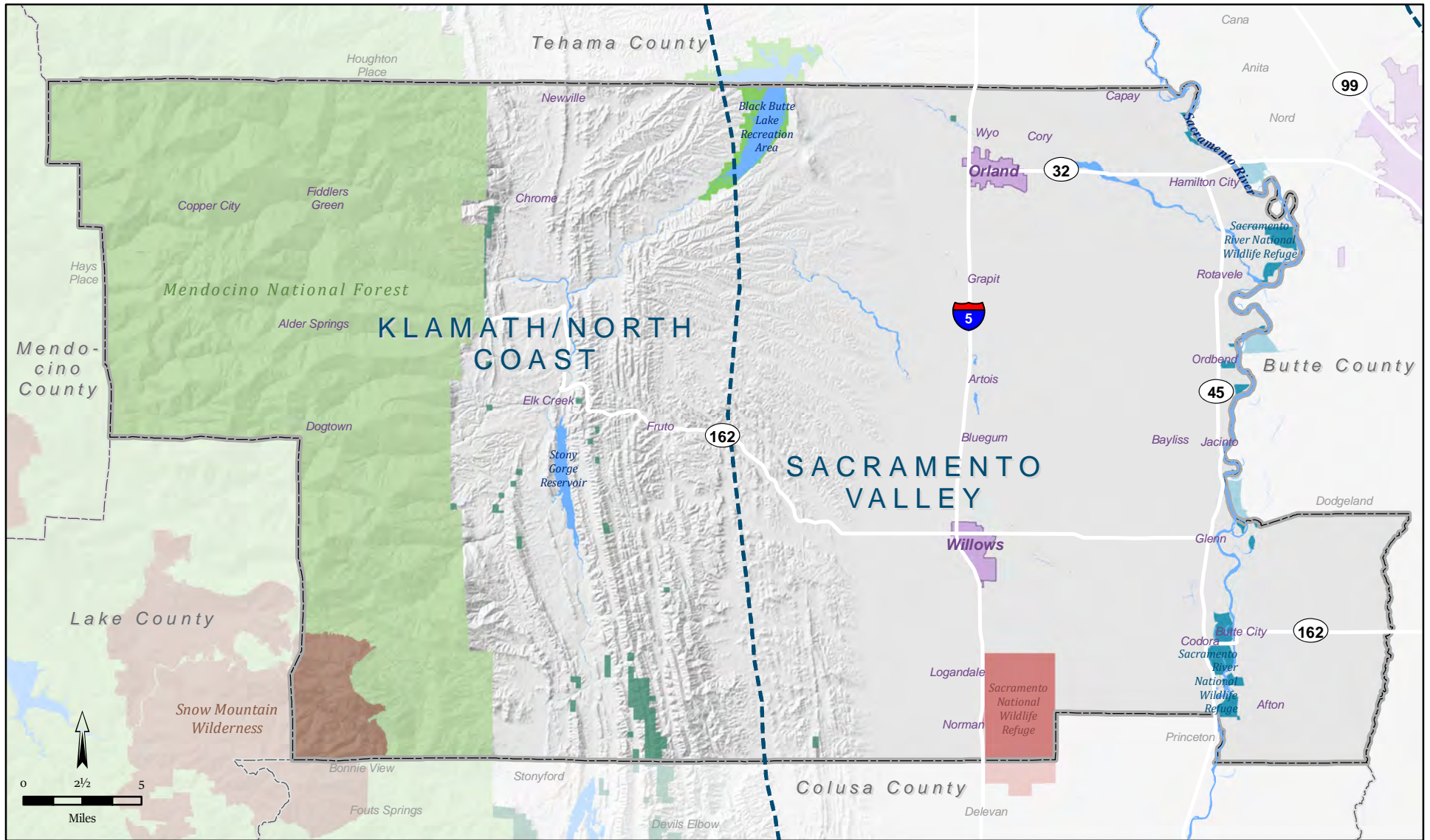
Valley Needlegrass Grassland is a mid-height (to 2 feet) grassland dominated by perennial, tussock-forming purple needlegrass (*Nassella pulchra*). Native and introduced annuals occur between the perennials, often exceeding the bunchgrasses in cover. They are usually found on fine-textured (often clay) soils, moist or even waterlogged during the winter, but very dry in the summer. Often associated with Oak Woodlands on moister, better drained sites.

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Sources: INACC 2004; USGS National Map; USGS Protected Areas Database. Map date: June 26, 2019.

**Legend**

Bioregions

**Public Lands**

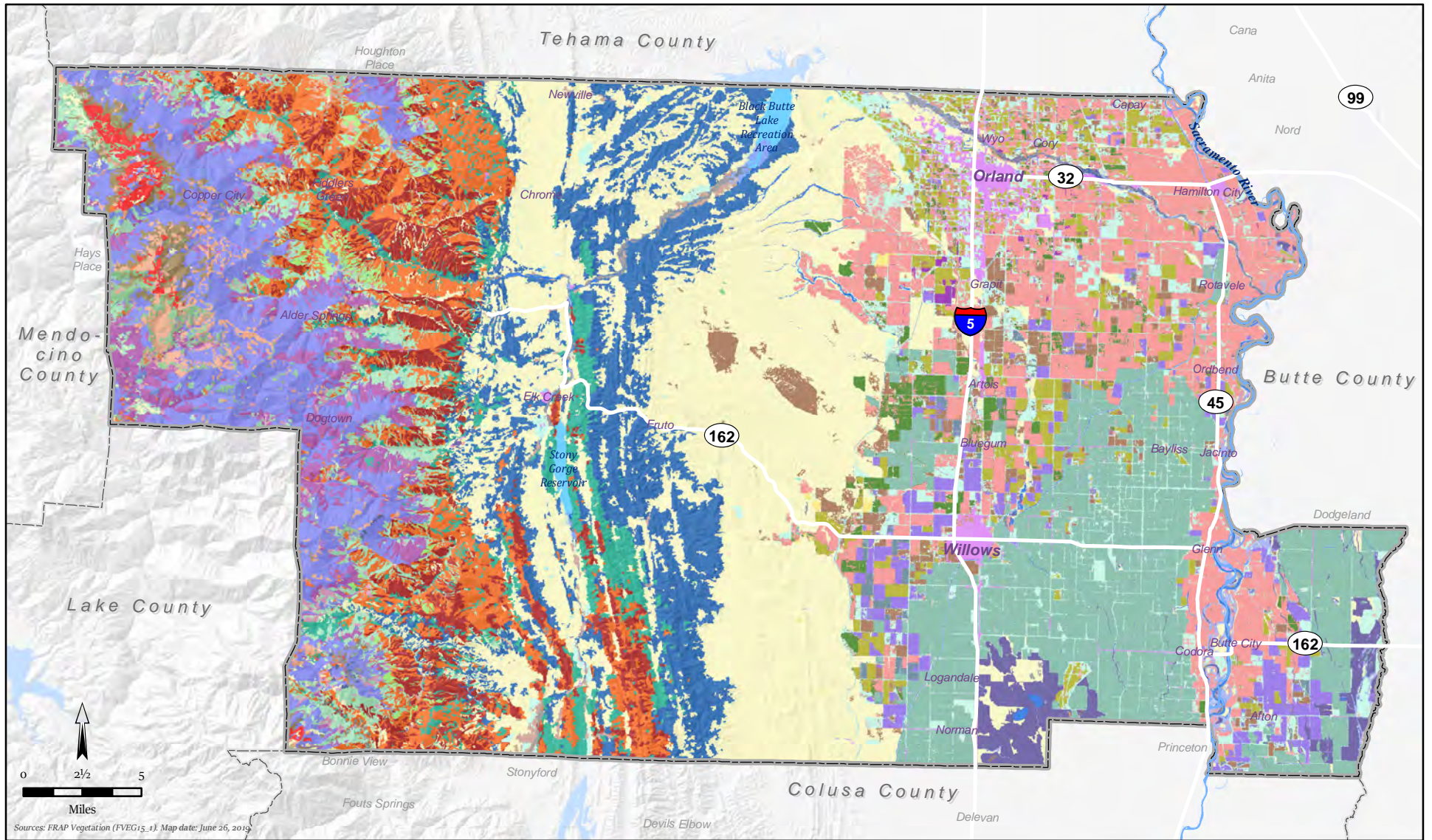
- Mendocino National Forest
- Wilderness Area
- USFWS Sacramento National Wildlife Refuge
- USFWS Sacramento River National Wildlife Refuge
- BLM Lands



COUNTY OF GLENN, CALIFORNIA  
**FIGURE 5.2-1. BIOREGIONS**

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**Legend**

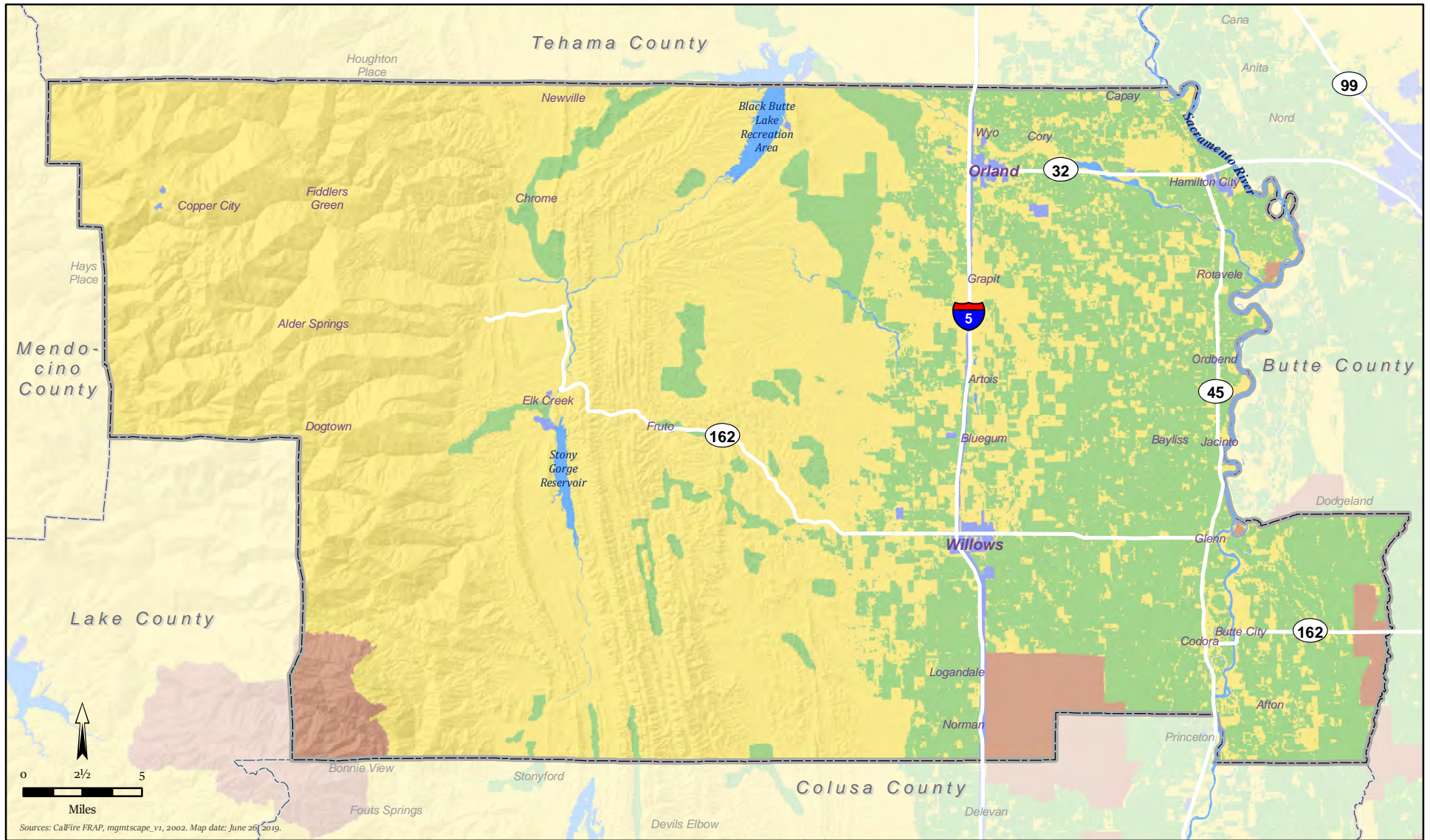
Alpine-Dwarf Shrub	Coastal Scrub	Irrigated Grain Crops	Montane Hardwood	Riverine
Annual Grassland	Cropland	Irrigated Hayfield	Montane Hardwood-Conifer	Sagebrush
Barren	Deciduous Orchard	Irrigated Row and Field Crops	Montane Riparian	Urban
Blue Oak Woodland	Douglas Fir	Jeffrey Pine	Pasture	Valley Foothill Riparian
Blue Oak-Foothill Pine	Dryland Grain Crops	Klamath Mixed Conifer	Perennial Grassland	Valley Oak Woodland
Chamise-Redshank Chaparral	Eucalyptus	Lacustrine	Ponderosa Pine	Vineyard
Closed-Cone Pine-Cypress	Evergreen Orchard	Mixed Chaparral	Red Fir	Wet Meadow
Coastal Oak Woodland	Fresh Emergent Wetland	Montane Chaparral	Rice	White Fir

COUNTY OF GLENN, CALIFORNIA

FIGURE 5.2-2. LAND COVER

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COUNTY OF GLENN, CALIFORNIA

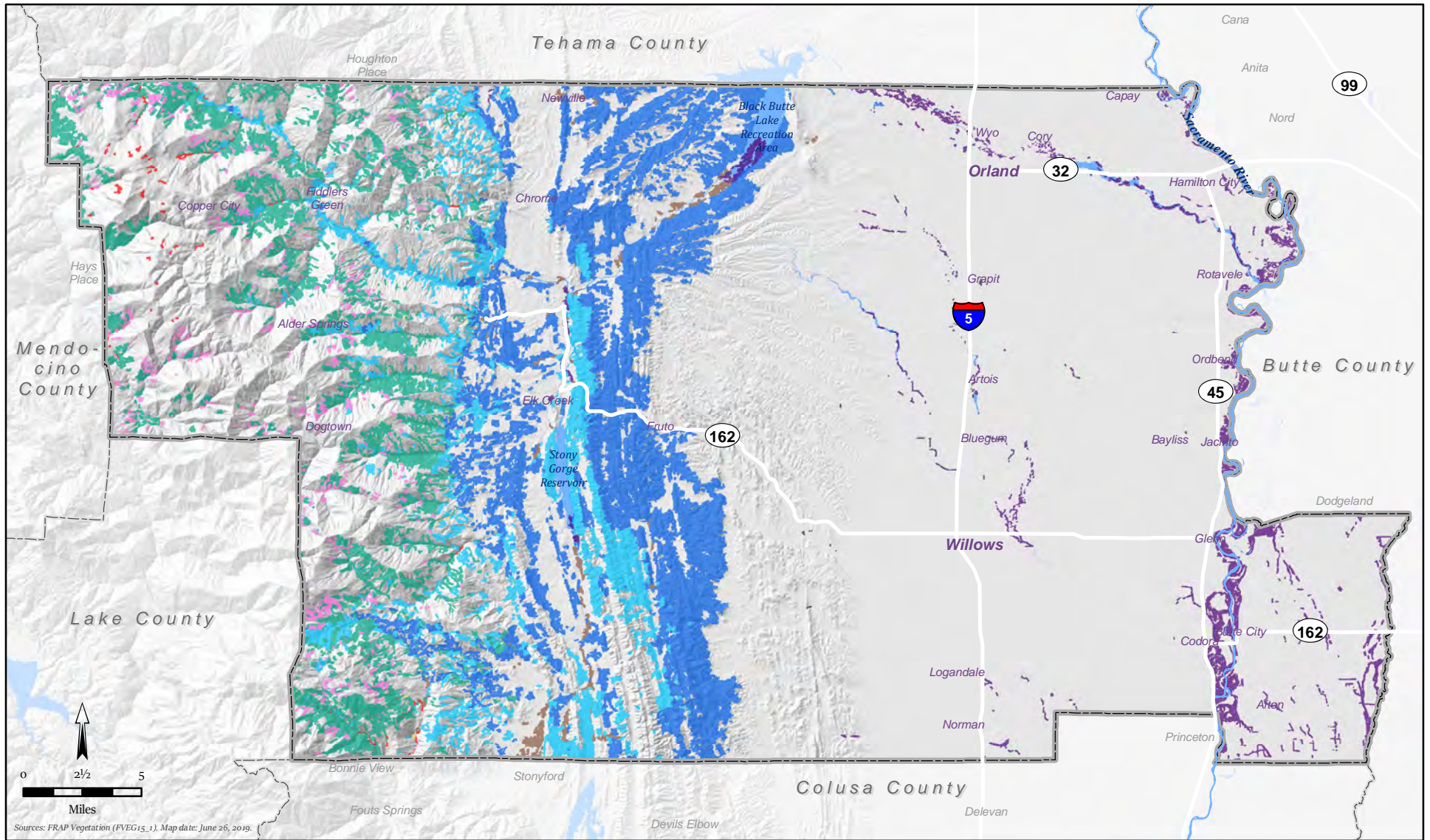
FIGURE 5.2-3. LAND MANAGEMENT CLASSIFICATIONS

**Legend**

- Agriculture - Active Farming (±227,795 acres)
- Wildlife/Natural Lands Reserve (±27,193 acres)
- Urban (±6,954 acres)
- Agriculture - Rangeland/Forestland (±587,300 acres)

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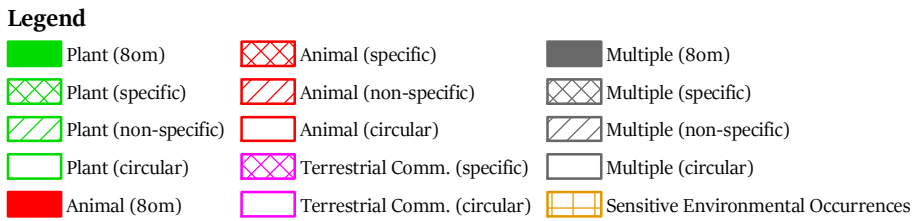
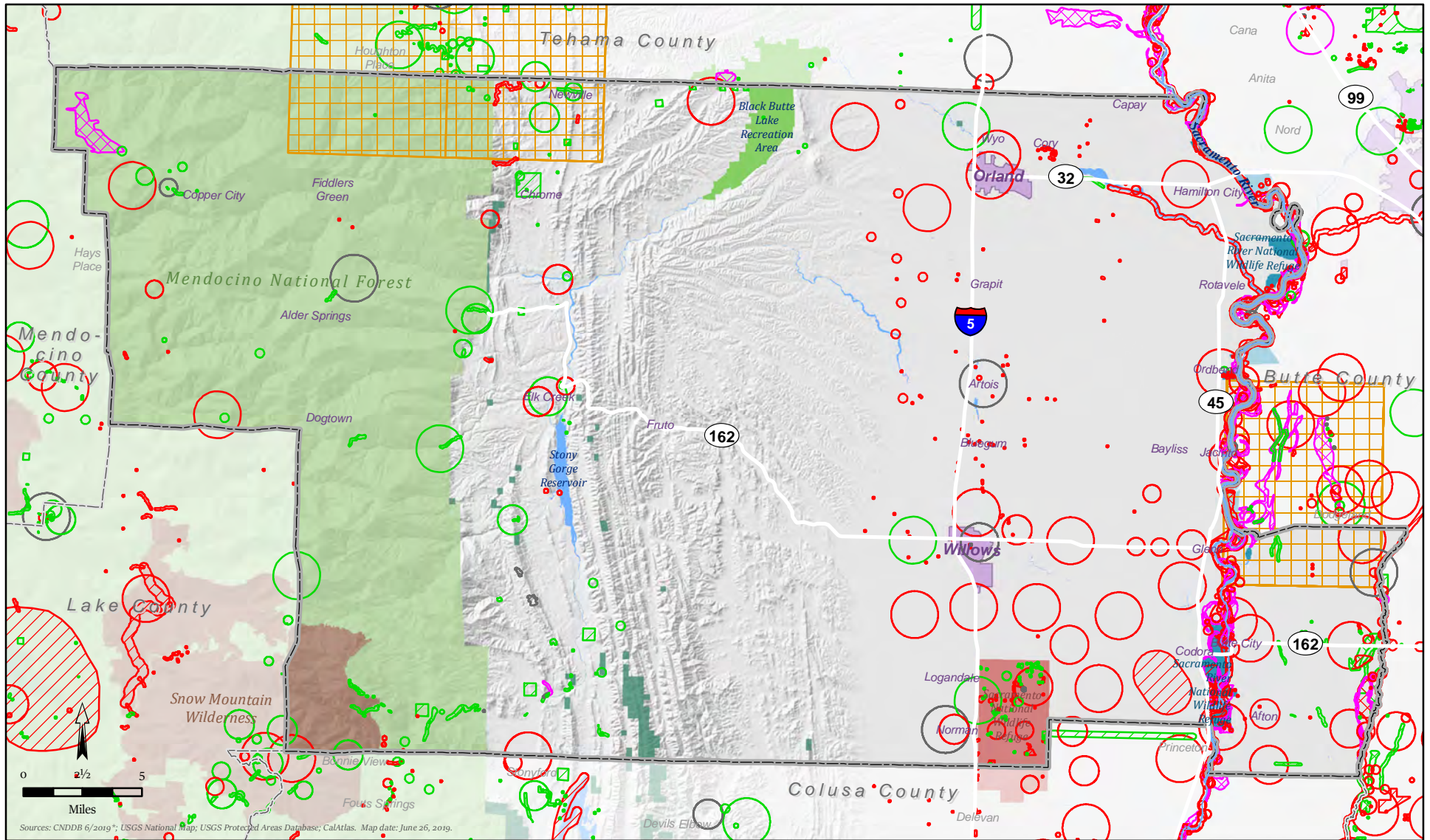


COUNTY OF GLENN, CALIFORNIA

FIGURE 5.2-4. OAK WOODLAND COMMUNITIES

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\* Note: the occurrences shown on this map represent the known locations of the species listed here as of the date of this version. There may be additional occurrences or additional species within this area which have not been surveyed and/or mapped. Lack of information in the CNDDDB about a species or an area can never be used as proof that no special status species occur in an area.

COUNTY OF GLENN, CALIFORNIA

**FIGURE 5.2-5. CALIFORNIA NATURAL DIVERSITY DATABASE**

## 5.3 AIR QUALITY

This section discusses the overall regulatory framework for air quality management in California and the region, including national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS), and describes existing air quality conditions in Glenn County. This section also includes a discussion of climate change and greenhouse gasses. Information presented in this section is based in part on information gathered from the Glenn County Air Pollution Control District (APCD) and the California Air Resources Board (CARB).

### REGULATORY FRAMEWORK

#### *FEDERAL*

#### **Clean Air Act**

The Federal Clean Air Act (FCAA) was first signed into law in 1970. In 1977, and again in 1990, the law was substantially amended. The FCAA is the foundation for a national air pollution control effort, and it is composed of the following basic elements: NAAQS for criteria air pollutants, hazardous air pollutant standards, state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

The EPA is responsible for administering the FCAA. The FCAA requires the EPA to set NAAQS for several problem air pollutants based on human health and welfare criteria. Two types of NAAQS were established: primary standards, which protect public health, and secondary standards, which protect the public welfare from non-health-related adverse effects such as visibility reduction.

#### **U.S. Environmental Protection Agency**

At the Federal level, EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA), which was enacted in 1963. The FCAA was amended in 1970, 1977, and 1990.

The FCAA required EPA to establish primary and secondary national ambient air quality standards (NAAQS). The FCAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The Federal Clean Air Act Amendments of 1990 (FCAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA has responsibility to review all state SIPs to determine conformity to the mandates of the FCAAA and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

#### **Federal Hazardous Air Pollutant Program**

Title III of the FCAA requires the EPA to promulgate national emissions standards for hazardous air pollutants (NESHAPs). 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), the EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring maximum available control technology (MACT). These Federal rules are also commonly



referred to as MACT standards, because they reflect the Maximum Achievable Control Technology. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), the EPA is required to promulgate health risk–based emissions standards were deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards. The FCAAA required the 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, §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.

### **Energy Policy and Conservation Act**

The Energy Policy and Conservation Act of 1975 sought to ensure that all vehicles sold in the U.S. would meet certain fuel economy goals. Through this Act, Congress established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the Act, the National Highway Traffic and Safety Administration, which is part of the U.S. Department of Transportation (USDOT), is responsible for establishing additional vehicle standards and for revising existing standards.

Since 1990, the fuel economy standard for new passenger cars has been 27.5 mpg. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 mpg. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Compliance with federal fuel economy standards is determined on the basis of each manufacturer’s average fuel economy for the portion of its vehicles produced for sale in the U.S. The Corporate Average Fuel Economy (CAFE) program, which is administered by the EPA, was created to determine vehicle manufacturers’ compliance with the fuel economy standards. The EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information generated under the CAFE program, the USDOT is authorized to assess penalties for noncompliance.

### **Energy Policy Act of 1992 (EPAct)**

The Energy Policy Act of 1992 (EPAct) was passed to reduce the country’s dependence on foreign petroleum and improve air quality. EPAct includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. EPAct requires certain federal, state, and local government and private fleets to purchase a percentage of light duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are included in EPAct. Federal tax deductions will be allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs.

### **Energy Policy Act of 2005**

The Energy Policy Act of 2005 was signed into law on August 8, 2005. Generally, the act provides for renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for a clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

### **Intermodal Surface Transportation Efficiency Act (ISTEA)**

ISTEA (49 U.S.C. § 101 et seq.) promoted the development of intermodal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that metropolitan planning organizations (MPOs), such as SACOG, were to address in developing transportation plans and programs, including some energy-related factors. To meet the ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values that were to guide

transportation decisions in that metropolitan area. The planning process was then to address these policies. Another requirement was to consider the consistency of transportation planning with federal, state, and local energy goals. Through this requirement, energy consumption was expected to become a criterion, along with cost and other values that determine the best transportation solution.

### **The Safe, Accountable, flexible, Efficient Transportation Equity Act: A legacy for Users (SAFETEA-LU)**

SAFETEA-LU (23 U.S.C. § 507), renewed the Transportation Equity Act for the 21st Century (TEA-21) of 1998 (23 U.S.C.; 49 U.S.C.) through FY 2009. SAFETEA-LU authorized the federal surface transportation programs for highways, highway safety, and transit. SAFETEA-LU addressed the many challenges facing our transportation system today—such as improving safety, reducing traffic congestion, improving efficiency in freight movement, increasing intermodal connectivity, and protecting the environment—as well as laying the groundwork for addressing future challenges. SAFETEA-LU promoted more efficient and effective federal surface transportation programs by focusing on transportation issues of national significance, while giving state and local transportation decision makers more flexibility to solve transportation problems in their communities. SAFETEA-LU was extended in March of 2010 for nine months, and expired in December of the same year. In June 2012, SAFETEA-LU was replaced by the Moving Ahead for Progress in the 21st Century Act (MAP-21), which has taken effect on October 1, 2012.

### **U.S Federal Climate Change Policy**

According to the EPA, “the United States government has established a comprehensive policy to address climate change” that includes slowing the growth of emissions; strengthening science, technology, and institutions; and enhancing international cooperation. To implement this policy, “the Federal government is using voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science.” The federal government’s goal is to reduce the greenhouse gas (GHG) intensity (a measurement of GHG emissions per unit of economic activity) of the American economy by 18 percent over the 10-year period from 2002 to 2012. In addition, the EPA administers multiple programs that encourage voluntary GHG reductions, including “ENERGY STAR”, “Climate Leaders”, and Methane Voluntary Programs. However, as of this writing, there are no adopted federal plans, policies, regulations, or laws directly regulating GHG emissions.

#### *STATE*

### **California Clean Air Act**

The California Clean Air Act (CCAA) was first signed into law in 1988. The CCAA provides a comprehensive framework for air quality planning and regulation, and spells out, in statute, the state’s air quality goals, planning and regulatory strategies, and performance. CARB is the agency responsible for administering the CCAA. CARB established ambient air quality standards pursuant to the California Health and Safety Code [§39606(b)], which are similar to the federal standards.

### **California Air Resources Board**

CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), which was adopted in 1988. The CCAA requires that all air districts in the State endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

CARB is primarily responsible for developing and implementing air pollution control plans to achieve and maintain the NAAQS. CARB is primarily responsible for statewide pollution sources and produces a major part of the SIP. Local air districts are still relied upon to provide additional strategies for sources under their jurisdiction. The CARB combines this data and submits the completed SIP to EPA.

Other CARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control and air quality management districts), establishing CAAQS (which in many cases are more stringent than the NAAQS), determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, and off-road vehicles

### **Air Quality Standards**

NAAQS are determined by the EPA. The standards include both primary and secondary ambient air quality standards. Primary standards are established with a safety margin. Secondary standards are more stringent than primary standards and are intended to protect public health and welfare. States have the ability to set standards that are more stringent than the federal standards. As such, California established more stringent ambient air quality standards.

Federal and state ambient air quality standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulates (PM<sub>10</sub>) and lead. In addition, California has created standards for pollutants that are not covered by federal standards. The state and federal primary standards for major pollutants are shown in Table 5.3-1.

Like the EPA, CARB also designates areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant in air quality data shows that a State standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard, and are not used as a basis for designating areas as nonattainment.

### **CARB Mobile-Source Regulation**

The State of California is responsible for controlling emissions from the operation of motor vehicles in the state. Rather than mandating the use of specific technology or the reliance on a specific fuel, the CARB's motor vehicle standards specify the allowable grams of pollution per mile driven. In other words, the regulations focus on the reductions needed rather than on the manner in which they are achieved. Towards this end, the CARB has adopted regulations which required auto manufacturers to phase in less polluting vehicles.

### **Tanner Air Toxics Act**

California regulates Toxic Air Containments (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 CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and has adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to the CARB list of TACs. Once a TAC is identified, CARB 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 Best Available Control Technology (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. CARB 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, CARB 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. Upcoming milestones include the low-sulfur diesel-fuel requirement, and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide.

### **Transport of Pollutants**

The California Clean Air Act, Section 39610 (a), directs the CARB to “identify each district in which transported air pollutants from upwind areas outside the district cause or contribute to a violation of the ozone standard and to identify the district of origin of transported pollutants.” The information regarding the transport of air pollutants from one basin to another was to be quantified to assist interrelated basins in the preparation of plans for the attainment of State ambient air quality standards. Numerous studies conducted by the CARB have identified air basins that are impacted by pollutants transported from other air basins (as of 1993).

### **State Toxic Air Contaminant Programs**

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 CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified over 21 TACs, and adopted the EPA’s list of HAPs as TACs. Most recently, diesel exhaust particulate was added to the CARB list of TACs. Once a TAC is identified, CARB then adopts an Airborne Toxics Control Measure 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 best available control technology (BACT) to minimize emissions. None of the TACs identified by CARB have a safe threshold.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level:

1. Prepare a toxic emission inventory;
2. Prepare a risk assessment if emissions are significant;
3. Notify the public of significant risk levels; and 4. Prepare and implement risk reduction measures.

CARB 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 and generators). In February 2000, CARB adopted a new public transit bus fleet rule and emission standards for new urban buses. These new 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 with which transit agencies must demonstrate compliance with the urban transit bus fleet rule. Upcoming milestones include the low sulfur diesel fuel requirement, and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially less TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, and diesel PM) have been reduced significantly since 2000, and is being reduced

further in California through a progression of regulatory measures [e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of CARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be reduced by 85% in 2020 from the estimated year 2000 level. Adopted regulations are also expected to continue to reduce formaldehyde emissions from cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

### **California Strategy to Reduce Petroleum Dependence (AB 2076)**

AB 2076 (Chapter 936, Statutes of 2000) requires the California Energy Commission (CEC) and the CARB to develop and submit to the Legislature a strategy to reduce petroleum dependence in California. The statute requires the strategy to include goals for reducing the rate of growth in the demand for petroleum fuels. In addition, the strategy is required to include recommendations to increase transportation energy efficiency as well as the use of non-petroleum fuels and advanced transportation technologies including alternative fuel vehicles, hybrid vehicles, and high-fuel efficiency vehicles.

The strategy, Reducing California's Petroleum Dependence, was adopted by the CEC and CARB in 2003. The strategy recommends that California reduce inroad gasoline and diesel fuel demand to 15 percent below 2003 demand levels by 2020 and maintain that level for the foreseeable future; the Governor and Legislature work to establish national fuel economy standards that double the fuel efficiency of new cars, light trucks, and sport utility vehicles; and increase the use of non-petroleum fuels to 20 percent of on-road fuel consumption by 2020 and 30 percent by 2030.

### **California Executive Orders S-3-05 and S-20-06, and Assembly Bill 32**

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80 percent below the 1990 levels by the year 2050.

In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

Climate change and GHG reduction is also a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change.

CARB, which is part of Cal-EPA, develops air quality regulations at the state level. The state regulations mirror federal regulations by establishing industry-specific pollution controls for criteria, toxic, and nuisance pollutants. California also requires areas to develop plans and strategies for attaining state ambient air quality standards as set forth in the California Clean Air Act of 1988. In addition to developing regulations, CARB develops motor vehicle emission standards for California vehicles.

### **Assembly Bill 1493**

In response to AB 1493, CARB approved amendments to the California Code of Regulations (CCR) adding GHG emission standards to California's existing motor vehicle emission standards. Amendments to CCR Title 13 Sections 1900 (CCR 13 1900) and 1961 (CCR 13 1961), and adoption of Section 1961.1 (CCR 13 1961.1), require automobile manufacturers to meet fleet average GHG emission limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes beginning with the 2009 model year. Emission limits are further reduced each model year through 2016. For passenger cars and light-

duty trucks 3,750 pounds or less loaded vehicle weight (LVW), the 2016 GHG emission limits are approximately 37 percent lower than during the first year of the regulations in 2009. For medium-duty passenger vehicles and light-duty trucks 3,751 LVW to 8,500 pounds gross vehicle weight (GVW), GHG emissions are reduced approximately 24 percent between 2009 and 2016.

CARB requested a waiver of Federal preemption of California's Greenhouse Gas Emissions Standards. The intent of the waiver is to allow California to enact emissions standards to reduce carbon dioxide and other greenhouse gas emissions from automobiles in accordance with the regulation amendments to the CCRs that fulfill the requirements of AB 1493. The EPA granted a waiver to California to implement its greenhouse gas emissions standards for cars.

### **Assembly Bill 1007**

Assembly Bill 1007, (Pavley, Chapter 371, Statutes of 2005) required the California Energy Commission to prepare a state plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The Energy Commission prepared the plan in partnership with the California Air Resources Board and in consultation with the other state, federal, and local agencies. In preparing the State Alternative Fuels Plan, the Committee incorporated and built on the work by the Bio-Energy Interagency Working Group, the work of other agencies, and also examined the broader suite of alternative fuels that could benefit California's transportation market.

As required by Assembly Bill 1007, the State Alternative Fuels Plan (Plan) presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. The Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce greenhouse gas emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

### **Assembly Bill 2140**

Under the Federal Disaster Mitigation Act of 2000, each municipality must develop a Local Hazard Mitigation Plan (LHMP) or participate in a multi-jurisdictional LHMP in order to be eligible for pre-disaster mitigation grants or post-disaster recovery assistance from the federal government. AB 2140 authorizes local governments to adopt their LHMP's with the safety elements of their General Plans. Integration or incorporation by reference is encouraged through a post-disaster financial incentive which authorizes the state to use available California Disaster Assistance Act funds to cover local shares of the 25% non-federal portion of grant-funded post-disaster projects.

### **Bioenergy Action Plan – Executive Order #S-06-06**

Executive Order #S-06-06 establishes targets for the use and production of biofuels and biopower and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The executive order establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and 75 percent by 2050. The executive order also calls for the state to meet a target for use of biomass electricity.

### **Governor's Low Carbon Fuel Standard (Executive Order #S-01-07)**

Executive Order #S-01-07 establishes a statewide goal to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 through establishment of a Low Carbon Fuel Standard. The Low Carbon Fuel Standard shall be incorporated into the State Alternative Fuels Plan required by AB 1007 and is one of the proposed discrete early action GHG reduction measures identified by CARB pursuant to AB 32.

### **Executive Order B-30-15**

On April 29, 2015, Governor Jerry Brown issued Executive Order (EO) B-30-15, which establishes a State GHG reduction target of 40 percent below 1990 levels by 2030. The new emission reduction target provides for a mid-term goal that would help the State to continue on course from reducing GHG emissions to 1990 levels by 2020 (per AB 32) to the ultimate goal of reducing emissions 80 percent under 1990 levels by 2050 (per EO S-03-05). This is in line with the scientifically established levels needed in the U.S. to limit global warming below 2 degrees Celsius – the warming threshold at which scientists say there will likely be major climate disruptions. EO B-30-15 also addresses the need for climate adaptation and directs State government to:

Incorporate climate change impacts into the State’s Five-Year Infrastructure Plan;

Update the Safeguarding California Plan, the State climate adaptation strategy, to identify how climate change will affect California infrastructure and industry and what actions the State can take to reduce the risks posed by climate change;

Factor climate change into State agencies’ planning and investment decisions; and

Implement measures under existing agency and departmental authority to reduce GHG emissions.

### **Climate Action Program at Caltrans**

In December 2006, Caltrans issued a Climate Action Program. The goal of the Climate Action Program is to promote clean and energy efficient transportation, and provide guidance for mainstreaming energy and climate change issues into business operations. The overall approach to lower fuel consumption and CO<sub>2</sub> from transportation is twofold: (1) reduce congestion and improve efficiency of transportation systems through smart land use, operational improvements, and Intelligent Transportation Systems; and (2) institutionalize energy efficiency and GHG emission reduction measures and technology into planning, project development, operations, and maintenance of transportation facilities, fleets, buildings, and equipment.

The reasoning underlying the Climate Action Program is the conclusion that “the most effective approach to addressing GHG reduction, in the short-to-medium term, is strong technology policy and market mechanisms to encourage innovations. Rapid development and availability of alternative fuels and vehicles, increased efficiency in new cars and trucks (light and heavy duty), and super clean fuels are the most direct approach to reducing GHG emissions from motor vehicles (emission performance standards and fuel or carbon performance standards).”

### **Senate Bill 97 (SB 97)**

Senate Bill 97 was signed by the Governor on August 24, 2007. This bill would provide that in an environmental impact report, negative declaration, mitigated negative declaration, or other document required by CEQA for either transportation projects funded under the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or projects funded under the Disaster Preparedness and Flood Prevention Bond Act of 2006, the failure to analyze adequately the effects of greenhouse gas emissions otherwise required to be reduced pursuant to regulations adopted under the Global Warming Solutions Act of 2006 does not create a cause of action for a violation of CEQA. The bill would provide that this provision shall apply retroactively for any of the above documents that are not final and shall be repealed on January 1, 2010.

The bill would require the OPR, by July 1, 2009, to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions, as required by CEQA, including, but not limited to, effects associated with transportation or energy consumption. The Resources Agency would be required to certify and adopt those guidelines by January 1,

2010. The OPR would be required to periodically update the guidelines to incorporate new information or criteria established by the CARB pursuant to the California Global Warming Solutions Act of 2006.

### **Senate Bill 375**

SB 375 requires the CARB to develop regional greenhouse gas emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035. The 18 MPOs in California will prepare a "sustainable communities strategy" to reduce the amount of vehicle miles traveled (VMT) in their respective regions and demonstrate the ability for the region to attain CARB's targets. CARB would later determine if each region is on track to meet their targets. Builders also would get relief from certain environmental reviews under California Environmental Quality Act if they build projects consistent with the new sustainable community strategies. In addition, cities would get extra time -- eight years instead of five -- to update housing plans required by the state.

### **Senate Bill 32**

An update to Assembly Bill 32 was passed in August 2016, which extends the state's targets for reducing greenhouse gases from 2020 to 2030. Under Senate Bill (SB) 32, the state would reduce its greenhouse gas emissions to 40 percent below 1990 levels by 2030.

### **Senate Bill 379**

As California confronts climate change impacts, local governments are now required, in accordance with Senate Bill 379, to include a climate change vulnerability assessment, measures to address vulnerabilities, and comprehensive hazard mitigation and emergency response strategy within their Land Use and Safety Elements. Communities may use the safety element as a vehicle for defining "acceptable risk" and the basis for determining the level of necessary mitigation. Policies may include methods of minimizing risks, as well as ways to minimize economic disruption and expedite recovery following disasters.

### *LOCAL*

### **Northern Sacramento Valley Air Quality Attainment Plan**

As specified in the California Clean Air Act of 1988 (CAA), Chapters 1568-1588 it is the responsibility of each air pollution control district and air quality management district within the State to attain and maintain California's ambient air quality standards. The CAA requires that an Attainment Plan (Plan) be developed by all non-attainment districts for ozone (O<sub>3</sub>), carbon monoxide (CO), sulfur oxides (SO<sub>x</sub>), and nitrogen oxides (NO<sub>x</sub>) that are either receptors or contributors of transported air pollutants. The purpose of the Plan is to comply with the requirements of the CAA as implemented through the California Health and Safety Code. Districts are required to update the Plan every three years.

The Northern Sacramento Valley (NSV) is classified as a moderate nonattainment area for State 1-hour ozone standard. The NSV comprises the northern portion of the Sacramento Valley Air Basin and includes the counties of Butte, Colusa, Glenn, Tehama, Shasta and the northern portions of Yuba & Sutter. The NSV is generally rural in nature, with a low population density and a predominately agricultural economy. Its industrial base is dominated by agricultural/construction support operations, although small scale manufacturing is also found throughout the region.

Health and Safety Code section 41503(b) requires that control measures for the same emission sources be uniform throughout the air basin. To meet this requirement the NSV has coordinated the development of the Plan and established specific rule adoption protocols through the Technical Advisory Committee (TAC) of the Sacramento Basinwide Control Council.



The Plan was initially submitted to CARB on September 16, 1991. CARB held a public hearing on the Plan on July 9, 1992 and found the Plan to conform to several elements of the CCAA, but also identified several deficiencies. CARB gave conditional approval of the Plan to allow time for completing plan modifications after consultation with the districts. The Plan includes the all feasible control measures applicable to the NSV, emission accounting and ranking of measures by cost-effectiveness, and provisions to develop area and indirect source control measures. The Plan did not fully satisfy the CCAA requirement for permitting rules and several districts did not make the cost-effectiveness findings.

After evaluating the progress achieved with the 1991 Plan, the NSV shifted the primary emphasis from the adoption of stationary source control measures to motor vehicle emission reductions. Because mobile sources are the single largest contributor to ozone pollution, the 1994 Plan concentrated on reducing these emissions through the implementation of Indirect Source Review (ISR) programs and Transportation Control Measures (TCMs). Several stationary source measures previously considered in the 1991 Plan were deemed not applicable or not offering cost-effective emission control and were removed from the list.

The 1997 triennial update to the Plan addressed the progress made implementing the 1994 Plan and proposed modifications to the strategies necessary to attain the State ozone standard at the earliest practicable date. Like the 1994 Plan, the 1997 Plan focused on the adoption and implementation of control measures for stationary sources, mobile sources, area wide sources, indirect sources and addressed public education programs. The Plan also addressed the transport of pollutants from the upwind metropolitan areas to the NSV. With the State Implementation Plan (SIP) as the state's established control strategy for the future, the CARB found that the NSV districts would not be required to prepare a comprehensive plan update for 1997. Instead, districts were directed to focus on implementing their existing control strategies and SIP commitments.

As with the 1997 Plan, the 2000 and 2003 Plan were focused on implementing existing control strategies and SIP commitments. In the 2000, 2003 and 2006 Plan updates, districts endeavored to incorporate three general principles to guide them in their planning process: (1) Air quality modeling to identify the reductions needed and to design effective emission reduction strategies; (2) Comprehensive emission reduction programs that take advantage of current emission control technologies; and (3) Address the impacts of pollutant transport in the attainment demonstration.

### **Glenn County Air Pollution Control District**

The Glenn County Air Pollution Control District (APCD) is the local agency with primary responsibility for compliance with both the federal and state standards and for ensuring that air quality conditions are maintained. They do this through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues.

Activities of the Glenn County APCD include the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, issuance of permits for stationary sources of air pollution, inspection of stationary sources of air pollution and response to citizen complaints, monitoring of ambient air quality and meteorological conditions, and implementation of programs and regulations required by the FCAA and CCAA.

### **Glenn County General Plan**

The existing Glenn County General Plan includes the following policies related to air quality:

GOAL:

**PSG-4: Protection and enhancement of air quality.**

**POLICIES:**

PSP-34: Support State programs to reduce backyard and agricultural burning, including development of alternatives to rice straw burning and creating markets for rice straw.

PSP-35: Review development requests to determine the impact such development will have on the existing air quality and for compliance with the air pollution reduction measures specified in the Glenn County Air Quality Attainment Plan.

PSP-36: Promote jobs/housing balance when evaluating development projects.

PSP-37: Encourage design of new development which minimizes automobile trips and maximizes other modes of transportation.

**EXISTING SETTING**

Glenn County is located within the Sacramento Valley Air Basin (SVAB). The SVAB is the northern half of California's Great Valley and is bordered on three sides (west, north, and east) by mountain ranges, with peaks in the eastern range above 9,000 feet. Figure 5.3-1 delineates the boundary of the SVAB. The SVAB is approximately 13,700 square miles and essentially a smooth valley floor with elevations ranging from 40 to 500 feet. The rolling valley is interrupted by the Sutter Buttes, an area of 80 square miles in northern Sutter County, which rise abruptly to more than 2,100 feet above the valley floor.

The SVAB consists of 13 counties and is split into two planning sections based on the degree of pollutant transport from one area to the other and the level of emissions within each area. The Glenn County area belongs to the Northern Sacramento Valley Air Basin (NSVAB), which is composed of the seven northern-most counties of the SVAB. These counties include Butte, Colusa, Glenn, Shasta, Sutter, Tehama, and Yuba.

The NSVAB has been categorized as "moderately" non-attainment for ozone and particulate matter under the state standards. The air basin of the Sacramento Valley is about 200 miles long in a north-south direction, and has a maximum width of about 150 miles, although the width of the valley floor only averages about 50 miles.

**Air Movement**

The Sacramento Valley portion of the air basin forms a bowl, bounded on the west by the Coast Ranges, on the north by the Cascade Range, and on the east by the Sierra Nevada. These mountain ranges reach heights exceeding 7,000 feet above sea level. During summer, the wide, flat expanse of the Sacramento Valley provides an ideal environment for the formation of photochemical smog. Moreover, the prevailing winds in the Sacramento Valley blow from south to north, driven by the marine air traveling through the Carquinez Strait. These winds can transport pollutants from the broader Sacramento area and from the San Francisco Bay Area to the Northern Sacramento Valley Air Basin. The mountain ranges that surround the Northern Sacramento Valley Air Basin provide a physical barrier to continued movement of the air mass, significantly hindering the dispersal of pollutants.

Generally, the County experiences moderate to very poor capability to disperse pollutants nearly 80 percent of the time. This is, in large measure, due to the relatively stable atmosphere which acts to suppress vertical air movement. Extremely stable atmospheric conditions referred to as "inversions" act as barriers to pollutants. In valley locations under 1,000 ft, they create a "lid" under which pollutants are trapped. Dust and other pollutants can become trapped within these inversion layers and will not disperse until atmospheric conditions become more unstable. This situation creates concentrations of pollutants at or near the ground surface which pose significant health risks for plants, animals, and people.

Inversions occur in the SVAB with great frequency in all seasons. The most stable inversions occur in late summer and fall. The summertime inversions are often the result of marine air pushing under an overlying warm air mass. These are termed “marine inversions” and are generally accompanied by brisk afternoon winds, which provide good air circulation.

In contrast, many autumn inversions are the result of warm air subsiding in a high-pressure cell where accompanying light winds do not provide adequate dispersion. Autumn inversions limit vertical mixing, creating a very stable layer of air with very light or calm winds. These inversions are usually present on clear cold nights during late fall and winter. In the morning, these ground based inversions are weakened and eventually eliminated by solar heating. As a result, they are strongest in the late night and early morning, when ground-level temperatures are coldest and solar radiation is low.

### **Seasonal Pollution Variations**

Carbon monoxide, oxides of nitrogen, particulate matters, and lead particulate concentrations in the late fall and winter are highest when there is little interchange of air between the valley and the coast and when humidity is high following winter rains. This type of weather is associated with radiation fog, known as tule fog, when temperature inversions at ground level persist over the entire valley for several weeks and air movement is virtually absent.

Pollution potential in the Glenn County area is relatively high due to the combination of air pollutant emissions sources, transport of pollutants into the area and meteorological conditions that are conducive to high levels of air pollution. Elevated levels of particulate matter (primarily very small particulates or PM<sub>10</sub>) and ground-level ozone are of most concern to regional air quality officials.

Local carbon monoxide “hot spots” are important to a lesser extent. Ground-level ozone, the principal component of smog, is not directly emitted into the atmosphere but is formed by the reaction of reactive organic gases (ROG) and nitrogen oxides (NOx) (known as ozone precursor pollutants) in the presence of strong sunlight. Ozone levels are highest in Glenn County during late spring through early fall, when weather conditions are conducive and emissions of the precursor pollutants are highest.

Surface-based inversions that form during late fall and winter nights cause localized air pollution problems (PM<sub>10</sub> and carbon monoxide) near the emission sources because of poor dispersion conditions. Emission sources are primarily from automobiles. Conditions are exacerbated during drought-year winters.

### **Criteria Pollutants**

The EPA uses six "criteria pollutants" as indicators of air quality, and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS). Each criteria pollutant is described below.

**Ozone (O<sub>3</sub>)** is a photochemical oxidant and the major component of smog. While O<sub>3</sub> in the upper atmosphere is beneficial to life by shielding the earth from harmful ultraviolet radiation from the sun, high concentrations of O<sub>3</sub> at ground level are a major health and environmental concern. O<sub>3</sub> is not emitted directly into the air but is formed through complex chemical reactions between precursor emissions of volatile organic compounds (VOC) and oxides of nitrogen (NOx) in the presence of sunlight. These reactions are stimulated by sunlight and temperature so that peak O<sub>3</sub> levels occur typically during the warmer times of the year. Both VOCs and NOx are emitted by transportation and industrial sources. VOCs are emitted from sources as diverse as autos, chemical manufacturing, dry cleaners, paint shops and other sources using solvents.

The reactivity of O<sub>3</sub> causes health problems because it damages lung tissue, reduces lung function and sensitizes the lungs to other irritants. Scientific evidence indicates that ambient levels of O<sub>3</sub> not only affect people with impaired respiratory systems, such as asthmatics, but healthy adults and children as well. Exposure to O<sub>3</sub> for several hours at relatively low concentrations has been found to significantly reduce lung function and induce respiratory inflammation in normal, healthy people during exercise. This decrease in lung function generally is accompanied by symptoms including chest pain, coughing, sneezing and pulmonary congestion.

**Carbon monoxide (CO)** is a colorless, odorless and poisonous gas produced by incomplete burning of carbon in fuels. When CO enters the bloodstream, it reduces the delivery of oxygen to the body's organs and tissues. Health threats are most serious for those who suffer from cardiovascular disease, particularly those with angina or peripheral vascular disease. Exposure to elevated CO levels can cause impairment of visual perception, manual dexterity, learning ability and performance of complex tasks.

**Nitrogen dioxide (NO<sub>2</sub>)** is a brownish, highly reactive gas that is present in all urban atmospheres. NO<sub>2</sub> can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Nitrogen oxides are an important precursor both to ozone (O<sub>3</sub>) and acid rain, and may affect both terrestrial and aquatic ecosystems. The major mechanism for the formation of NO<sub>2</sub> in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO<sub>x</sub>). NO<sub>x</sub> plays a major role, together with VOCs, in the atmospheric reactions that produce O<sub>3</sub>. NO<sub>x</sub> forms when fuel is burned at high temperatures. The two major emission sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

**Sulfur dioxide (SO<sub>2</sub>)** affects breathing and may aggravate existing respiratory and cardiovascular disease in high doses. Sensitive populations include asthmatics, individuals with bronchitis or emphysema, children and the elderly. SO<sub>2</sub> is also a primary contributor to acid deposition, or acid rain, which causes acidification of lakes and streams and can damage trees, crops, historic buildings and statues. In addition, sulfur compounds in the air contribute to visibility impairment in large parts of the country. This is especially noticeable in national parks. Ambient SO<sub>2</sub> results largely from stationary sources such as coal and oil combustion, steel mills, refineries, pulp and paper mills and from nonferrous smelters.

**Particulate matter (PM)** includes dust, dirt, soot, smoke and liquid droplets directly emitted into the air by sources such as factories, power plants, cars, construction activity, fires and natural windblown dust. Particles formed in the atmosphere by condensation or the transformation of emitted gases such as SO<sub>2</sub> and VOCs are also considered particulate matter.

Based on studies of human populations exposed to high concentrations of particles (sometimes in the presence of SO<sub>2</sub>) and laboratory studies of animals and humans, there are major effects of concern for human health. These include effects on breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alterations in the body's defense systems against foreign materials, damage to lung tissue, carcinogenesis and premature death.

**Respirable particulate matter (PM<sub>10</sub>)** consists of small particles, less than 10 microns in diameter, of dust, smoke, or droplets of liquid which penetrate the human respiratory system and cause irritation by themselves, or in combination with other gases. Particulate matter in Glenn County is caused primarily by dust from grading and excavation activities, from agricultural uses (as created by soil preparation activities, fertilizer and pesticide spraying, weed burning and animal husbandry), and from motor vehicles, particularly diesel-powered vehicles. PM<sub>10</sub> causes a greater health risk than larger particles, since these fine particles can more easily penetrate the defenses of the human respiratory system.

**Fine particulate matter (PM<sub>2.5</sub>)** consists of small particles, which are less than 2.5 microns in size. Similar to PM<sub>10</sub>, these particles are primarily the result of combustion in motor vehicles, particularly diesel engines, as

well as from industrial sources and residential/agricultural activities such as burning. It is also formed through the reaction of other pollutants. As with PM<sub>10</sub>, these particulates can increase the chance of respiratory disease, and cause lung damage and cancer. In 1997, the EPA created new Federal air quality standards for PM<sub>2.5</sub>.

The major subgroups of the population that appear to be most sensitive to the effects of particulate matter include individuals with chronic obstructive pulmonary or cardiovascular disease or influenza, asthmatics, the elderly and children. Particulate matter also soils and damages materials, and is a major cause of visibility impairment.

**Lead (Pb)** exposure can occur through multiple pathways, including inhalation of air and ingestion of Pb in food, water, soil or dust. Excessive Pb exposure can cause seizures, mental retardation and/or behavioral disorders. Low doses of Pb can lead to central nervous system damage. Recent studies have also shown that Pb may be a factor in high blood pressure and subsequent heart disease.

### **Odors**

Typically, odors are 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).

With respect to odors, the human nose is the sole sensing device. 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.

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.

### **Naturally Occurring Asbestos**

The EPA Region 9 office is working in areas of California to address concerns about potential effects of naturally occurring asbestos. Naturally occurring asbestos can take the form of long, thin, separable fibers. Natural weathering or human disturbance can break naturally occurring asbestos down to microscopic fibers, easily suspended in air. There is no health threat if asbestos fibers in soil remain undisturbed and do not become airborne. When inhaled, these thin fibers irritate tissues and resist the body's natural defenses. Asbestos, a known carcinogen, causes cancers of the lung and the lining of internal organs, as well as asbestosis and other diseases that inhibit lung function.

Asbestiform minerals occur naturally in rock and soil as the result of natural geologic processes, often in veins near earthquake faults in the coastal ranges and the foothills of the Sierra Nevada mountains. Sometimes the metamorphic conditions are right for the formation of chrysotile asbestos or tremolite-actinolite asbestos in bodies of ultramafic rock or along their boundaries. Asbestos is much less likely to be associated with non-ultramafic rock types.

Ultramafic rocks are igneous rocks that form in high temperature environments well below the surface of the earth. By the time they are exposed at the surface by uplift and erosion, ultramafic rocks may be partially to completely altered to serpentinite, a type of metamorphic rock. Asbestos is the generic term for the naturally occurring fibrous (asbestiform) varieties of six silicate minerals, including chrysotile which is found in serpentinite and is the most common in California.

Serpentinite is an ultramafic rock that has a greasy or waxy appearance and may be dark to light green, brown, yellow or white. Small amounts of chrysotile asbestos are common in serpentinite. Other forms of asbestos such as amphibole asbestos also occur with serpentinite, but such occurrences are less common than chrysotile asbestos.

Because of the correlation of asbestos and ultramafic rocks, the location of ultramafic rocks provides insight to the potential for naturally occurring asbestos in each county. The California Department of Conservation, Division of Mines and Geology mapped the location of ultramafic rocks within California, which is limited to the foothill regions of the Sierra Nevada, Coastal Range, and Cascade Range.

### **Sensitive receptors**

A sensitive receptor is a location where human populations, especially children, seniors, and sick persons, are present and where there is a reasonable expectation of continuous human exposure to pollutants. Examples of sensitive receptors include residences, hospitals and schools.

### **Ambient Air Quality**

Both the EPA and the CARB have established ambient air quality standards for common pollutants. These ambient air quality standards represent safe levels of contaminants that avoid specific adverse health effects associated with each pollutant.

The federal and state ambient air quality standards are summarized in Table 5.3-1 for important pollutants. The federal and state ambient standards were developed independently, although both processes attempted to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the state standards are more stringent. This is particularly true for ozone and particulate matter between 2.5 and 10 microns in diameter.

**TABLE 5.3-1: FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS**

POLLUTANT	AVERAGING TIME	FEDERAL PRIMARY STANDARD	STATE STANDARD
Ozone	1-Hour	--	0.09 ppm
	8-Hour	0.070 ppm	0.070 ppm
Carbon Monoxide	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	35.0 ppm	20.0 ppm
Nitrogen Dioxide	Annual	0.53 ppm	0.03 ppm
	1-Hour	0.100 ppm	0.18 ppm
Sulfur Dioxide	Annual	0.03 ppm	--
	24-Hour	0.14 ppm	0.04 ppm
	1-Hour	0.075	0.25 ppm
PM10	Annual	--	20 ug/m3
	24-Hour	150 ug/m3	50 ug/m3
PM2.5	Annual	12 ug/m3	12 ug/m3
	24-Hour	35ug/m3	--
Lead	30-Day Avg.	--	1.5 ug/m3
	3-Month Avg.	1.5 ug/m3	--

NOTES: PPM = PARTS PER MILLION,  $\mu\text{G}/\text{M}^3$  = MICROGRAMS PER CUBIC METER

SOURCES: CALIFORNIA AIR RESOURCES BOARD, 2017A.

The EPA established new national air quality standards for ground-level ozone and for fine particulate matter in 1997. The 1-hour ozone standard was phased out and replaced by an 8-hour standard of 0.075 ppm. Implementation of the 8-hour standard was delayed by litigation, but was determined to be valid and enforceable by the U.S. Supreme Court in a decision issued in February of 2001.

In 1997, new national standards for fine particulate matter diameter 2.5 microns or less (PM<sub>2.5</sub>) were adopted for 24-hour and annual averaging periods. The current PM<sub>10</sub> standards were to be retained, but the method and form for determining compliance with the standards were revised.

The State of California regularly reviews scientific literature regarding the health effects and exposure to PM and other pollutants. On May 3, 2002, CARB staff recommended lowering the level of the annual standard for PM<sub>10</sub> and establishing a new annual standard for PM<sub>2.5</sub>. The new standards became effective on July 5, 2003, with another revision on November 29, 2005.

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TACs is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TACs are regulated on the basis of risk rather than specification of safe levels of contamination.

Existing air quality concerns within Glenn County and the entire NSVPA are related to increases of regional criteria air pollutants (e.g., ozone and particulate matter), exposure to toxic air contaminants, odors, and increases in greenhouse gas emissions contributing to climate change. The primary source of ozone (smog) pollution is motor vehicles which account for 70 percent of the ozone in the region. Particulate matter is caused by dust, primarily dust generated from construction and grading activities, and smoke which is emitted from fireplaces, wood-burning stoves, and agricultural burning.

### Attainment Status

In accordance with the California Clean Air Act (CCAA), the CARB is required to designate areas of the state as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation

for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A “nonattainment” designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria.

Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An “unclassified” designation signifies that the data do not support either an attainment or nonattainment status. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The EPA designates areas for ozone (O<sub>3</sub>), carbon monoxide (CO), and nitrogen dioxide (NO<sub>2</sub>) as “does not meet the primary standards,” “cannot be classified,” or “better than national standards.” For sulfur dioxide (SO<sub>2</sub>), areas are designated as “does not meet the primary standards,” “does not meet the secondary standards,” “cannot be classified,” or “better than national standards.” However, the CARB terminology of attainment, nonattainment, and unclassified is more frequently used.

Glenn County has a national designation for either Unclassified or Attainments for all criteria pollutants. The County has a state designation as non-attainment for PM<sub>10</sub>. The County is designated either attainment or unclassified for the remaining state standards.

**TABLE 5.3-2: STATE AND NATIONAL ATTAINMENT STATUS**

<i>CRITERIA POLLUTANTS</i>	<i>STATE DESIGNATIONS</i>	<i>NATIONAL DESIGNATIONS</i>
8-Hour Ozone	Attainment	Unclassified/Attainment
PM10	Nonattainment	Unclassified
PM2.5	Attainment	Unclassified/Attainment
Carbon Monoxide	Unclassified	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified/Attainment
Sulfates	Attainment	No Federal Standard
Lead	Attainment	Unclassified/Attainment
Hydrogen Sulfide	Unclassified	No Federal Standard
Visibility Reducing Particles	Unclassified	No Federal Standard

SOURCES: CALIFORNIA AIR RESOURCES BOARD (2018). [WWW.ARB.CA.GOV/DESIG/ADM/ADM.HTM](http://WWW.ARB.CA.GOV/DESIG/ADM/ADM.HTM)

## **Air Quality Monitoring**

The Glenn County APCD and CARB maintain one air quality monitoring site in Glenn County, located on Colusa Street in the City of Willows. It is important to note that the federal ozone 1-hour standard was revoked by the EPA and is no longer applicable for federal standards. Data obtained from the Glenn monitoring site over the last 3-year period is shown in Table 5.3-3.



**TABLE 5.3-3: AMBIENT AIR QUALITY MONITORING DATA (WILLOWS-COLUSA.)**

POLLUTANT	CAL.	FED.	YEAR	MAX CONCENTRATION	DAYS (SAMPLES) STATE/FED STANDARD EXCEEDED
	PRIMARY STANDARD				
Ozone (O3) (1-hour)	0.09 ppm for 1 hour	NA	2015	0.080	0/NA
			2016	0.070	0/NA
			2017	0.068	0/NA
Ozone (O3) (8-hour)	0.07 ppm for 8 hours	0.07 ppm for 8 hours	2015	0.072	0/0
			2016	0.070	0/0
			2017	0.068	0/0
Particulate Matter (PM10)	50 ug/m3 for 24 hours	150 ug/m3 for 24 hours	2015	118.0	*/0
			2016	79.6	*/0
			2017	181.7	*/1.0
Fine Particulate Matter (PM2.5)	No 24 hour State Standard	35 ug/m3 for 24 hours	2015	31.8	NA/*
			2016	31.1	NA/*
			2017	55.2	NA/*

SOURCES: CALIFORNIA AIR RESOURCES BOARD (ADAM) AIR POLLUTION SUMMARIES, 2015, 2016, AND 2017.

NOTES:

PPM = PARTS PER MILLION.

UG/M3 = MICRONS PER CUBIC METER.

NA= NOT APPLICABLE

\* = THERE WAS INSUFFICIENT (OR NO) DATA AVAILABLE TO DETERMINE THE VALUE

## 5.4 GREENHOUSE GASSES AND CLIMATE CHANGE

Various gases in the Earth's atmosphere, classified as atmospheric greenhouse gases (GHGs), play a critical role in determining the Earth's surface temperature. Solar radiation enters Earth's atmosphere from space, and a portion of the radiation is absorbed by the Earth's surface. The Earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation.

Naturally occurring greenhouse gases include water vapor (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and ozone (O<sub>3</sub>). Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also greenhouse gases, but they are, for the most part, solely a product of industrial activities. Although the direct greenhouse gases CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O occur naturally in the atmosphere, human activities have changed their atmospheric concentrations. From the pre-industrial era (i.e., ending about 1750) to 2011, concentrations of these three greenhouse gases have increased globally by 40, 150, and 20 percent, respectively (IPCC, 2013).

This section addresses greenhouse gases and sets the framework for analysis of this important topic in the General Plan.

### Greenhouse Gases and Climate Change Linkages

Greenhouse gases, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), ozone (O<sub>3</sub>), water vapor, nitrous oxide (N<sub>2</sub>O), and chlorofluorocarbons (CFCs).

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. In California, the transportation sector is the largest emitter of GHGs, followed by the industrial sector (California Air Resources Board, 2017b).

As the name implies, global climate change is a global problem. Unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, GHGs are global pollutants. Global pollutants are pollutants that have international impacts and affect the ecosystem on a world-wide scale. In regard to global pollutants, California produced approximately 440 million gross metric tons of carbon dioxide equivalents (MMTCO<sub>2</sub>e) in 2015 (California Air Resources Board, 2017b). By 2020, California is projected to produce 509 MMTCO<sub>2</sub>e per year (California Air Resources Board, 2014).

Carbon dioxide equivalents are a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO<sub>2</sub> were being emitted.

Consumption of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2015, accounting for 39% of total GHG emissions in the state. This category was followed by the industrial sector (23%), the electricity generation sector (including both in-state and out-of-state sources) (29%) and the agriculture sector (8%), the residential sector (6%), and the commercial sector (5%) (California Air Resources Board, 2017b)

## Effects of Global Climate Change

The effects of increasing global temperature are far reaching and extremely difficult to quantify. The scientific community continues to study the effects of global climate change. In general, increases in the ambient global temperature as a result of increased GHGs is anticipated to result in rising sea levels, which could threaten coastal areas through accelerated coastal erosion, threats to levees and inland water systems and disruption to coastal wetlands and habitat.

If the temperature of the ocean warms, it is anticipated that the winter snow season would be shortened. Snowpack in the Sierra Nevada provides both water supply (runoff) and storage (within the snowpack before melting), which is a major source of supply for the state. According to a California Energy Commission report, the snowpack portion of the supply could potentially decline by 70 to 90 percent by the end of the 21<sup>st</sup> century (CEC 2006c). This phenomenon could lead to significant challenges securing an adequate water supply for a growing state population. Further, the 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 levee/flood control system.

Sea level has risen approximately seven inches during the last century and, according to the CEC report, it is predicted to rise an additional 22 to 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 failure of species to migrate in time to adapt to the perturbations in climate, could also result.

Under the emissions scenarios of the Climate Scenarios report (California Climate Change Center 2006), the impacts of global climate change in California are anticipated to include, but are not limited to, the following.

**Public Health.** Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation are projected to increase from 25 to 35 percent - under the lower warming range, to 75 to 85 percent- under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55 percent more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming scenario, there could be up to 100 more days per year with temperatures above 90oF in Los Angeles and 95oF in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures will increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

**Water Resources.** A vast network of man-made reservoirs and aqueducts capture and transport water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snow pack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snow pack, increasing the risk of summer water shortages.

The state's water supplies are also at risk from rising sea levels. An influx of saltwater would degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a

major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta, a major state fresh water supply. Global warming is also projected to seriously affect agricultural areas, with California farmers projected to lose as much as 25 percent of the water supply they need; decrease the potential for hydropower production within the state (although the effects on hydropower are uncertain); and seriously harm winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by as much as 1 month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

If GHG emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snow pack by as much as 70 to 90 percent. Under the lower warming scenario, snow pack losses are expected to be only half as large as those expected if temperatures were to rise to the higher warming range. How much snow pack will be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snow pack would pose challenges to water managers, hamper hydropower generation, and nearly eliminate all skiing and other snow-related recreational activities.

**Agriculture.** Increased GHG emissions are expected to cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. Although higher carbon dioxide levels can stimulate plant production and increase plant water-use efficiency, California's farmers will face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and development will change, as will the intensity and frequency of pest and disease outbreaks. Rising temperatures will likely aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than optimal development for many crops, so rising temperatures are likely to worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts, and milk.

In addition, continued global warming will likely shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Should range contractions occur, it is likely that new or different weed species will fill the emerging gaps. Continued global warming is also likely to alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

**Forests and Landscapes.** Global warming is expected to intensify this threat by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. For example, if precipitation increases as temperatures rise, wildfires in southern California are expected to increase by approximately 30 percent toward the end of the century. In contrast, precipitation decreases could increase wildfires in northern California by up to 90 percent.

Moreover, continued global warming will alter natural ecosystems and biological diversity within the state. For example, alpine and sub-alpine ecosystems are expected to decline by as much as 60 to 80 percent by the end of the century as a result of increasing temperatures. The productivity of the state's forests is also expected to decrease as a result of global warming.

**Rising Sea Levels.** Rising sea levels, more intense coastal storms, and warmer water temperatures will increasingly threaten the state’s coastal regions. Under the higher warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.

### Implications of Climate Change for Glenn County

The impact of climate change in California varies across the state due to diversity in biophysical setting, climate, and jurisdictional characteristics. The California Adaptation Planning Guide organized the state into climate impact regions based on county boundaries in combination with projected climate impacts, existing environmental settings, socioeconomic factors, and regional designations and organizations. Glenn County is considered within the Northern Central Valley climate impact region (which includes the counties of Tehama, Glenn, Butte, Colusa, Yuba, Yolo, Sutter, Sacramento, San Joaquin, Stanislaus, Merced, and Madera).

Table 5.4-1 summarizes Cal-Adapt projections for the Northern Central Valley Region and is intended to identify the major types of changes projected for the region.

**Table 5.4-1: Cal-Adapt Climate Projections for the Northern Central Valley Region**

Climate Variable	Predicted Implications and Ranges
Temperature Change, 1990-2100	January increase in average temperature of 4°F to 6°F in 2050 and between 8°F and 12°F by 2100. July increase in average temperature of 6°F to 7°F in 2050 and 12°F to 15°F by 2100. (Modeled high temperatures – average of all models; high carbon emissions scenario)
Precipitation	Annual precipitation is projected to decline by approximately one to two inches by 2050 and three to six inches by 2100. (high carbon emissions scenario)
Heat Wave	Heat wave is defined as five days over 102°F to 105°F, except in the mountainous areas to the east. Two to three more heat waves per year are expected by 2050 with five to eight more by 2100.
Wildfire Risk	By 2085, the northern and eastern portions of the region will experience an increase in wildfire risk, more than 4 times the current levels in some areas. (high carbon emissions scenario)

Sources: California Department of Public Health 2017; Cal-Adapt.

Overall, temperatures are expected to rise throughout this century. During the next few decades, climate scenarios project average temperature to rise between 1°F and 2.3°F in California. The projected temperature increases begin to diverge at mid-century so that, by the end of the century, the temperature increases projected in the higher emissions scenario are approximately twice as high as those projected in the lower emissions scenario. The historical average temperature within Glenn County is 60.3°F. Projected Temperature Changes in Glenn County using Cal-Adapt prediction tools indicates that under a low-emissions scenario the predicted temperatures could rise by 3.5°F to 63.8°F, while under a high-emission scenario temperatures could increase by as much as 6.2°F to 66.5°F by the end of the century. Increased temperatures may also be manifested as heat waves and sustained high heat days.

## **Climate Change and Public Health.**

Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation are projected to increase from 25 to 35 percent under the lower warming range, to 75 to 85 percent under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55 percent more frequent if GHG emissions are not significantly reduced (assuming fuel loads remain similar).

Increased temperatures may also be manifested as heat waves and sustained high heat days which can directly harm human health through heat-related illnesses (mild heat stress to fatal heat stroke) and the exacerbation of pre-existing conditions in the medically fragile, chronically ill, and vulnerable. Increased heat also intensifies the photochemical reactions that produce smog and ground level ozone and fine particulates (PM2.5), which contribute to and exacerbate respiratory disease in children and adults. Increased heat and carbon dioxide enhance the growth of plants that produce pollen, which are associated with allergies. Increased temperatures add to the heat load of buildings in urban areas and exacerbate existing urban heat islands adding to the risk of high ambient temperatures.

Lack of moisture, due to multi-year drought conditions and fuel accumulation from historical forestry and fire suppression practices, increases the risk of wildfires. Devastating wildfires impact watersheds and increase the risk of landslides or mudslides, and sediment in run-off that reduce water quality. In addition to fire-related injuries, local and regional transport of smoke, ash, and fine particles increases respiratory and cardiovascular risks. Increasing temperatures and changes in precipitation may lead to intensified drought conditions. Drought decreases the availability and quality of water for humans. This includes reduced water levels to fight wildfires.

Drought may increase exposure to health hazards including wildfires, dust storms, extreme heat events, flash flooding, degraded water quality, and reduced water quantity. Dust storms associated with drought conditions have been associated with increased incidents of Valley fever, a fungal pathogen. Vector-borne illnesses. Climatic changes alter the range, biogeography, and growth of microbes and the vectors of food, water, and vector-borne illnesses. This includes the changes in aquatic environments that could increase harmful algal blooms and lead to increases in foodborne and waterborne illnesses. Climate change is expected to have global impacts on food production and distribution systems. This can cause food prices to increase, which makes food less affordable and increases food insecurity, obesity, and malnutrition in economically constrained households.

Through sea level rise, salt water may intrude into coastal aquifers thus reducing quality and quantity of water supply. Coastal erosion can contribute to the loss of recreational venues and pose a variety of hazards to infrastructure and public safety. Water intrusion into buildings can result in mold contamination leading to indoor air quality problems.

Widespread social and economic disruptions may include damage to the infrastructure for the delivery of health services and for general economic well-being. Energy production and distribution is also threatened by heat and wildfires through loss of efficiency, generating capacity, and fires disrupting transmission lines.

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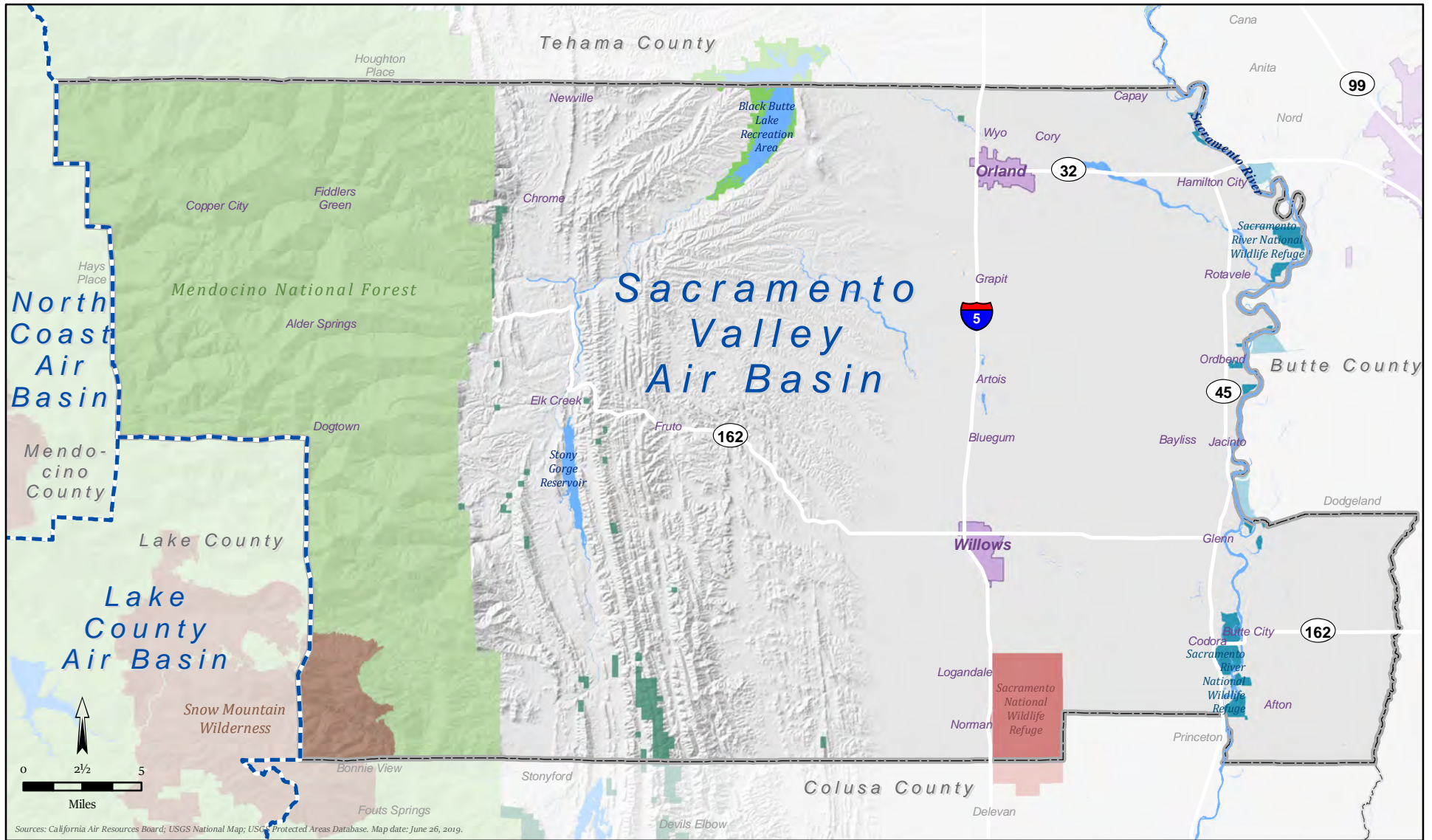
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- Legend**
- California Air Basin
  - Public Lands**
  - Mendocino National Forest
  - Wilderness Area
  - USFWS Sacramento National Wildlife Refuge
  - USFWS Sacramento River National Wildlife Refuge
  - BLM Lands



COUNTY OF GLENN, CALIFORNIA

FIGURE 5.4-1. SACRAMENTO VALLEY AIR BASIN



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## 5.5 GEOLOGY, SOILS, AND SEISMICITY

This section addresses seismic and geologic hazards in Glenn County. For hazards relating to flooding, wildfire, and hazardous materials see Section 4.0 (Hazards, Safety, and Noise)

### REGULATORY FRAMEWORK

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#### *STATE*

The State of California has established a variety of regulations and requirements related to seismic safety and structural integrity, including the California Building Standards Code, the Alquist-Priolo Earthquake Fault Zoning Act, and the Seismic Hazards Mapping Act.

#### **California Building Standards Code**

Title 24 of the California Code of Regulations, known as the California Building Standards Code (CBSC) or simply "Title 24," contains the regulations that govern the construction of buildings in California. The CBSC includes 12 parts: California Building Standards Administrative Code, California Building Code, California Residential Building Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Historical Building Code, California Fire Code, California Existing Building Code, California Green Building Standards Code (CALGreen Code), and the California Reference Standards Code. Through the CBSC, the State provides a minimum standard for building design and construction. The CBSC contains specific requirements for seismic safety, excavation, foundations, retaining walls, and site demolition. It also regulates grading activities, including drainage and erosion control.

The California Building Code, Title 24, Part 2, Chapter 16 addresses structural design, Chapter 17 addresses structural tests and special inspections, and Chapter 18 addresses soils and foundations. Section 1610 provides structural design standards for foundation walls and retaining walls to ensure resistance to lateral soil loads. Section 1613 provides structural design standards for earthquake loads. Section 1704.7 requires special inspections for existing site soil conditions, fill placement and load-bearing requirements during the construction as specified in Table 1704.7 of this section. Sections 1704.8 through 1704.16 provide inspection and testing requirements for various foundation types, and construction material types. Section 1803.1.1.1 requires each city and county enact an ordinance which requires a preliminary soil report and that the report be based upon adequate test borings or excavations, of every subdivision, where a tentative and final map is required pursuant to Section 66426 of the Government Code. Section 1803.5.3 defines expansive soils and specifies that in areas likely to have expansive soil, the building official shall require soil tests to determine where such soils do exist. Section 1803.5.4 specifies that a subsurface soil investigation must be performed to determine whether the existing ground-water table is above or within 5 feet (1524 mm) below the elevation of the lowest floor level where such floor is located below the finished ground level adjacent to the foundation. Section 1803.5.8 provides specific standards where shallow foundations will bear on compacted fill material more than 12 inches (305 mm) in depth. Sections 1803.5.11 and 1803.5.12 provide requirements for geotechnical investigations for structures assigned varying Seismic Design Categories in accordance with Section 1613. Section 1804 provides standards and requirements for excavation, grading, and fill. Sections 1808, 1809, and 1810 provide standards and requirements for the construction of varying foundations.

#### **Alquist-Priolo Earthquake Fault Zoning Act**

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 sets forth the policies and Criteria of the State Mining and Geology Board, which governs the exercise of governments' responsibilities to prohibit 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, as delineated on maps officially issued by the State Geologist. Working definitions include:

- Fault – a fracture or zone of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side;
- Fault Zone – a zone of related faults, which commonly are braided and sub parallel, but may be branching and divergent. A fault zone has a significant width (with respect to the scale at which the fault is being considered, portrayed, or investigated), ranging from a few feet to several miles;
- Sufficiently Active Fault – a fault that has evidence of Holocene surface displacement along one or more of its segments or branches (last 11,000 years); and
- Well-Defined Fault – a fault whose trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface. The geologist should be able to locate the fault in the field with sufficient precision and confidence to indicate that the required site-specific investigations would meet with some success.

“Sufficiently Active” and “Well Defined” are the two criteria used by the State to determine if a fault should be zoned under the Alquist-Priolo Act.

### **Seismic Hazards Mapping Act**

The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically-induced landslides. Under the Act, seismic hazard zones are to be mapped by the State Geologist to assist local governments in land use planning. The program and actions mandated by the Seismic Hazards Mapping Act closely resemble those of the Alquist-Priolo Earthquake Fault Zoning Act (which addresses only surface fault-rupture hazards) and are outlined below:

The State Geologist is required to delineate the various “seismic hazard zones.”

- Cities and Counties, or other local permitting authority, must regulate certain development “projects” within the zones. They must withhold the development permits for a site within a zone until the geologic and soil conditions of the site are investigated and appropriate mitigation measures, if any, are incorporated into development plans.
- The State Mining and Geology Board provides additional regulations, policies, and criteria, to guide cities and counties in their implementation of the law. The Board also provides guidelines for preparation of the Seismic Hazard Zone Maps and for evaluating and mitigating seismic hazards.
- Sellers (and their agents) of real property within a mapped hazard zone must disclose that the property lies within such a zone at the time of sale.

### **Caltrans Seismic Design Criteria**

The California Department of Transportation (Caltrans) has Seismic Design Criteria (SDC), which is an encyclopedia of new and currently practiced seismic design and analysis methodologies for the design of new bridges in California. The SDC adopts a performance-based approach specifying minimum levels of structural system performance, component performance, analysis, and design practices for ordinary standard bridges.

The SDC has been developed with input from the Caltrans Offices of Structure Design, Earthquake Engineering and Design Support, and Materials and Foundations. Memo 20-1 outlines the bridge category and classification, seismic performance criteria, seismic design philosophy and approach, seismic demands and capacities on structural components and seismic design practices that collectively make up Caltrans' seismic design methodology.

### *LOCAL*

#### **Glenn County General Plan**

The existing Glenn County General Plan includes the following policies and implementation measures related to geology and soils:

#### GOAL:

**PSG-3: Protection and enhancement of the quality of life by reducing the loss of life and personal property due to geologic hazards.**

#### POLICIES:

PSP-28: Promote sound agricultural and development practices which conserve soil resources and avoid or mitigate impacts associated with erosion.

PSP-29: Protect valley stream courses from the effects of erosion.

PSP-30: Require erosion control plans for development proposed on sloping land.

PSP-31: Require a site-specific geological investigation prior to development within areas of high landslide risk.

PSP-32: Monitor gas and water well production in order to evaluate subsidence activity.

PSP-33: Enforce the requirements of the Uniform Building Code for all development in order to protect people, property and improvements from seismic and other geologic hazards.

## **GEOLOGIC SETTING**

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### **Regional Geology**

The Planning Area lies in the Sacramento Valley in Northern California. The Sacramento Valley is located in the Northern portion of the Great Valley Geomorphic Province. The Great Valley, also known as the Central Valley, is a topographically flat, northwest-trending, structural trough (or basin) about 50 miles wide and 450 miles long. It is bordered by the Tehachapi Mountains on the south, the Klamath Mountains on the north, the Sierra Nevada on the east, and the Coast Ranges on the west. Figure 5.5-1 shows the USGS Glenn County Quadrangle Topographic view.

Similar to the county's terrain, rock types can be broadly divided into three different units which increase in age from east to west. In the east, geologic materials consist primarily of unconsolidated Pleistocene and Recent sediments including alluvial fan deposits, stream channel deposits of the Sacramento River and inland basin deposits. Exposed at the lower elevations of the foothills are Tertiary sediments, primarily consisting of Pliocene sediments with some continental volcanics. At the higher foothill elevations, exposed outcrops are

Cretaceous and Jurassic marine and non-marine sedimentary rocks, while the western mountainous region of the county is formed mainly of deformed Jurassic marine sediments and volcanics.

## Soils

A Custom Soil Survey was completed for the Planning Area using the NRCS Web Soil Survey program. The NRCS Soils Map is provided in Figure 5.5-2. Table 5.5-1 below identifies the type and range of soils found in the county.

**TABLE 5.5-1: GLENN COUNTY SOILS, COMPLEXES AND ASSOCIATIONS**

NAME	ACRES	PERCENT OF AOI
Alluvial Lands	2,105.79	<1%
Altamont	26,698.33	3%
Arbuckle loam	23,431.28	3%
Artois loam	4,304.99	1%
Ayar clay	1,715.71	<1%
Burris clay	1,591.58	<1%
Capay clay	12,641.30	1%
Castro clay	7,226.44	1%
Clear lake clay	4,012.09	<1%
Colluvial Land	15,259	2%
Columbia loams and sands	13,026	2%
Contra costa clay loams	9,039	1%
Corning land complexes	4,328	1%
Corning loams	10,274	1%
Cortina loams	13,592	2%
Dubakella stony loam	68	<1%
East park clay	498	<1%
Eroded land	4,476	1%
Goulding rocky loam	1,479	<1%
Gravel pits	306	<1%
Henneke stony clay loam	12,199	1%
Hillgate loams and complexes	39,635	5%
Hohmann rocky loam	742	<1%
Hugo loam	1,517	<1%
Hulls gravelly loam	1,792	<1%
Jacinto loams	3,064	<1%
Josephine loams	4,250	1%
Kimball loam and complexes	10,177	1%
Landlow clays and loams	9,500	1%
Landslides	61	<1%
Lobo loams and complexes	22,204	3%
Los gatos loams	5,428	1%
Los osos-yorkville complex	35	<1%
Madonna complex	355	<1%
Marvin clays and loams	18,159	2%
Masteron loams	3,360	<1%
Maymen loams	69,243	8%
Maywood loams	226	<1%
Millsholm loams and complexes	30,443	4%

NAME	ACRES	PERCENT OF AOI
Millsap loams	1,240	0%
Moda loam	586	<1%
Montara clay	138	<1%
Myers clays, loams, and complexes	30,151	4%
Nacimiento loams, soils, complexes and association*	24,947	3%
Neuns loams and complexes	4,916	1%
Newville loams and complexes	37,740	4%
Orland - Unknown	616	<1%
Orland loams and complexes	7,830	1%
Parrish loams and complexes	4,867	1%
Perkins loams	1,963	<1%
Plaza loams	18,423	2%
Pleasanton loams	1,808	<1%
Polebar loams and complexes	2,172	<1%
Porterville clays	877	<1%
Redding gravelly loam	337	<1%
Riverwash	9,378	1%
Riz loams	7,155	1%
Rock land and outcrop	3,185	<1%
Sacramento clay	293	<1%
Sehorn soils, complexes and associations	56,600	7%
Shedd Loams, Complexes and associations	3,885	<1%
Sheetiron loams and complexes	91,445	11%
Stockton clays	5,925	1%
Stonyford clays, loams and complexes	3,750	<1%
Sunnyvale clays and loams	3,715	<1%
Tehama loams and complexes	40,307	<1%
Terrace escarpments	1,005	5%
Toomes loams and complexes	563	<1%
Tyson loams	1,994	<1%
Willows clay	29,128	<1%
Wyo loams	22,371	3%
Yolo loams	5,305	3%
Yorkville loams	303	1%
Zamora clays and loams	28,950	<1%
Water	6,874	3%
Total	849,206	100%

SOURCE: NRCS CUSTOM SOIL SURVEY 2019.

As shown in Table 5.5-1, the majority of soils within the Planning Area consist of loams, clays, and complexes. Below is a brief description of the most prominent soils within the County.

**Sheetiron loam and complexes.** The Sheetiron series consists of moderately deep, well drained soils formed in material derived from mica-quartz schist. Sheetiron soils are on mountains. Slopes are 9 to 90 percent. The mean annual precipitation is about 45 inches and the mean annual temperature is about 52 degrees F. These soils are used mainly for timber production, wildlife habitat and watershed. Native vegetation is ponderosa pine, Douglas-fir, sugar pine, Jeffrey pine, California black oak, canyon live oak, Oregon white oak, manzanita

and ceanothus; Scattered white fir occur at the higher elevations. These soils occur in the North part of the Coast Ranges and Klamath Mountains in California and possibly in Oregon. The soils are moderately extensive.

**Sehorn soils, complexes and associations.** The Sehorn series consists of moderately deep, well-drained soil on foothills. These soils formed in residuum weathered from calcareous sandstone and shale. Slope ranges from 2 to 75 percent. The mean annual precipitation is about 25 inches and the mean annual temperature is about 61 degrees F. These soils are used for grazing with a few areas of gently sloping soils used for dryland grain. Natural vegetation is annual grasses and forbs with blue oaks and shrubs. These soils occur in the foothills of the eastern slopes of the northern Coast Range, California. The soils are moderately extensive.

**Maymen loam.** The Maymen series consists of shallow, somewhat excessively drained soils that formed in residuum weathered from shale, schist, greenstone, sandstone and conglomerate. Maymen soils are on mountains. Slopes range from 5 to 100 percent. The mean annual precipitation is about 42 inches, and the mean annual temperature is about 54 degrees F. This soil is used for watershed, wildlife habitat and recreation. Vegetation is usually open stands of chaparral consisting of chamise, Manzanita, several species of ceanothus, several species of scrub or dwarf oak and scattered small trees in protected sites such as drainages or north slopes. The soils are extensive and are mapped in the coast ranges of northern and central California.

**Hillgate loams and complexes.** The Hillgate series consists of very deep, well to moderately well drained soils that formed in alluvium from mixed sources. They are on low terraces with slopes of 0 to 50 percent. Mean annual precipitation is about 16 inches and the mean annual temperature is about 61 degrees F. These soils are used where cultivated, small grains, irrigated pasture, shallow rooted row crops and rice. Areas not cultivated, annual grasses and forbs with open stands of valley and blue oaks. These soils occur in the west side of Sacramento Valley and Coast Range valleys soils are of moderate extent.

**Newville loams and complexes.** The Newville series consists of very deep, well drained soils that formed in gravelly alluvium from sedimentary and metamorphic rocks. Newville soils are on dissected fan remnants. Slopes range from 3 to 65 percent. The mean annual temperature is 60 to 63 degrees F. (15 to 17 degrees C.) and mean annual precipitation from 15 to 25 inches (381 to 635 millimeters). These soils are used for grazing and some dry farmed grain. The vegetation is annual grasses, forbs, blue oak and scattered shrubs. These soils occur in dissected fan remnants on the west side of Sacramento Valley, California. The soils are moderately extensive.

**Millsholm loams and complexes.** The Millsholm series consists of shallow, well drained soils that formed in material weathered from sandstone, mudstone and shale. Millsholm soils are on hills and mountains and have slopes of 5 to 75 percent. The mean annual precipitation is about 25 inches and the mean annual temperature is about 60 degrees F. These soils are used mainly for livestock grazing. Principal native plants are annual grasses with blue oak, manzanita, ceanothus, and Foothill pine. Chamise is common in some areas. These soils occur in foothills of the eastern slopes of the northern Coast Range, California and the hills and mountains of the Diablo Range in the California Coast Ranges. The soils are extensive.

## FAULTS AND SEISMICITY

### Faults

A fault is a fracture in the crust of the earth. A fault trace is the line on the earth's surface defining the fault. Displacement of the earth's crust along faults releases energy in the form of earthquakes and in some cases in fault creep. Most faults are the result of repeated displacements over a long period of time.

Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Surface ruptures have been known to extend up to 50 miles with displacements of an inch to 20 feet. Fault rupture almost always follows preexisting faults, which are zones of weakness. Rupture may occur suddenly during an earthquake or slowly in the form of fault creep. Sudden displacements are more damaging to structures because they are accompanied by shaking.

The State of California designates faults as active, potentially active, and inactive depending on how recent the movement that can be substantiated for a fault. Table 5.5-2 presents the California fault activity rating system.

**TABLE 5.5-2: FAULT ACTIVITY RATING**

<i>FAULT ACTIVITY RATING</i>	<i>GEOLOGIC PERIOD OF LAST RUPTURE</i>	<i>TIME INTERVAL (YEARS)</i>
Active (A)	Holocene	Within last 11,000 years
Potentially Active (PA)	Quaternary	11,000-1.6 Million Years
Inactive (I)	Pre-Quaternary	Greater than 1.6 Million

*SOURCE: CALIFORNIA GEOLOGICAL SURVEY*

The 2010 Fault Activity Map provided by the California Department of Conservation identified potential seismic sources within and around the County. The closest known faults classified as active by the California Geological Survey is the Barlett Springs fault system within the Alquist-Priolo Zone, located approximately 10 miles to the outside the western boundary of the County. The Corning Fault, Round Valley, Estel Ridge fault and Hot Spring shear zone located within and approximately 10, 5 and 10 miles respectively from the county boundary; have had movement as recently as the Quaternary Period (1.6 million years ago to 11.7 thousand years ago), thus, are considered potentially active faults. Other faults that could potentially affect the Planning Area include the Chico Monocline and Stoney Creek Faults. Figure 5.5-3 provides a map of known area faults.

### Seismicity

The amount of energy available to a fault is determined by considering the slip-rate of the fault, its area (fault length multiplied by down-dip width), maximum magnitude, and the rigidity of the displaced rocks. These factors are combined to calculate the moment (energy) release on a fault. The total seismic energy release for a fault source is sometimes partitioned between two different recurrence models, the characteristic and truncated Gutenberg-Richter (G-R) magnitude-frequency distributions. These models incorporate our knowledge of the range of magnitudes and relative frequency of different magnitudes for a particular fault. The partition of moment and the weights for multiple models are given in the following summary.

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. By comparison, magnitude is based on the amplitude of the earthquake waves recorded on instruments, which have a common calibration. The Richter scale, a logarithmic scale ranging from 0.1 to 9.0, with 9.0 being the strongest, measures the magnitude of an



earthquake relative to ground shaking. Table 5.5-3 provides a description and a comparison of intensity and magnitude.

**TABLE 5.5-3: RICHTER MAGNITUDES AND EFFECTS**

MAGNITUDE	EFFECTS
< 3.5	Typically not felt
3.5 – 5.4	Often felt but damage is rare
5.5 – < 6	Damage is slight for well-built buildings
6.1 – 6.9	Destructive potential over ±60 miles of occupied area
7.0 – 7.9	“Major Earthquake” with the ability to cause damage over larger areas
≥ 8	“Great Earthquake” can cause damage over several hundred miles

SOURCE: ASSOCIATION OF BAY AREA GOVERNMENTS, 2011.

According to the California Geological Survey’s Probabilistic Seismic Hazard Assessment Program, Glenn County is considered to be within an area that is predicted to have a 10 percent probability that a seismic event would produce horizontal ground shaking of 10 to 20 percent within a 50-year period. This level of ground shaking correlates to a Modified Mercalli intensity of V to VII, light to strong. Table 5.5-4 below presents Modified Mercalli intensity effects at each level.

**TABLE 5.5-4: MODIFIED INTENSITY SCALE FOR EARTHQUAKES**

RICHTER MAGNITUDE	MODIFIED MERCALLI	EFFECTS OF INTENSITY
0.1 – 0.9	I	Earthquake shaking not felt
1.0 – 2.9	II	Shaking felt by those at rest.
3.0 – 3.9	III	Felt by most people indoors, some can estimate duration of shaking.
4.0 – 4.5	IV	Felt by most people indoors. Hanging objects rattle, wooden walls and frames creak.
4.6 – 4.9	V	Felt by everyone indoors, many can estimate duration of shaking. Standing autos rock. Crockery clashes, dishes rattle and glasses clink. Doors open, close and swing.
5.0 – 5.5	VI	Felt by all who estimate duration of shaking. Sleepers awaken, liquids spill, objects are displaced, and weak materials crack.
5.6 – 6.4	VII	People frightened and walls unsteady. Pictures and books thrown, dishes and glass are broken. Weak chimneys break. Plaster, loose bricks and parapets fall.
6.5 – 6.9	VIII	Difficult to stand. Waves on ponds, cohesionless soils slump. Stucco and masonry walls fall. Chimneys, stacks, towers, and elevated tanks twist and fall.
7.0 – 7.4	IX	General fright as people are thrown down, hard to drive. Trees broken, damage to foundations and frames. Reservoirs damaged, underground pipes broken.
7.5 – 7.9	X	General panic. Ground cracks, masonry and frame buildings destroyed. Bridges destroyed, railroads bent slightly. Dams, dikes and embankments damaged.
8.0 – 8.4	XI	Large landslides, water thrown, general destruction of buildings. Pipelines destroyed, railroads bent.
8.5 +	XII	Total nearby damage, rock masses displaced. Lines of sight/level distorted. Objects thrown into air.

SOURCE: UNITED STATES GEOLOGICAL SURVEY

The Significant United States Earthquake data published by the USGS in the National Atlas identifies earthquakes that caused deaths, property damage, and geologic effects or were felt by populations near the epicenter. No significant earthquakes are identified within the Planning Area; however, significant earthquakes are documented in the region. The following table presents the significant earthquakes in the region.

**TABLE 5.5-5: SIGNIFICANT EARTHQUAKES IN THE REGION**

MAGNITUDE	INTENSITY	LOCATION	YEAR
5.6	VII	Petrolia	2019
5.0	V	Geysers	2016
5.1	IV	Upper Lake	2016
5.7	VII	Greenville	2013
5.1	N/A	Redding	1998
5.7	N/A	Palermo	1975
5.5	N/A	Lassen Peak	1950
5.0	N/A	Lassen Peak	1946
5.6	N/A	Ukiah	1869
5.5	N/A	Sierra County	1855

SOURCE: UNITED STATE GEOLOGICAL SURVEY, 2019.

### Alquist-Priolo Special Study Zone

The California legislature passed the Alquist-Priolo Special Studies Zone Act in 1972 to address seismic hazards associated with faults and to establish criteria for developments for areas with identified seismic hazard zones. The California Geologic Survey (CGS) evaluates faults with available geologic and seismologic data and determines if a fault should be zoned as active, potentially active, or inactive. If CGS determines a fault to be active, then it is typically incorporated into a Special Studies Zone in accordance with the Alquist-Priolo Earthquake Hazard Act. Alquist-Priolo Special Study Zones are usually one-quarter mile or less in width and require site-specific evaluation of fault location and require a structure setback if the fault is found traversing a project site. The Planning Area is not within an Alquist-Priolo Special Study Zone. The nearest Alquist-Priolo fault zone, the Bartlett Springs, is located approximately 40 miles southwest of Willows.

### Seismic Hazards

**Fault Rupture.** A fault rupture occurs when the surface of the earth breaks as a result of an earthquake, although this does not happen with all earthquakes. These ruptures generally occur in a weak area of an existing fault. Ruptures can be sudden (i.e. earthquake) or slow (i.e. fault creep). The Alquist-Priolo Fault Zoning Act requires active earthquake fault zones to be mapped and it provides special development considerations within these zones. Glenn County does not have surface expression of active faults and fault rupture is not anticipated. Figure 5.5-3 shown regional faults in relation to Glenn County.

**Liquefaction.** Liquefaction typically requires a significant sudden decrease of shearing resistance in cohesionless soils and a sudden increase in water pressure, which is typically associated with an earthquake of high magnitude. The potential for liquefaction is highest when groundwater levels are high, and loose, fine, sandy soils occur at depths of less than 50 feet. Soil data from the NRCS Web Soil Survey (NRCS 2019) suggests that the potential for liquefaction ranges from low to high within the Planning Area given that many soils are high in sand and the water table is moderately high.

**Lateral Spreading.** Lateral spreading typically results when ground shaking moves soil toward an area where the soil integrity is weak or unsupported, and it typically occurs on the surface of a slope, although it does not occur strictly on steep slopes. Oftentimes, lateral spreading is directly associated with areas of liquefaction. The potential for liquefaction is moderate to high in many areas of the county, however because the Planning Area is generally flat lateral spreading of soils has not been observed within the Planning Area.

**Landslides.** Landslides include rockfalls, deep slope failure, and shallow slope failure. Factors such as the geological conditions, drainage, slope, vegetation, and others directly affect the potential for landslides. One of the most common causes of landslides is construction activity that is associated with road building (i.e. cut and fill). The county is generally flat; therefore, the potential for landslides is generally low. The areas of highest apparent landslide potential in the county generally correlate with relief. Those areas having the highest potential occur in the mountainous western portion of the county, while lower potential areas occur in the lower relief eastern portion of the county.

### **Non-Seismic Hazards**

**Expansive Soils.** Expansive soils can undergo significant volume change with changes in moisture content. They shrink and harden when dried and expand and soften when wet. If structures are underlain by expansive soils, it is important that foundation systems be capable of tolerating or resisting any potentially damaging soil movements. In addition, it is important to limit moisture changes in the surficial soils by using positive drainage away from buildings as well as limiting landscaping watering. Most of Glenn County has expansive soils. Areas of low expansion potential occur in a small area between Orland and Hamilton City and along the Sacramento River. The remainder of the valley and foothill areas is classified as having high expansion potential. The western portion of the county is classified as having moderate expansion potential.

According to the NRCS Web Soil Survey, the soils in the Planning Area soils vary from a low shrink-swell potential to a very high shrink-swell potential. Figure 5.5-4 provides a map of the shrink-swell potential of the soils within the Planning Area.

**Erosion.** Erosion naturally occurs on the surface of the earth as surface materials (i.e. rock, soil, debris, etc.) is loosened, dissolved, or worn away, and transported from one place to another by gravity. Two common types of soil erosion include wind erosion and water erosion. The steepness of a slope is an important factor that affects soil erosion. Erosion potential in soils is influenced primarily by loose soil texture and steep slopes. Loose soils can be eroded by water or wind forces, whereas soils with high clay content are generally susceptible only to water erosion. The potential for erosion generally increases as a result of human activity, primarily through the development of facilities and impervious surfaces and the removal of vegetative cover. Erosion may be expected in Glenn County where protective vegetation is removed by construction, fire or cultivation. Factors that contribute to erosion include topography, rainfall, and soil type. Similar to landslide potential, erosion hazard in the county is highest in the western mountain region and lowest in the eastern valley region.

**Collapsible Soils.** Collapsible soils undergo a rearrangement of their grains and a loss of cementation, resulting in substantial and rapid settlement under relatively low loads. Collapsible soils occur predominantly at the base of mountain ranges, where Holocene-age alluvial fan and wash sediments have been deposited during rapid run-off events. Soils prone to collapse are commonly associated with manmade fill, wind-laid sands and silts, and alluvial fan and mudflow sediments deposited during flash floods. During an earthquake, even slight settlement of fill materials can lead to a differentially settled structure and significant repair costs. Differential

settlement of structures typically occurs when heavily irrigated landscape areas are near a building foundation. Examples of common problems associated with collapsible soils include tilting floors, cracking or separation in structures, sagging floors, and nonfunctional windows and doors. Collapsible soils have not been identified in the County as an issue. However, in areas subject to potential liquefaction, the potential for liquefaction induced settlement is present.

**Subsidence.** Land subsidence is the gradual settling or sinking of an area with little or no horizontal motion due to changes taking place underground. It is a natural process, although it can also occur (and is greatly accelerated) as a result of human activities. Common causes of land subsidence from human activity include: pumping water, oil, and gas from underground reservoirs; dissolution of limestone aquifers (sinkholes); collapse of underground mines; drainage of organic soils; and initial wetting of dry soils. Known and potential subsidence areas occur in the eastern portion of the county where extensive groundwater withdrawals have occurred. Extraction of natural gas from reservoirs located in these same areas can also contribute to local subsidence of the land surface.

**Naturally Occurring Asbestos.** The term “asbestos” is used to describe a variety of fibrous minerals that, when airborne, can result in serious human health effects. Naturally occurring asbestos is commonly associated with ultramafic rocks and serpentinite. Ultramafic rocks, such as dunite, peridotite, and pyroxenite are igneous rocks comprised largely of iron-magnesium minerals. As they are intrusive in nature, these rocks often undergo metamorphosis, prior to their being exposed on the Earth’s surface. The metamorphic rock serpentinite is a common product of the alteration process. Ultramafic rocks, serpentinite rocks, and naturally occurring asbestos have been identified within Glenn County. Serpentine rock, and its parent material, ultramafic rock, are abundant in the Sierra foothills to the east, and the Klamath Mountains and Coast Ranges to the west.

## REFERENCES

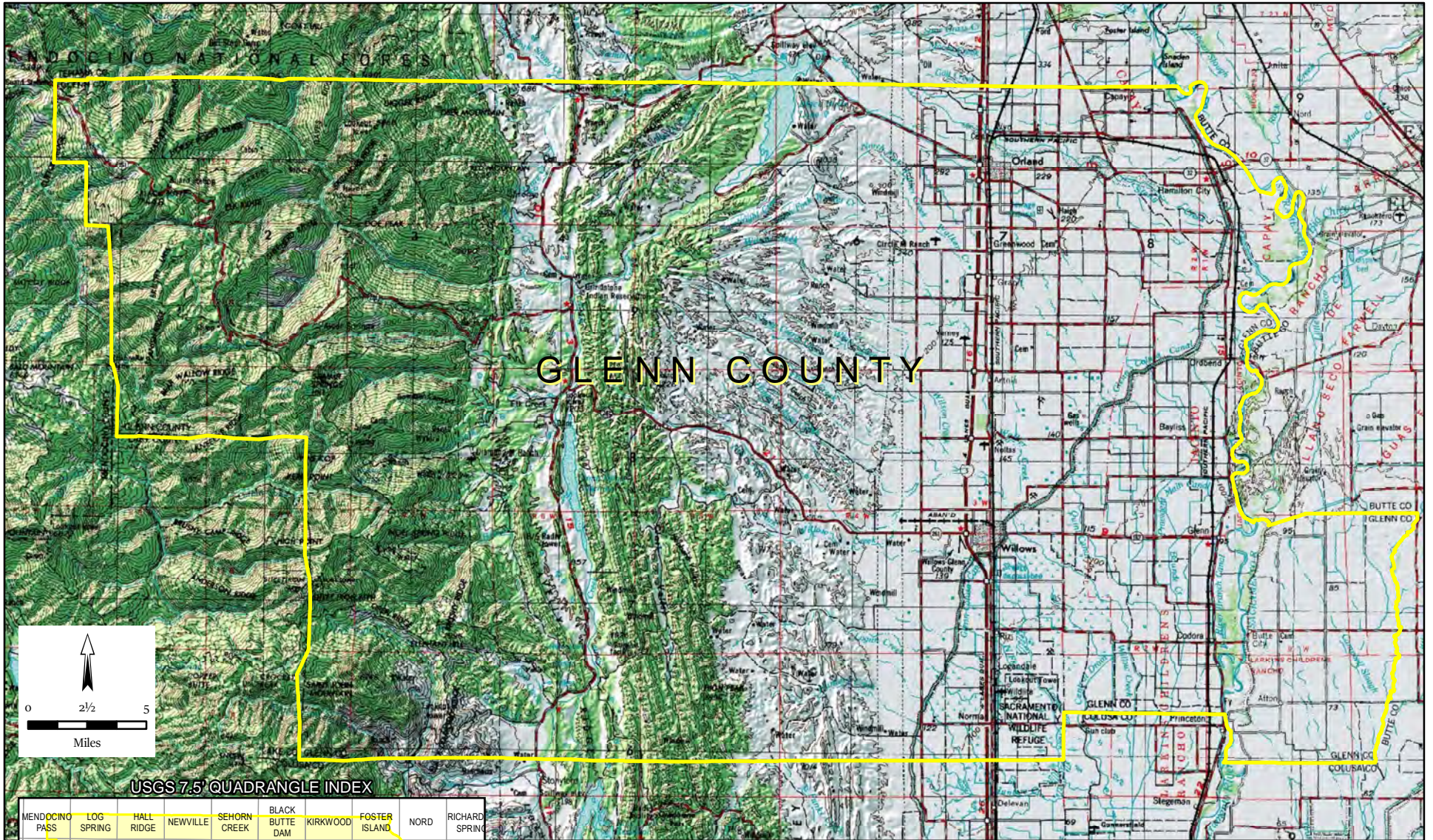
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Asbestos TEM Laboratories inc. adapted 2011 U.S. Geological Survey open-file report prepared by Bradley S. Van Gosen (U.S. Geological Survey, Denver, CO) and John P. Clinkenbeard (California Geological Survey, Sacramento).

US Geologic Survey; CalAtlas; Open Street Data Map date: January 17, 2018.





USGS 7.5' QUADRANGLE INDEX

MENDOCINO PASS	LOG SPRING	HALL RIDGE	NEWVILLE	SEHORN CREEK	BLACK BUTTE DAM	KIRKWOOD	FOSTER ISLAND	NORD	RICHARD SPRING
PLASKETT RIDGE	PLASKETT MEADOWS	ALDER SPRINGS	CHROME	JULIAN ROCKS	FRUTO NE	ORLAND	HAMILTON CITY	ORD FERRY	CHICO
HULL MOUNTAIN	KNEECAP RIDGE	FELKNER HILL	ELK CREEK	FRUTO	STONE VALLEY	WILLOWS	GLENN	LLANO SECO	NELSON
LAKE PILLSBURY	CROCKETT PEAK	ST. JOHN MTN.	STONYFORD	RAIL CANYON	LOGAN RIDGE	LOGAN-DALE	PRINCETON	BUTTE CITY	WEST OF BIGGS
ELK MOUNTAIN	POTATO HILL	FOUTS SPRINGS	GILMORE PEAK	LODOGA	SITES	MAXWELL	MOULTON WEIR	SANBORN SLOUGH	

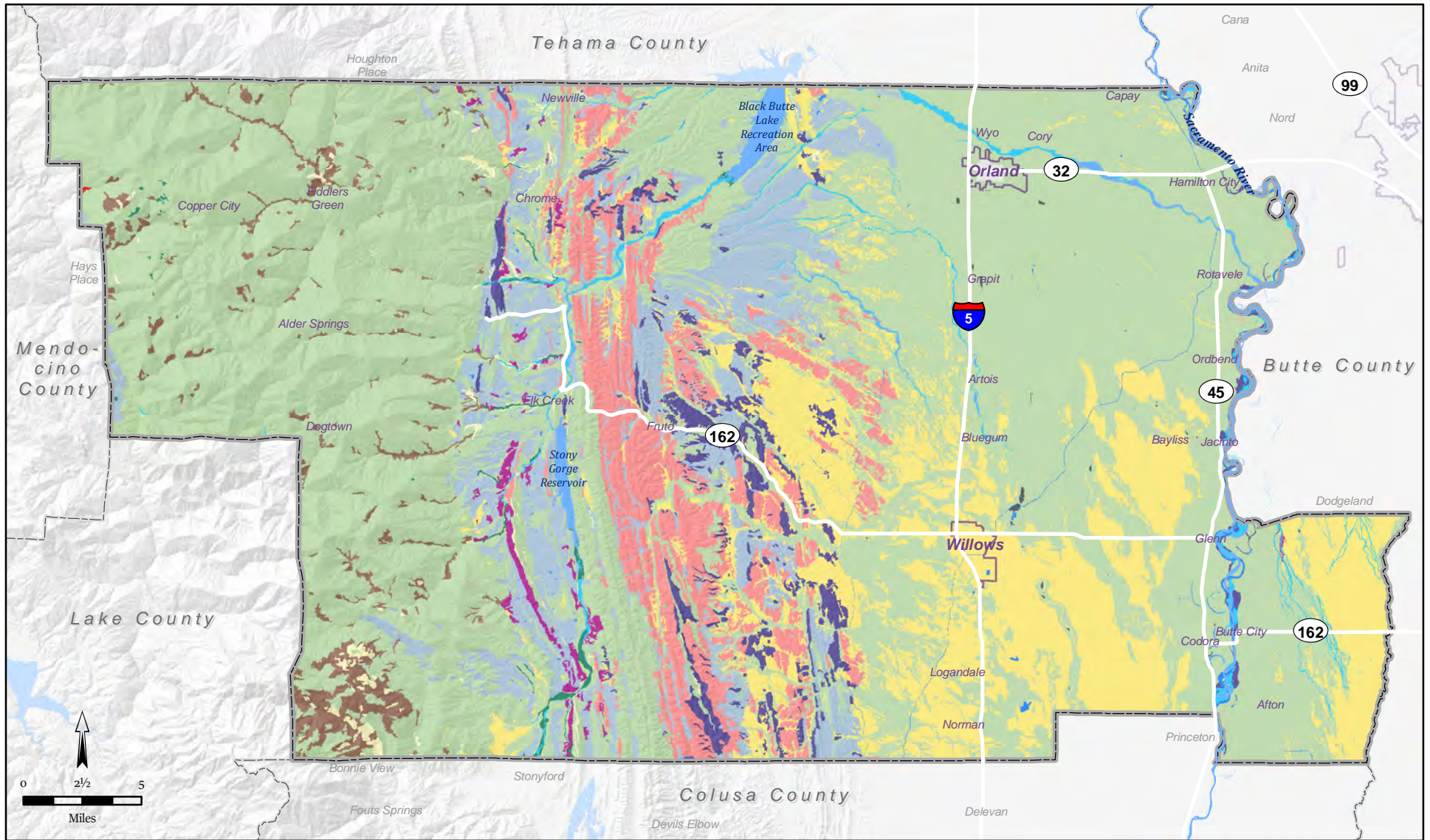
COUNTY OF GLENN, CALIFORNIA

FIGURE 5.5-1. USGS TOPOGRAPHIC MAP

Sources: ArcGIS Online USA Topographic Map Service. Map date: June 26, 2019



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Sources: NRCS web soil survey, CAO21 Glenn County, California, v14, 09/12/2018. Map date: June 27, 2019.

**Legend**

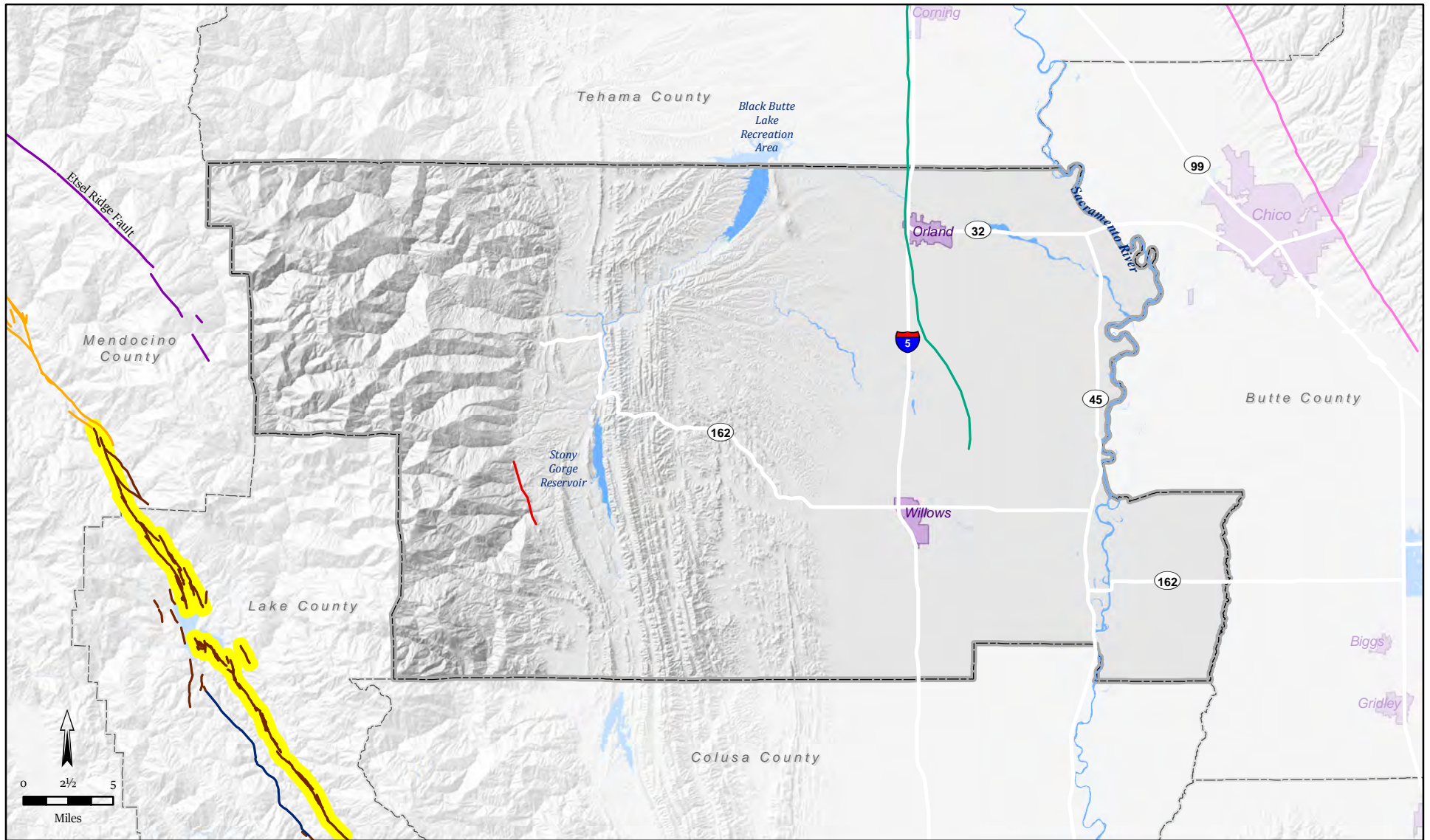
- |                |             |           |       |
|----------------|-------------|-----------|-------|
| Alluvial lands | Complex     | Loam      | Soils |
| Association    | Eroded land | Riverwash | Water |
| Clay           | Gravel pits | Rock      |       |
| Colluvial land | Landslide   | Sand      |       |

COUNTY OF GLENN, CALIFORNIA

FIGURE 5.5-2. SOILS



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Sources: USGS Quaternary faults database. Map date: June 27, 2019.

COUNTY OF GLENN, CALIFORNIA

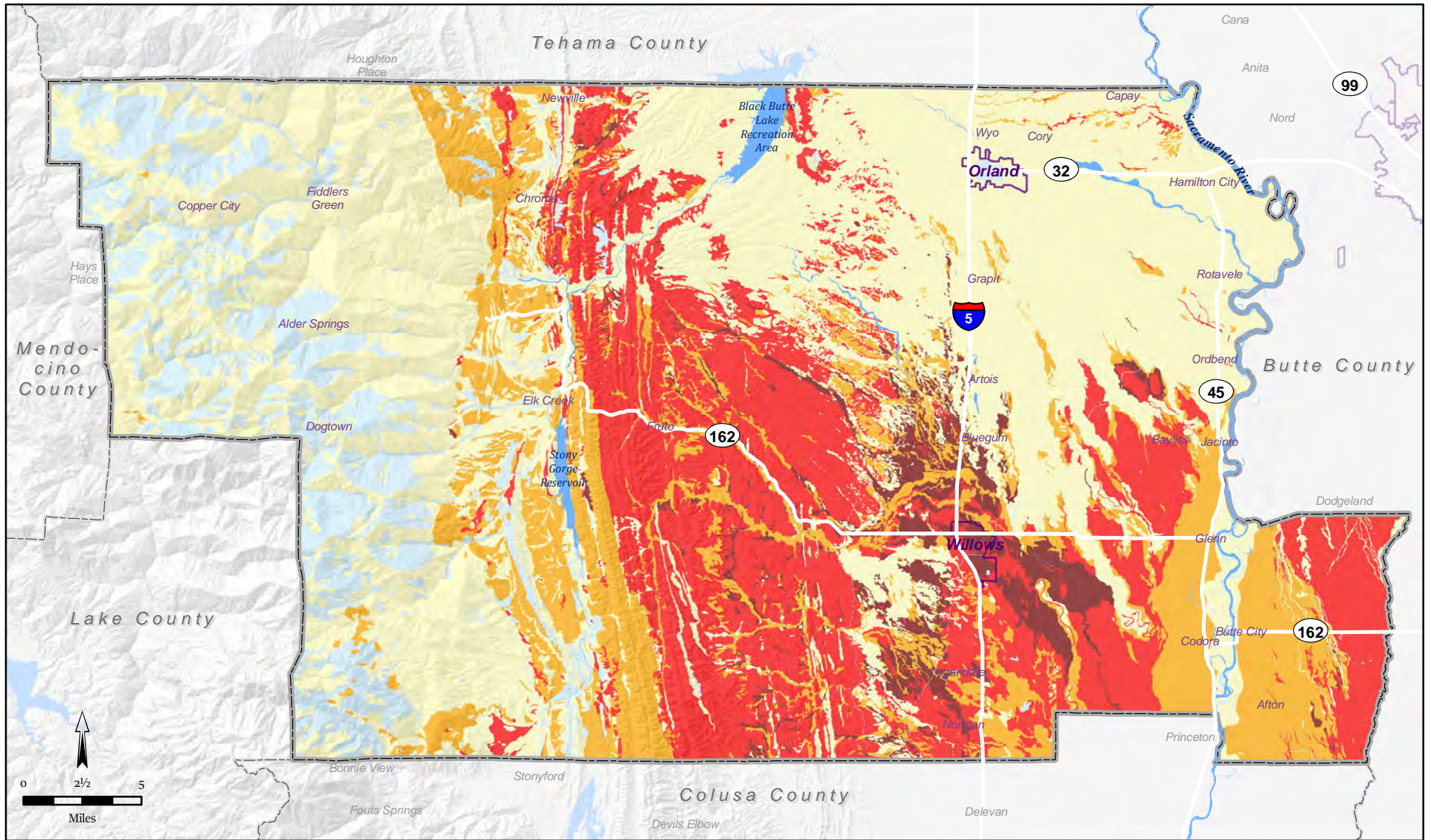
**Legend**

- Bartlett Springs fault
- Hot Springs shear zone
- Etsel Ridge fault
- Round Valley fault
- Chico Monocline
- Corning fault
- Stoney Creek fault
- Alquist-Priolo Zone

**FIGURE 5.5-3. EARTHQUAKE FAULTS**

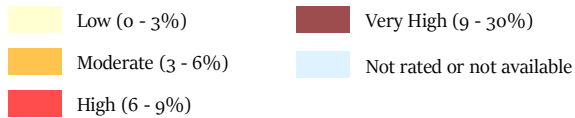
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Sources: NRCS web soil survey, CA021 Glenn County, California, v14, 09/12/2018. Map date: June 27, 2019.

**Shrink-Swell Potential of the Surface Horizon (Linear Extensibility%)\***



\*Shrink-Swell Potential is determined by linear extensibility. Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Soils are considered to have low potential when the linear extensibility is less than 3%, moderate if 3-6%, high if 6-9%, and very high if greater than 9%.

COUNTY OF GLENN, CALIFORNIA

**FIGURE 5.5-4. SHRINK-SWELL POTENTIAL OF SOILS**

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## 5.6 MINERAL AND ENERGY RESOURCES

This section describes mineral and energy resources in the Planning Area from both a qualitative and quantitative perspective. The results of this assessment may be used in planning and management decisions that may affect mineral and energy resources in the Planning Area.

### REGULATORY FRAMEWORK

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#### *STATE*

#### **Surface Mining and Reclamation Act of 1975**

The California Department of Conservation Surface Mining and Reclamation Act of 1975 (§ 2710), also known as SMARA, provides a comprehensive surface mining and reclamation policy that permits the continued mining of minerals, as well as the protection and subsequent beneficial use of the mined and reclaimed land. The purpose of SMARA is to ensure that adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition and readily adaptable for alternative land uses. The production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, wildlife, range and forage, as well as aesthetic enjoyment. Residual hazards to public health and safety are eliminated. These goals are achieved through land use planning by allowing a jurisdiction to balance the economic benefits of resource reclamation with the need to provide other land uses.

If a use is proposed that might threaten the potential recovery of minerals from an area that has been classified mineral resource zone 2 (MRZ-2), SMARA would require the jurisdiction to prepare a statement specifying its reasons for permitting the proposed use, provide public notice of these reasons, and forward a copy of the statement to the State Geologist and the State Mining and Geology Board (Cal. Pub. Res. Code Section 2762). Lands classified MRZ-2 are areas that contain identified mineral resources.

#### **Division of Mines and Geology**

The California Division of Mines and Geology (DMG) operates within the Department of Conservation. The DMG is responsible for assisting in the utilization of mineral deposits and the identification of geological hazards.

#### **State Geological Survey**

Similar to the DMG, the California Geological Survey is responsible for assisting in the identification and proper utilization of mineral deposits, as well as the identification of fault locations and other geological hazards.

#### **Public Resources Code**

PRC Section 2762(d) and 2763 requires a lead agency to prepare a statement specifying its reasons for permitting a use that would threaten the potential to extract mineral resources either 1) in an area that has been designated in its general plan as having important minerals to be protected, or 2) if the use is proposed in an area with significant resources pursuant to Section 2761(b)(2) and the lead agency has not yet acted on the State's designation. PRC Section 2763 requires that lead agency land use decisions involving areas designated as being of regional significance shall be in accordance with the lead agency's mineral resource management policies and shall also, in balancing mineral values against alternative land uses, consider the importance of these minerals to their market region as a whole and not just their importance to the lead agency's area of jurisdiction.

### **Assembly Bill 617**

Assembly Bill 617 (AB 617) was signed by Governor Jerry Brown on July 26, 2017, amends California Health and Safety Code section 40920.6, and requires Districts to adopt a schedule of BARCT regulation implementation. BARCT rules amend existing District Regulations but in the case that no specific District Regulations exist, new Regulations are adopted. In the Districts circumstance, it does not have a BARCT regulation so new rules would need to be evaluated. This schedule referenced in Item 5 is a timeframe for the District to potentially adopt new Regulation(s) specific to certain facilities in the natural gas industry identified by CARB.

### *LOCAL*

### **Glenn County Code Sections: 15.840.010 Natural Gas Wells**

Glenn County regulates natural gas well development and operation within the county through administrative and conditional use permits. Administrative permits may be approved and issued for the drilling of natural gas wells provided the following standards are being met:

- A. The proposed location of the gas well is at least five hundred feet from the nearest residential dwelling unit;
- B. The proposed location of the gas well is at least one hundred twenty feet from a county road right-of-way;
- C. That if the proposed location of the gas well is within a flood hazard area as designated on the flood hazard maps of Glenn County, or within a designated floodway or special floodplain combining zone, the rules, regulations and restrictions of the zones shall be conditions of approval;
- D. The fire protection regulations of the affected fire district shall be complied with;
- E. The drilling mud shall be disposed of at an approved disposal site;
- F. The necessary permits shall be secured from all affected federal, state and local agencies;
- G. That the applicant shall enter into a road maintenance agreement with the Glenn county road department;
- H. Conversion of this gas well to an injection well may be permitted with a conditional use permit.
- I. Installation of a gas well compressor shall require an additional administrative permit approved by the director in the agricultural zones and a conditional use permit approved by the planning commission in the residential zones. (Ord. 1183 § 2, 2006)

### **Glenn County General Plan**

The existing Glenn County General Plan identifies the following Mineral Resource Policies:

GOAL:

**NRG-5: Conservation and protection of non-renewable mineral and energy resources.**

POLICIES:

NRP-70: Encourage a resource management role for the County.

- NRP-71: Require that mineral extraction operations within streams as well as dry land deposits be performed in a way that is compatible with surrounding land uses, does not adversely affect the environment, and which mitigates related impacts through site-specific mitigation measures.
- NRP-72: Establish mitigation fees for development which does not compensate for environmental impacts.
- NRP-73: Include the Stony Creek fan aggregate resource on the groundwater recharge overlay to the Land Use Diagram and reference the overlay when reviewing development proposals in order to protect the resource from future incompatible encroachment, including overcovering by houses and other forms of development.
- NRP-74: Ensure proper management of the Stony Creek aggregate resource.
- NRP-75: Require that adequate security be posted to ensure that surface mining reclamation plans are implemented.
- NRP-76: Petition the State Geologist to designate and protect mineral resources in the county from incompatible uses.
- NRP-77: Require a Master Environmental Assessment and Aggregate Resource Management Plan to be completed on Stony Creek for gravel operations in cooperation with the Glenn County Resource Conservation District.
- NRP-78: Support the natural gas industry while ensuring that its operations are carried out in a safe and environmentally responsible manner.
- NRP-79: Protect gas fields from incompatible development and encroachment through appropriate land-use planning.
- NRP-80: Consider the location of gas wells when drafting urban limit lines or considering approval of urban development.
- NRP-81: Entertain proposals for additional hydroelectric development and biomass energy conversion, subject to the siting policies contained in the Energy Element of the General Plan.

## EXISTING SETTING

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### **Statewide Resources**

In 2012, the California Geological Survey identified that approximately 4 billion tons of permitted aggregate reserves lie within the 31 aggregate study areas in California. These permitted aggregate reserves have been determined to be acceptable for commercial use, exist within properties owned or leased by aggregate producing companies, and have permits allowing mining of aggregate material. Sand, gravel, and crushed stones are construction materials that are collectively referred to as construction aggregate. These materials provide the bulk and strength to Portland cement concrete (PCC), asphaltic concrete (AC), plaster, and stucco. Other uses include road base, subbase, railroad ballast, and fill.

From 1981 to 2010, California consumed an average of about 180 million tons of construction aggregate (all grades) per year (CGS, 2012).



## Regional Setting

Notable mineral resources in Glenn County include natural gas and construction grade aggregate material. In addition, published reports indicate past attempts to exploit deposits of chromite, molybdenite and copper. Primary areas for gravel extraction occur along Stony Creek and the Sacramento River, although there are other pockets of gravel scattered throughout the county. Several gas fields contribute to a significant quantity of natural gas production in Glenn County. Of these, the Malton-Black Butte field located on the border with Tehama County in eastern Glenn County, and the Willows-Beehive Bend field located in southeastern Glenn County account for nearly 80 percent of total gas production in the county. No oil or geothermal resources have been discovered in the county.

Mining in Glenn County was primarily related to the extraction of strategic minerals during World Wars I and II. The extraction of chrome and manganese essentially ended in the late 1940s with the loss of government demand and subsidies. The primary mineral resources in Glenn County are sand, gravel, and natural gas. In 1997, the California Geological Survey assessed the Glenn County Production-Consumption (P-C) Region mineral resources, with a focus on aggregate resources. Mineral resources in the region are classified based on whether the aggregate meets the specifications for use in PCC. This aggregate is termed “PCC-grade aggregate.” The material quality specifications for PCC-grade aggregate are more restrictive than the specifications for aggregate for other applications. As a result of the strict specifications, PCC-grade aggregate deposits are scarcer and more valuable than other aggregate resources.

To be considered significant for the purpose of mineral land classification, a mineral deposit or group of deposits, must meet criteria adopted by the State Mining and Geology Board. These criteria include marketability and threshold values. The threshold value is approximately \$17.375 million for a construction aggregate deposit. PCC-grade aggregate sells for about \$13 per ton in the Glenn County P-C Region; therefore, \$17,375,000 equates to about 1.3 million tons of PCC-grade aggregate material.

## Mineral Resource Classification

Pursuant to the Surface Mining and Reclamation Act of 1975 (SMARA), the California State Mining and Geology Board oversees the Mineral Resource Zone (MRZ) classification system. The MRZ system characterizes both the location and known/presumed economic value of underlying mineral resources. The mineral resource classification system uses four main MRZs based on the degree of available geologic information, the likelihood of significant mineral resource occurrence, and the known or inferred quantity of significant mineral resources. The four classifications are described in Table 5.6-1 below.

**TABLE 5.6-1: MINERAL RESOURCE CLASSIFICATION SYSTEM**

CLASSIFICATION	DESCRIPTIONS
MRZ-1	Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
MRZ-2	Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
MRZ-3	Areas containing mineral deposits, the significance of which cannot be evaluated.
MRZ-4	Areas where available information is inadequate for assignment to any other MRZ classification.

Source: California Department of Conservation Division of Mines and Geology, Accessed September 2019

## Mineral Extraction Activities

Approximately 22 million tons of PCC-grade aggregate reserves are permitted for production in the County (CGS, 2018).

## Local Mineral Resources

Figure 5.6-1: Mineral Resource Zones shows mineral resources within the county. As shown on Figure 5.6-1, the northern central portion of the county consists of a large PCC-grade aggregate deposit situated along Stony Creek, Walker Creek, Black Butte Lake, and Elk Creek, classified as MRZ-2b (high likelihood of significant aggregate deposit). Portions of areas around Elk Creek and Black Butte Lake are designated as MRZ-2a, "significant aggregate deposit." The majority of the county contains areas that are designated as MRZ-3a, "areas which may contain significant aggregate deposits." The western portion of the county largely remains unclassified by the Department of Conservation. Table 5.6-2 identifies significant mineral resources within the county.

**TABLE 5.6-2: MINERAL RESOURCES WITHIN THE COUNTY**

<i>CLASSIFICATION</i>	<i>DESCRIPTIONS</i>
<b>MRZ-2a</b>	Areas containing significant aggregate deposit
<b>MRZ-2b</b>	Areas where a high likelihood of significant aggregate deposits are presence.
<b>MRZ-3a</b>	Areas which may contain significant aggregate deposits, the significance of which cannot be evaluated.

*SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION DIVISION OF MINES AND GEOLOGY, SEPTEMBER 2019*

## Local Natural Gas Resources

Glenn County currently has several operational natural gas fields that produce significant amounts of natural gas. Of these, the Malton-Black Butte field located on the border with Tehama County in eastern Glenn County, and the Willows-Beehive Bend field located in southeastern Glenn County account for the majority of total gas production in the county. Within the county there are approximately 274 Active wells, 164 Idle wells, 34 Canceled wells, and 1,313 Plugged wells. Generally, wells are located in the eastern portions of the county generally east of Interstate 5, and also west of the Orland Planning Area. Figure 5.6-2 shows gas well location and status throughout the county.

## REFERENCES

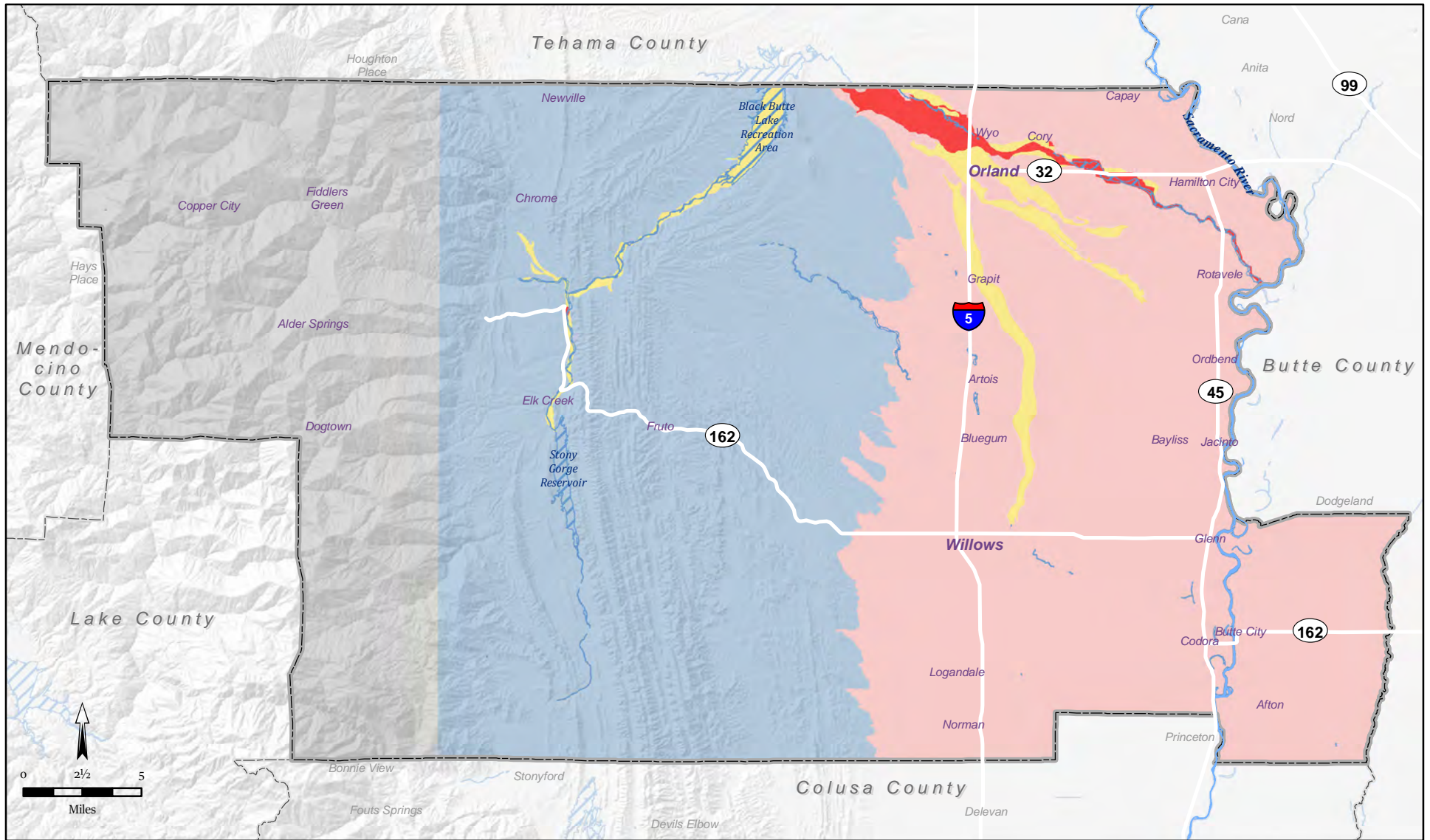
California Department of Conservation. 2002. California Geological Survey, Note 36.

California Natural Resources Agency (2012) updated mineral land classification map.

Department of Conservation. 1997. Open-File Report 97-02: Mineral Land Classification of Concrete-Grade Aggregate Resources in Glenn County, Plates 1 and 2.

Department of Conservation. 2018. Aggregate Sustainability in California. Map sheet 52.

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Sources: California Department of Conservation, Division of Mines and Geology, Open-File Report 97-02: Mineral Land Classification of Concrete-Grade Aggregate Resources in Glenn County, California, 1997, Plates 1 and 2. Map date: June 27, 2019. Revised December 10, 2019.

COUNTY OF GLENN, CALIFORNIA

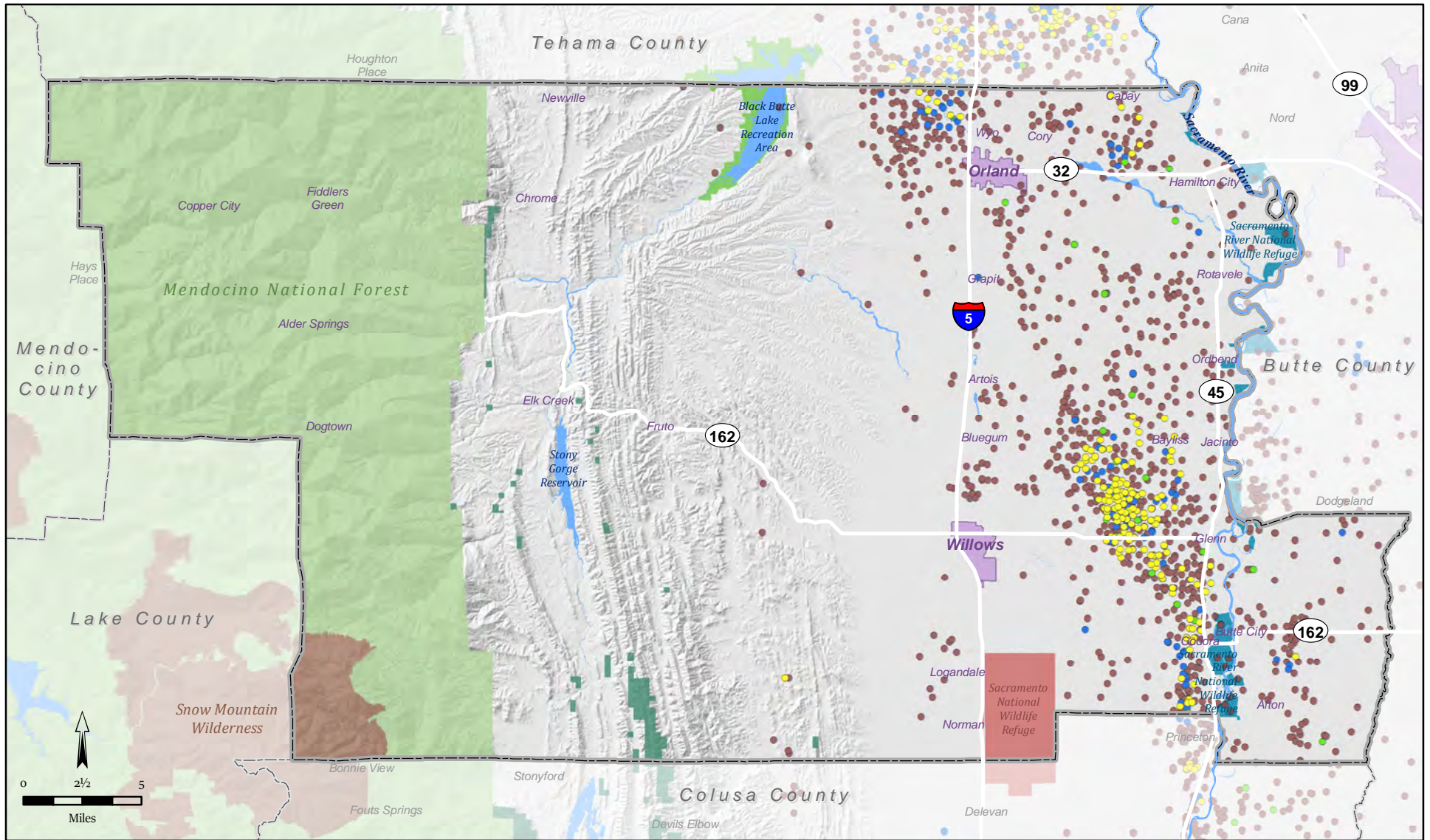
FIGURE 5.6-1. MINERAL RESOURCE ZONES

**Legend**

- MRZ-2a: Significant aggregate deposit
- MRZ-2b: High likelihood of significant aggregate deposit
- MRZ-3a: May contain significant aggregate deposit
- Unclassified
- Unmapped

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Sources: USGS National Map; USGS Protected Areas Database; CalAtlas; California Department of Conservation, Oil Gas and Geothermal Resources, July 2, 2019. Map date: July 2, 2019.

**Legend**

**Public Lands**

- Mendocino National Forest
- Wilderness Area
- USFWS Sacramento National Wildlife Refuge
- USFWS Sacramento River National Wildlife Refuge
- BLM Lands

**Wells by Status**

- Active (274 wells)
- Canceled (34 wells)
- Idle (164 wells)
- Plugged (1,313 wells)

COUNTY OF GLENN, CALIFORNIA

FIGURE 5.6-2. Gas Well Status

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## 5.7 HYDROLOGY AND WATER QUALITY

Glenn County contains both surface and ground water resources. Water used for urban and community land uses comes almost exclusively from groundwater sources. Therefore, the discussion of groundwater resources and groundwater quality in Glenn County is included in Section 3.1- Community Services and Facilities. The analysis in this section focuses on surface water resources within Glenn County. The information in this section was derived primarily from the 2007 Glenn County Preliminary Plan for Groundwater and Coordinated Water Management, the Northern California Water Association, and the U.S. Bureau of Reclamation.

### REGULATORY SETTING

#### *FEDERAL*

#### **CLEAN WATER ACT (CWA)**

The CWA, initially passed in 1972, regulates the discharge of pollutants into watersheds throughout the nation. Section 402(p) of the act establishes a framework for regulating municipal and industrial stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) Program. Section 402(p) requires that stormwater associated with industrial activity that discharges either directly to surface waters or indirectly through municipal separate storm sewers must be regulated by an NPDES permit.

The State Water Resources Control Board (SWRCB) is responsible for implementing the Clean Water Act and does so through issuing NPDES permits to cities and counties through regional water quality control boards. Federal regulations allow two permitting options for storm water discharges (individual permits and general permits). The SWRCB elected to adopt a statewide general permit (Water Quality Order No. 2003-0005-DWQ) for small Municipal Separate Storm Sewer Systems (MS4s) covered under the CWA to efficiently regulate numerous storm water discharges under a single permit. Permittees must meet the requirements in Provision D of the General Permit, which require the development and implementation of a Storm Water Management Plan (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable. The SWMP must include the following six minimum control measures:

- 1) Public Education and Outreach on Storm Water Impacts
- 2) Public Involvement/Participation
- 3) Illicit Discharge Detection and Elimination
- 4) Construction Site Storm Water Runoff Control
- 5) Post-Construction Storm Water Management in New Development
- 6) Redevelopment and Pollution Prevention/Good Housekeeping for Municipal Operations

#### *NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)*

National Pollutant Discharge Elimination System (NPDES) permits are required for discharges of pollutants to navigable waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, the ocean, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. NPDES permits are issued under the Federal Clean Water Act, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.)

The RWQCB issues these permits in lieu of direct issuance by the Environmental Protection Agency, subject to review and approval by the EPA Regional Administrator (EPA Region 9). The terms of these NPDES permits implement pertinent provisions of the Federal Clean Water Act and the Act's implementing regulations,



including pre-treatment, sludge management, effluent limitations for specific industries, and anti-degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable so as to achieve the Clean Water Act's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the CWC.

These NPDES permits regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. NPDES permits are issued for five years or less, and are therefore to be updated regularly. The rapid and dramatic population and urban growth in the Central Valley Region has caused a significant increase in NPDES permit applications for new waste discharges. To expedite the permit issuance process, the RWQCB has adopted several general NPDES permits, each of which regulates numerous discharges of similar types of wastes. The SWRCB has issued general permits for stormwater runoff from construction sites statewide. Stormwater discharges from industrial and construction activities in the Central Valley Region can be covered under these general permits, which are administered jointly by the SWRCB and RWQCB.

### *STATE*

#### **California Water Code**

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Division 7 of the California Water Code) (Porter-Cologne Act). The Porter-Cologne Act grants the SWRCB and each of the Regional Water Quality Control Boards (RWQCBs) power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the Federal Clean Water Act. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a Water Quality Control Plan (Basin Plan) for its region. The regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

#### **Water Quality Control Plan for the Central Valley Region**

The Water Quality Control Plan for the Central Valley Region (Basin Plan) includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The term "water quality standards," as used in the Federal Clean Water Act, includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain the water quality standards.

The RWQCB regulates waste discharges to minimize and control their effects on the quality of the region's ground and surface water. Permits are issued under a number of programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. The Basin Plan reflects, incorporates, and implements

applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code and the Clean Water Act.

### **Sacramento Valley Integrated Regional Water Management Plan**

Northern California water suppliers in partnership with local governments, environmental representatives and state and federal agencies continue to refine an "Integrated Regional Water Management Plan for the Sacramento Valley" (Regional Plan). The Regional Plan is designed to protect Northern California water rights and supplies and it will serve as a roadmap for present and future generations to provide water for farms, cities, birds, fish and recreation.

#### *LOCAL*

### **Glenn County Water Quality Program**

The Glenn County Water Quality Program if implemented through the Department of Environmental Health. The Water Quality Program is responsible for the enforcement of standards and codes regarding the construction and destruction of water wells, monitoring wells, exploratory soil borings and other special use wells.

The Glenn County Department of Environmental Health reviews and approves permit applications and conducts on-site inspections to verify proper seals, well locations and site information. All new wells must have an approved permit from the Environmental Health Department prior to the start of any construction. The purpose of the program is to protect groundwater quality and to ensure an adequate and safe drinking water supply for the residents of Glenn County. Improperly constructed, altered, maintained, or destroyed wells are a potential pathway for introducing poor quality water, pollutants, and contaminants into good-quality ground water.

### **Glenn Groundwater Authority**

The Glenn Groundwater Authority (GGA) is a nine-member, multi-agency Joint Powers Authority (JPA) that was formed on June 20, 2017. The GGA is the Groundwater Sustainability Agency (GSA) responsible for implementation of the Sustainable Groundwater Management Act (SGMA) in the Glenn County portion of the Colusa Subbasin (5-21.52). The Board of the GGA is composed of representatives of the following:

*County of Glenn, City of Orland, City of Willows, Glenn-Colusa Irrigation District, Glide Water District, Princeton-Codora-Glenn/Provident Irrigation District (1 seat), Orland-Artois Water District, and Kanawha Water District formed with the primary purpose to comply with and implement SGM*

The Glenn Groundwater Authority was created by forming a Joint Exercise of Powers Agreement, signed by nine local agencies, with the purposes of being a Groundwater Sustainability Agency for the Glenn County portion of the Colusa Subbasin.

### **County Groundwater Management Plan**

Groundwater management in Glenn County is conducted in accordance with the management objectives in the Glenn County Groundwater Management Plan. The Glenn County Groundwater Management Plan was adopted by the Board of Supervisors on February 15, 2000 (Ordinance 1115) and requires that basin management objectives (BMOs) for minimum groundwater levels, minimum water quality and maximum inelastic subsidence be established for each of the 17 subareas within the plan area which generally includes areas of the county where irrigated agriculture is conducted; primarily in the Valley portion of the county.

## **Glenn County General Plan**

The existing Glenn County General Plan identifies the following goals, policies, and implementation measures related to hydrology and water quality:

GOALS:

**NRG-2: Protection and management of local water resources**

**PSG-6: Protection and enhancement of water quality**

POLICIES:

NRP-22: Oppose the exportation of groundwater resources outside the county.

NRP-23: Support legislation which will provide for a locally controlled Glenn County groundwater management district.

NRP-24: Recognize the following local priorities when dealing with questions of ground and surface water use:

- |         |                          |
|---------|--------------------------|
| Highest | 1) Household/Domestic    |
|         | 2) Agriculture           |
|         | 3) Industrial/Commercial |
|         | 4) Wildlife/Conservation |
| Lowest  | 5) Exportation           |

NRP-25: Protect groundwater recharge areas in the county from overcovering and contamination by carefully regulating the type of development which occurs within these areas.

NRP-26: Discourage onsite sewage disposal systems in areas with high groundwater recharge potential and eliminate existing concentrations of septic tanks in such areas through construction of community sewage treatment and disposal systems.

NRP-27: Prohibit uses with the potential to accidentally discharge harmful groundwater pollutants in areas of high groundwater recharge, unless appropriate mitigation measures have been incorporated into the operation of such uses.

NRP-28: Identify and monitor potential sources of groundwater pollution, including harmful agricultural practices.

NRP-29: Limit structural coverage and impervious surfaces within areas of high groundwater recharge through application of zoning that recognizes the importance of this feature.

NRP-30: Protect important watershed areas from poor development practices and potential degradation.

NRP-31: Monitor actions taken at the State and federal level which impact water resources in order to evaluate the effects of these actions on the county's resources.

NRP-32: Support programs that will provide better information to the County and other agencies concerning reservoir siltation and aid in the formulation of an appropriate plan of action.

- NRP-33: Carefully study the potential impact that any future reservoir construction may have on groundwater recharge areas in Glenn County.
- NRP-34: Recognize the value of irrigation system infrastructure by discouraging development within established irrigation district boundaries which would prematurely reduce the utility of such systems.
- NRP-35: Encourage the development of water conservation programs by water purveyors for both agricultural and urban uses.
- NRP-36: Encourage development of educational programs to increase public awareness of water conservation opportunities and the potential benefits of implementing conservation measures and programs.
- NRP-37: Recognize that efforts to reserve water in Glenn County for wildlife may also bring long-term benefits to the effort to retain water resources locally.
- NRP-38: Recognize the impacts of gravel extraction on groundwater quantity and quality and encourage extraction methods that preserve and enhance groundwater resources.
- PSP-43: Support ongoing regulatory and compliance efforts at the federal and State level for the protection of water quality.
- PSP-44: Support the Rice Herbicide Action Plan and encourage other agricultural practices which reduce the threat of surface water pollution from agricultural chemical use.
- PSP-45: Zone floodways and stream channels in a manner that promotes protection of water quality.
- PSP-46: Discourage on-site sewage disposal systems on small lots in areas containing gravelly soils.
- PSP-47: Support the preparation of area groundwater studies to ensure the protection of groundwater and to ensure that the holding capacity of the area is not exceeded.
- PSP-48: Support education programs which increase the public awareness of the proper disposal of hazardous wastes in order to protect groundwater.

## EXISTING SETTING

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### **Regional Hydrology**

Glenn County is located in the Sacramento River watershed. The Sacramento River runs north-south through the eastern part of Glenn County, forming its eastern boundary on its way to the Delta and San Francisco Bay. Many tributary streams flow from the mountains on both sides of the valley into the Sacramento River. The Sacramento River is the primary source of surface irrigation water in the County. The total length of the Sacramento River is approximately 327 miles and its drainage area encompasses approximately 27,200 square miles. For irrigation purposes, water from the river is diverted into two major canals, the Glenn-Colusa Canal and the Tehama-Colusa Canal. Stony Creek is also a predominant source of surface water, supporting two reservoirs within the County - Stony Gorge and Black Butte. Stony Creek is the second largest tributary on the west side of the Sacramento Valley; it merges with the Sacramento River south of Hamilton City. The Stony Creek watershed is 741 square miles and includes portions of Glenn, Colusa, and Tehama counties. The watershed is roughly divided into Upper Stony Creek and Lower Stony Creek, with Black Butte Reservoir forming the boundary. The majority of the upper watershed is publicly owned (Mendocino National Forest), while most (96%) of the lower watershed is privately owned agricultural land.

## Climate

Climate has a direct impact upon the availability of water in Glenn County. The SVAB has an inland Mediterranean climate, with mild, rainy winter weather from November through March and warm to hot, dry weather from May through September. Sacramento Valley temperatures range from 20 to 115 degrees Fahrenheit and the average annual rainfall is 20 inches. The topographic features giving shape to the SVAB are the Coast Range to the west, the Sierra Nevada to the east, and the Cascade Range to the north. The predominant annual and summer wind pattern in the Sacramento Valley is the sea breeze commonly referred to as the “Delta breeze.” These cool winds originate from the Pacific Ocean and flow through a sea-level gap in the Coast Range called the Carquinez Strait.

Glenn County has warm, dry days and relatively cool nights, with clear skies and limited rainfall. Winters are mild with light rains. In summer, high temperatures often exceed 100 degrees, with averages in the mid and high 90’s. Summer low temperatures average in the high 50’s.

Rainfall in the Sierra Nevada, Coast Range, and Cascade Mountains contribute to surface water flow and groundwater recharge in the Sacramento River Basin. The general direction of surface water flow is toward the center of the valley, flowing south. Water diversions, evaporation, and groundwater recharge reduce flows as the Sacramento River approaches the Delta. Peak flow typically occurs in the months January through March and minimum flows typically occur September through November.

## Surface Water Bodies

The Sacramento River is the only major naturally occurring water body in Glenn County. The three major man-made water bodies in the County are the Tehama Colusa Canal, the Glenn Colusa Canal, and the Stoney Gorge Reservoir. The following discussion provides information on the location, ownership, infrastructure, and an overview of the operational practices of the major water bodies that relate to or are within Glenn County.

**Sacramento River.** The Sacramento River is the largest river in the regional area, which is aligned in a north-south direction. The Sacramento River passes through the area on its way to the Delta and San Francisco Bay. Many tributary streams flow from the mountains on either side of the valley and then across the valley floor to the Sacramento River. These tributaries provide much of the surface water supply within the Four County area. The major tributary streams in terms of flow volume in the Four County Area that originate west of the Sacramento River include Cottonwood Creek, Elder Creek, Thomes Creek, Sehorn creek, Stony Creek, Willow Creek, Logan Creek, Cortina Creek, and Sand Creek. Major tributary streams in the Four County area that originate east of the Sacramento River include Battle Creek, Paynes Creek, Antelope Creek, Mill Creek, Deer Creek, Pine Creek, Big Chico Creek, Butte Creek, and Little Dry Creek. Canals in the Four County area include the Tehama Colusa Canal, the Glenn Colusa Canal, Colusa Basin Drainage Canal, Cherokee Canal, Western Canal, and the Corning Canal.

According to a 2005 report by the Glenn County Department of Agriculture, monthly mean daily flows in the Sacramento River near Red Bluff in northern Tehama County range from 6,900 to 20,400 cfs for the period 1964-2003. Monthly mean daily flows in the Sacramento River near Grimes in Southern Colusa County range from 6,500 to 16,900 cfs for the period 1946-2003 (USGS 2003). Water diversions, groundwater recharge discussed in Section 3.4, and evaporation reduce flows in the river as it passes through the Four County area even with the inflows from the various tributaries. Peak flow typically occurs in January, February and March, while minimum flow occurs in September, October, and November

**Tehama-Colusa Canal.** The Tehama Colusa Canal receives water from the settling basin at Red Bluff Diversion Dam. Groundbreaking ceremonies for the canal took place July 31, 1965. The canal is 110.9 miles long. It travels south from Red Bluff Diversion Dam through Tehama, Glenn, Colusa Counties, and into Yolo County, and terminates about two miles south of Dunnigan, California. The initial capacity of the canal is 2,530 cubic feet per second, diminishing to 1,700 cubic feet per second at the terminus.

The Tehama Colusa Canal System diverts water from the Sacramento River for use by various water districts across the region. The canal system is owned by the U.S. Bureau of Reclamation (USBR) and operated by the Tehama Colusa Canal Authority (TCCA). The dam at Red Bluff is owned and operated by the USBR. Within this arrangement exists a network of release structures and pumps that frequently result in complex flow conditions in the canals and pipes that deliver water to the districts. The TCCA's mission statement is: "... to secure, protect, and develop dependable and affordable sources of water and to operate, maintain, and improve the works essential to deliver such water." Operating two canal systems for the USBR (the Tehama Colusa Canal, 110 miles long and the Corning Canal, 15 miles long), the combined system serves 17 water districts.

**Glenn-Colusa Canal.** The Glenn Colusa Canal is operated by the Glenn Colusa Irrigation District (GCID). GCID is the largest water district in the Sacramento Valley. Located approximately eighty miles north of Sacramento, California, the district boundaries cover approximately 175,000 acres; of which 153,000 acres are deeded property and 138,800 are irrigable. There are 1,076 landowners in the District and an additional 300 tenant water users. There are an additional 5,000 acres of private habitat land, and winter water supplied by GCID to thousands of acres of rice land provides valuable habitat for migrating waterfowl during the winter months.

GCID's main pump station, its only diversion from the Sacramento River, is located near Hamilton City. The District's 65-mile long Main Canal conveys water into a complex system of nearly 1,000 miles of canals, laterals and drains, much of it constructed in the early 1900s.

From its first diversions until 1964, GCID relied upon its historic water rights and adequate water supply from the Sacramento River hydrologic system which receives rainfall and snowmelt from a 27,246 square mile watershed with average runoff of 22,389,000 acre-feet, providing nearly one-third of the state's total natural runoff. In 1964, after nearly two decades of negotiations with the United States, GCID along with other Sacramento River water rights diverters entered into "Settlement Water Contracts" with the USBR. These Settlement Contracts were necessary at that time to allow the USBR to construct, operate, and divert water for the newly constructed Central Valley Project. The contract provided GCID with water supply for the months of April through October for 720,000 acre-feet of base supply, and 105,000 acre-feet of Central Valley Project water that is purchased during the months of July and August. During a designated critical year when natural inflow to Shasta Reservoir is less than 3.2 million acre-feet, GCID's total supply is reduced by 25 percent, to a total of 618,000 acre-feet.

Additionally, the District has rights under a (SWRCB permit to "winter water" from November 1 through March 31 at a 1,200 cfs diversion rate. This water supply is used for rice straw decomposition and waterfowl habitat. The permit provides 150,000 acre-feet for rice straw decomposition and 32,900 acre-feet for crop consumption.

Groundwater can be used to supplement GCID's supplies, with 5,000 acre-feet available from District wells, and approximately 45,000 acre-feet from privately owned landowner wells.

**Stony Gorge Reservoir.** Stony Gorge Dam, which forms Stony Gorge Reservoir, is part of the Orland Project. Completed in 1928, the dam impounds Stony Creek for irrigation storage and flood control. Hydroelectric power is also produced. Along with the East Park Dam about fifteen miles upstream, it is part of the Orland Project in the Sacramento valley, one of the Bureau of Reclamation's first generation of water projects. The dam is owned by the Bureau and is operated by the local Orland Unit Water Users` Association

The reservoir it creates has a water surface of 1,280 acres, a shoreline of about eighteen miles, and a maximum capacity of 58,500 acre-feet. Recreation includes camping, boating, and fishing. Stony Gorge Reservoir is located approximately 21 miles west of Willows. The small community of Elk Creek lies immediately northwest of the reservoir, and the town of Stonyford lies a few miles south of the reservoir.

**Local Creeks.** Glenn County is primary creek drainages include Stony Creek, Willow Creek, and Walker Creek. Stony Creek flows from the mountainous uplands, through the foothills, and enters the Sacramento Valley just west of the Orland Buttes. It runs southwesterly into the Sacramento River about five miles southeast of Hamilton City. Draining foothill areas west of Stony Creek are Willow and Walker Creeks. Most northerly is Walker Creek which flows southeasterly, joining Willow Creek east of Willows. Willow Creek continues into Colusa County, eventually entering the Colusa Basin Drain.

## Watersheds

A watershed is a region that is bound by a divide that drains to a common watercourse or body of water. Watersheds serve an important biological function, oftentimes supporting an abundance of aquatic and terrestrial wildlife including special-status species and anadromous and native local fisheries. Watersheds provide conditions necessary for riparian habitat.

The State of California uses a hierarchical naming and numbering convention to define watershed areas for management purposes. This means that boundaries are defined according to size and topography, with multiple sub-watersheds within larger watersheds. Table 5.7-1 shows the primary watershed classification levels used by the State of California. The second column indicates the approximate size that a watershed area may be within a particular classification level, although variation in size is common.

**TABLE 5.7-1: STATE OF CALIFORNIA WATERSHED HIERARCHY NAMING CONVENTION**

<i>WATERSHED LEVEL</i>	<i>APPROXIMATE SQUARE MILES (ACRES)</i>	<i>DESCRIPTION</i>
Hydrologic Region (HR)	12,735 (8,150,000)	Defined by large-scale topographic and geologic considerations. The State of California is divided into ten HRs.
Hydrologic Unit (HU)	672 (430,000)	Defined by surface drainage; may include a major river watershed, groundwater basin, or closed drainage, among others.
Hydrologic Area (HA)	244 (156,000)	Major subdivisions of hydrologic units, such as by major tributaries, groundwater attributes, or stream components.
Hydrologic Sub-Area (HSA)	195 (125,000)	A major segment of an HA with significant geographical characteristics or hydrological homogeneity.

SOURCE: CALIFORNIA DEPARTMENT OF WATER RESOURCES, 2019

## Hydrologic Regions/Units in Glenn County

The majority of Glenn County is considered part of the Sacramento River Hydrologic Region. However, a small, western corner of the County contributes its drainage to the Pacific through the North Coast Hydrologic Region.

**Sacramento River Hydrologic Region.** The Sacramento River hydrologic region covers approximately 17.4 million acres (27,200 square miles). The region includes all or large portions of Modoc, Siskiyou, Lassen, Shasta, Tehama, Glenn, Plumas, Butte, Colusa, Sutter, Yuba, Sierra, Nevada, Placer, Sacramento, El Dorado, Yolo, Solano, Lake, and Napa counties, and small areas of Alpine and Amador counties. Geographically, the region extends south from the Modoc Plateau and Cascade Range at the Oregon border, to the Sacramento-San Joaquin Delta. The Sacramento Valley, which forms the core of the region, is bounded to the east by the crest of the Sierra Nevada and southern Cascades and to the west by the crest of the Coast Range and Klamath Mountains.

**North Coast Hydrologic Region.** The North Coast hydrologic region covers approximately 12.46 million acres (19,470 square miles) and includes all or portions of Modoc, Siskiyou, Del Norte, Trinity, Humboldt, Mendocino, Lake, and Sonoma counties, and small areas of Shasta, Tehama, Glenn, Colusa, and Marin counties. Extending from the Oregon border south to Tomales Bay, the region includes portions of four geomorphic provinces.

**Hydrologic Units.** Within Glenn County there are two hydrologic units. These include the Lower Butte and Stony Creek.

**Hydrologic Areas.** For purposes of planning on a County-wide basis, hydrologic areas are generally considered to be the appropriate watershed planning level. As specific projects within the County are developed the hydrologic area level may be too large in terms of scale, and a hydrologic subarea may be considered more appropriate. The remainder of this section is based on the hydrologic area level for watershed planning purposes.

Glenn County is located within 20 hydrologic areas. These include: Angel Slough, Black Butte River, Colusa Drain, Colusa Trough, Corbin Creek-Eel River, Grindstone Creek, Jewett Creek-Sacramento River, Little Stony Creek, Logan Creek, Lower Butte Creek, Lower Stony Creek, Middle Butte Creek, Middle Stony Creek, North Fork Stony Creek, Sacramento River, South Fork Willow Creek, Stone Corral Creek, Upper Stony Creek, Walker Creek, and Willows Creek. Figure 5.7-2 shows each watershed within the county.

## Groundwater basins

There are seven groundwater basins within Glenn County: the Stonyford Town Area, Funks Creek, Squaw Flat, Stony Gorge Reservoir, Elk Creek Area, Chrome Town Area, and Sacramento Valley Groundwater Basins. Of these, all except the Sacramento Valley Groundwater Basin are small (less than 5 square miles) isolated basins located in the Coast Ranges in the central to western portions of the County. These small basins have not been divided into subbasins. The Stonyford Town Area and Funks Creek Groundwater Basins also extend into Colusa County. The Sacramento Valley Groundwater Basin, in contrast to the smaller basins described above, covers over 5,900 square miles and 10 counties, and has been divided into 18 subbasins. The majority of the county overlies the Sacramento Valley - Colusa Groundwater subbasin. Other prominent subbasins within the county are the Sacramento Valley- Butte subbasin at the southeast corner of the county, Sacramento Valley- Corning at the northern portion of the county. The Sacramento Valley – Butte, Colusa, and Corning basins are subbasins of the Sacramento Valley Groundwater Basin. Other minor basins including Chrome Town Area, Elk Creek, Funks Creek, Squaw Flat, Stony Gorge Reservoir and Stonyford Town Area. Figures 5.7-1 shows the groundwater basins within the county.



**Butte Subbasin.** The Butte Subbasin is a portion of the larger Sacramento Valley Groundwater Basin covering approximately 207,342 acres. The subbasin spans Glenn and Tehama Counties and is bounded on the west by the Coast Ranges, on the north by Thomes Creek, on the east by the Sacramento River, and on the south by Stony Creek except for a small portion following the Glenn-Tehama County boundary

**Colusa Subbasin.** The Colusa Subbasin is a portion of the larger Sacramento Valley Groundwater Basin covering approximately 723,823 acres. The subbasin spans Glenn and Colusa Counties. It is generally bounded by Stony Creek to the north, the Coast Ranges to the west, to the east by the Sacramento River and the Reclamation District 1004 western boundary, and to the south by the Colusa-Yolo County boundary and the Colusa County Water District boundary. The Glenn Groundwater Authority (GGA) governs the Glenn County portion of the Colusa Subbasin and consists of nine member agencies, including the City of Willows (GGA acreage 286,154). According to Department of Water Resources (DWR) Bulletin 118 Estimates of groundwater extraction for agricultural, municipal and industrial, and environmental wetland uses are 310,000, 14,000 and 22,000 acre-feet respectively. Deep percolation from applied water is estimated to be 64,000 acre-feet. The storage capacity of the subbasin was estimated based on estimates of specific yield for the Sacramento Valley. Estimates of specific yield, determined on a regional basis, were used to obtain a weighted specific yield conforming to the subbasin boundary. The estimated specific yield for the subbasin is 7.1 percent. The estimated storage capacity to a depth of 200 feet is approximately 13,025,887 acre-feet.

**Corning Subbasin.** The Corning Subbasin is a portion of the larger Sacramento Valley Groundwater Basin covering approximately 207,342 acres. The subbasin spans Glenn and Tehama Counties and is bounded on the west by the Coast Ranges, on the north by Thomes Creek, on the east by the Sacramento River, and on the south by Stony Creek except for a small portion following the Glenn-Tehama County boundary.

## **Groundwater Management**

The Sustainable Groundwater Management Act (SGMA) passed in the fall of 2014, establishing a new structure for managing groundwater resources in California. The Department of Water Resources defines groundwater basins and subbasins and assigns a priority designation in relation to SGMA (High, Medium, Low, Very Low). High and Medium priority basins are required to be managed under SGMA by a Groundwater Sustainability Agency (GSA) or the State Water Resources Control Board. GSAs have the opportunity to manage groundwater at the local level by developing and implementing a Groundwater Sustainability Plan by 2022 and ensuring sustainable conditions by 2042 while avoiding six distinct undesirable results. If GSAs are not successful locally, the State Water Resources Control Board will intervene and assume responsibility for basin management. Glenn County has local GSA coverage and is currently compliant with SGMA.

GSAs will be working on the development of Groundwater Sustainability Plans (GSP) for the next several years. DWR has released the Groundwater Sustainability Plans and Projects Proposal Solicitation Package to allow agencies to apply for Proposition 1 grant funding to support GSP development and projects. GSAs within Glenn County are currently focused on applying for Proposition 1 grants for the development of GSPs within each subbasin to cover all areas within the County.

GSAs within Glenn County are currently focused on applying for Proposition 1 grants for the development of GSPs within each subbasin to cover all areas within the County. GSAs in the region are coordinating their Proposition 1 grant applications for GSP development in order to secure and maximize funding for shared subbasins.

Glenn County was also awarded a grant in 2016, as part of the Water Quality, Supply, and Infrastructure Improvement Act of 2014, (Sustainable Groundwater Planning Grant Program), administered by State of California, Department of Water Resources; in the amount of nearly \$250,000 to complete a project supporting Sustainable Groundwater Management Activities. With the grant, Glenn County completed the

Data Management and Hydrogeologic Conceptual Model Project (2016-2018) to support sustainable groundwater management activities. This Project includes the compilation of groundwater data, development of a groundwater data management system (DMS), creation of a water budget and hydrogeologic conceptual model (HCM), and ranking and scoring of groundwater-surface water modeling platforms. The data and models produced from this Project will be incorporated into one or more Sustainable Groundwater Management Act (SGMA) compliant Groundwater Sustainability Plans. The project concluded in July 2018.

### **Water Quality**

Under the USGS National Water Quality Assessment Program, the USGS conducted an intensive study of the Sacramento River Basin and collected data between 1995 and 1998. Through the sampling process, indicator streams were determined based upon the characterization that they drain small to intermediate sized watersheds with relatively homogeneous land use and geology.

The findings of the USGS study indicated that the water of the Sacramento River and its major tributaries is generally of good quality; the amount of dissolved solids in the Sacramento River and its major tributaries (Yuba, Feather, and American rivers) was low at all of the sampled locations. Higher median concentrations of dissolved solids occurred at agricultural sites such as the Sacramento Slough and Colusa Basin Drain, but those are diluted upon mixing with Sacramento River water. Nutrient concentrations such as nitrate also were low throughout the Sacramento River Basin, and drinking-water standards for nitrate were not exceeded during the course of this study. The concentrations of molinate and other pesticides (used in rice farming) measured during this study in the Colusa Basin Drain or in the Sacramento River, represent a significant improvement over concentrations measured in previous years.

### **Stormwater Quality**

Potential hazards to surface water quality include the following nonpoint pollution problems: high turbidity from sediment resulting from erosion of improperly graded construction projects, concentration of nitrates and dissolved solids from agriculture or surfacing septic tank failures, contaminated street and lawn run-off from urban areas, and warm water drainage discharges into cold water streams.

The most critical period for surface water quality is following a rainstorm which produces significant amounts of drainage runoff into streams at low flow, resulting in poor dilution of contaminants in the low flowing stream. Such conditions are most frequent during the fall at the beginning of the rainy season when stream flows are near their lowest annual levels. Besides the greases, oils, pesticides, litter, and organic matter associated with such runoff, heavy metals such as copper, zinc, and cadmium can cause considerable harm to aquatic organisms when introduced to streams in low flow conditions.

Urban stormwater runoff was managed as a non-point discharge (a source not readily identifiable) under the Federal Water Pollution Control Amendments of 1972 (PL 92-500, Section 208) until the mid-1980's. However, since then, the Federal Environmental Protection Agency has continued to develop implementing rules which categorize urban runoff as a point source (an identifiable source) subject to National Pollution Discharge Elimination System (NPDES) permits. Rules now affect medium and large urban areas, and further rulemaking is expected as programs are developed to meet requirements of Federal water pollution control laws.

Surface water pollution is also caused by erosion. Excessive and improperly managed grading, vegetation removal, quarrying, logging, and agricultural practices all lead to increased erosion of exposed earth and sedimentation of watercourses during rainy periods. In slower moving water bodies these same factors often cause a buildup of siltation, which ultimately reduces the capacity of the water system to percolate and recharge groundwater basins, as well as adversely affecting both aquatic resources and flood control efforts.

## Impaired Water Bodies

Section 303(d) of the federal Clean Water Act requires States to identify waters that do not meet water quality standards or objectives and thus, are considered "impaired." Once listed, Section 303(d) mandates prioritization and development of a Total Maximum Daily Load (TMDL). The TMDL is a tool that establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby the basis for the States to establish Water quality-based controls. The purpose of TMDLs is to ensure that beneficial uses are restored and that water quality objectives are achieved.

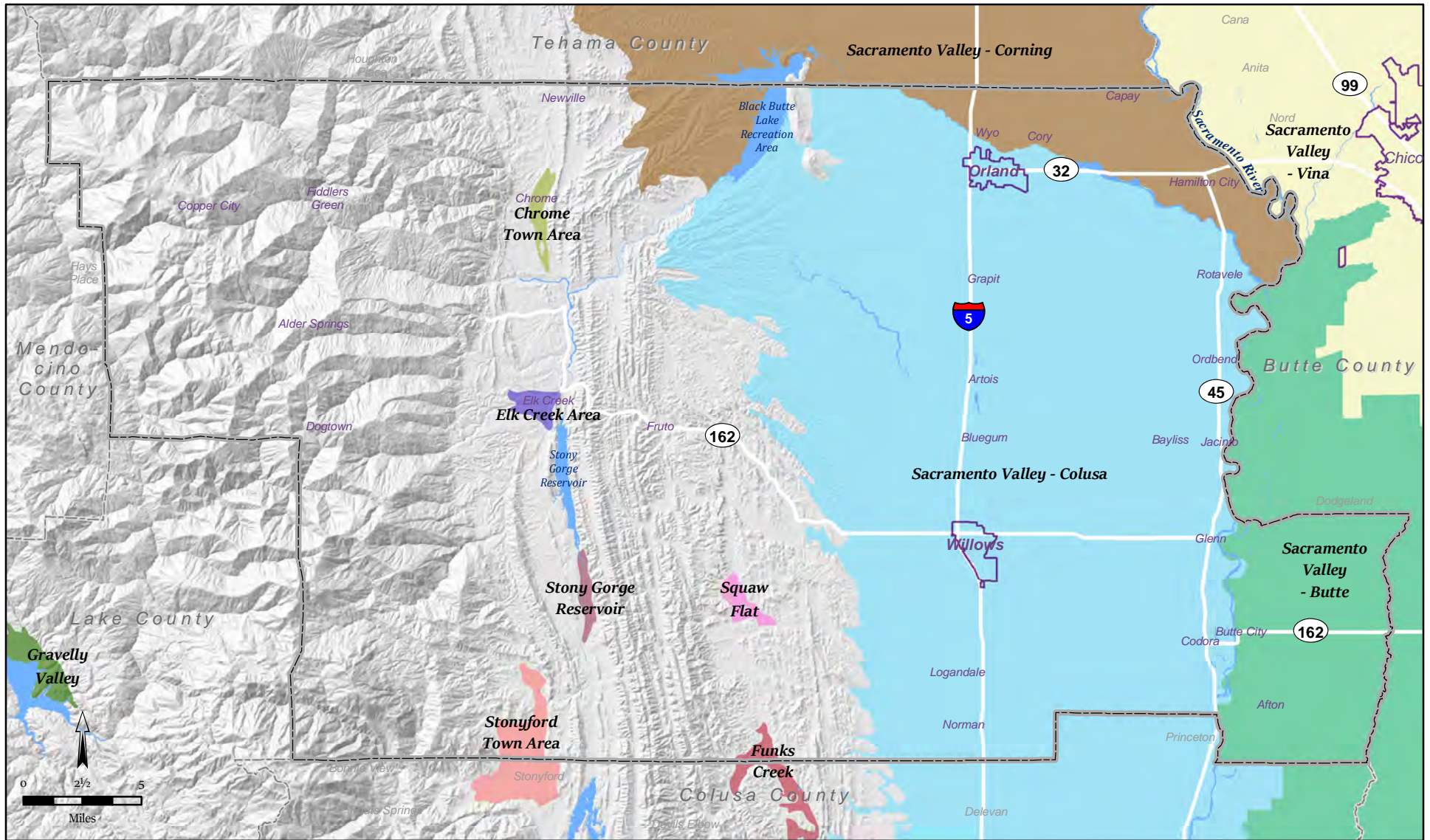
According to the California Water Quality Control Monitoring Council, which is part of California Environmental Protection Agency, Natural Resources, there are many areas within Glenn County which are considered Section 303(d) impaired waterbodies. Nine watersheds within Glenn County have Section 303(d) listed impaired water bodies. The impaired water bodies are located within the Middle Butte Creek, Sacramento River, Colusa Drain, Upper Stony Creek, Middle Stony Creek, Lower Stony Creek, Walker Creek, Black Butte River, and Corbin Creek-Eel River hydrologic areas. These hydrologic areas extend beyond the county boundary so not all impaired water body segments are located within Glenn County. The pollution source is predominantly agricultural and crop related, although mercury, and resource extraction is also a pollution source. There are a few pollution sources that are not currently known.

## REFERENCES

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- Regional Water Quality Control Board, 2016. Central Valley Region Water Quality Control Plan for the Sacramento River and San Joaquin River Basins





Sources: Department of Water Resources (DWR). Map date: June 27, 2019. Revised: January 29, 2020.

**Legend**

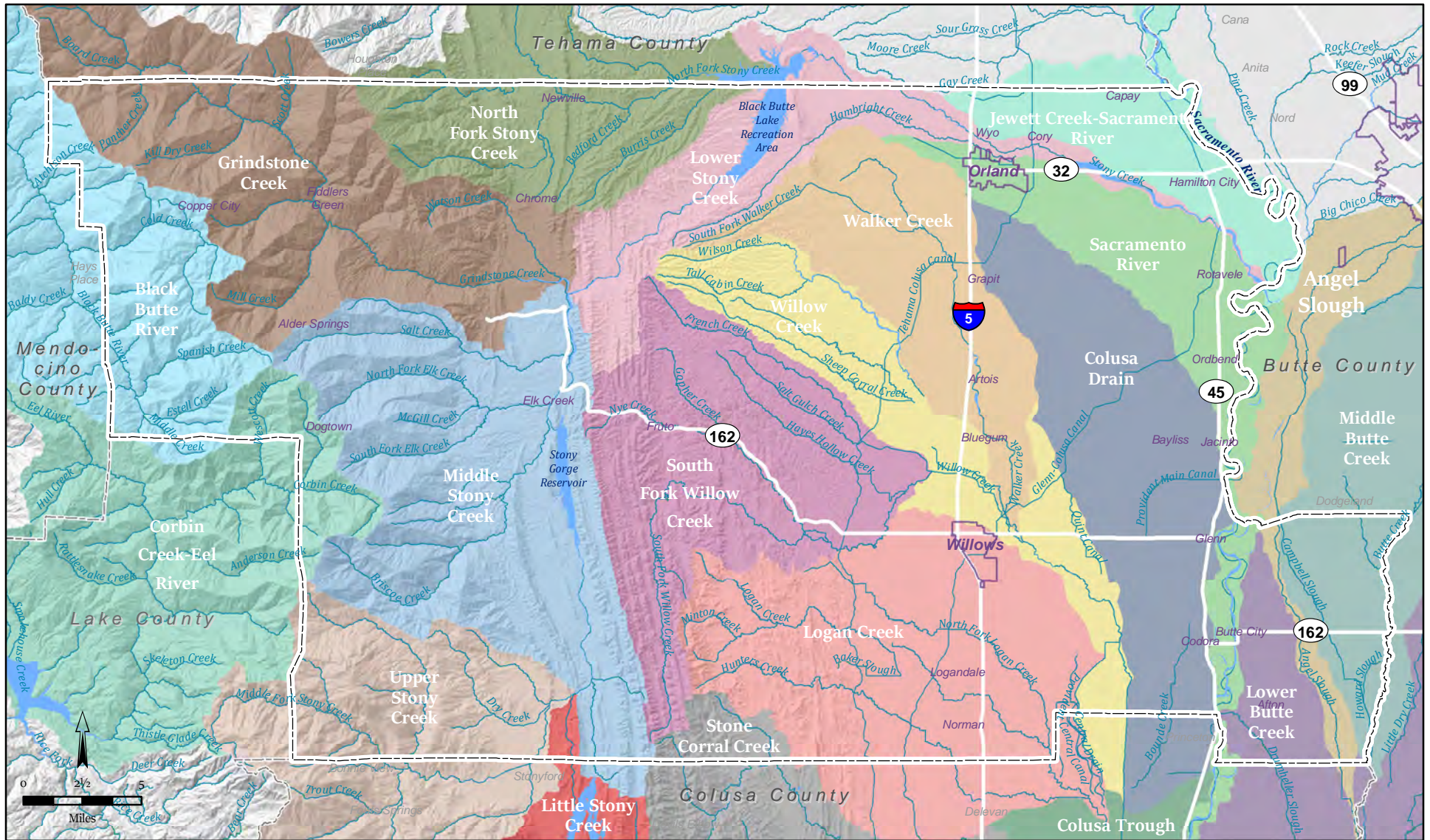
- |   |  |
|---|--|
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| <span style="display:inline-block; width:15px; height:10px; background-color:#9c27b0; border:1px solid black;"></span> Elk Creek Area             | <span style="display:inline-block; width:15px; height:10px; background-color:#fff176; border:1px solid black;"></span> Sacramento Valley - Vina    |
| <span style="display:inline-block; width:15px; height:10px; background-color:#e53935; border:1px solid black;"></span> Funks Creek                | <span style="display:inline-block; width:15px; height:10px; background-color:#f48fb1; border:1px solid black;"></span> Squaw Flat                  |
| <span style="display:inline-block; width:15px; height:10px; background-color:#43a047; border:1px solid black;"></span> Gravelly Valley            | <span style="display:inline-block; width:15px; height:10px; background-color:#9e5442; border:1px solid black;"></span> Stony Gorge Reservoir       |
| <span style="display:inline-block; width:15px; height:10px; background-color:#4db6ac; border:1px solid black;"></span> Sacramento Valley - Butte  | <span style="display:inline-block; width:15px; height:10px; background-color:#ff8a65; border:1px solid black;"></span> Stonyford Town Area         |
| <span style="display:inline-block; width:15px; height:10px; background-color:#81d4fa; border:1px solid black;"></span> Sacramento Valley - Colusa |  |

COUNTY OF GLENN, CALIFORNIA

**FIGURE 5.7-1. GROUNDWATER BASINS**





















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Sources: USGS Watershed Boundary Dataset; USGS National Hydrography Dataset. Map date: June 26, 2019. Revised: January 29, 2020.

**Legend**

 Angel Slough	 Little Stony Creek	 Sacramento River
 Black Butte River	 Logan Creek	 South Fork Willow Creek
 Colusa Drain	 Lower Butte Creek	 Stone Corral Creek
 Colusa Trough	 Lower Stony Creek	 Upper Stony Creek
 Corbin Creek-Eel River	 Middle Butte Creek	 Walker Creek
 Grindstone Creek	 Middle Stony Creek	 Willow Creek
 Jewett Creek-Sacramento River	 North Fork Stony Creek	

COUNTY OF GLENN, CALIFORNIA

FIGURE 5.7-2. WATERSHEDS

## 5.8 AGRICULTURE RESOURCES

This section provides an overview of the agricultural crops in Glenn County. Information in this section is derived primarily from the California Important Farmlands Map (California Department of Conservation, 2016), the California Land Conservation (Williamson) Act Status Report (California Department of Conservation, 2016), the Glenn County Annual Crop & Livestock Report (Glenn County Agricultural Commissioner, 2017), and the Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS, 2019).

### REGULATORY FRAMEWORK

#### *FEDERAL*

#### **Farmland Protection Policy Act**

The Farmland Protection Policy Act (FPPA) is intended to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses. It ensures that, to the extent practicable, federal programs are compatible with state and local units of government as well as private programs and policies to protect farmland. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a federal agency or with assistance from a federal agency. For the purpose of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for crop production. In fact, the land can be forest land, pastureland, cropland, or other land but does not include water bodies or land developed for urban land uses (i.e., residential, commercial, or industrial uses).

The Natural Resource Conservation Service (NRCS) administers the Farmland Protection Program. NRCS uses a land evaluation and site assessment (LESA) system to establish a farmland conversion impact rating score on proposed sites of federally funded and assisted projects. This score is used as an indicator for the project sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the recommended allowable level. The assessment is completed on form AD-1006, Farmland Conversion Impact Rating. The sponsoring agency completes the site assessment portion of the AD-1006, which assesses non-soil related criteria such as the potential for impact on the local agricultural economy if the land is converted to non-farm use and compatibility with existing agricultural use.

#### *STATE*

#### **Williamson Act**

The California Land Conservation Act of 1965, commonly known as the Williamson Act, was established based on numerous State legislative findings regarding the importance of agricultural lands in an urbanizing society. Policies emanating from those findings include those that discourage premature and unnecessary conversion of agricultural land to urban uses and discourage discontinuous urban development patterns, which unnecessarily increase the costs of community services to community residents.

- The Williamson Act authorizes each County to establish an agricultural preserve. Land that is within the agricultural preserve is eligible to be placed under a contract between the property owner and County that would restrict the use of the land to agriculture in exchange for a tax assessment that is based on the yearly production yield. The contracts have a 10-year term that is automatically renewed each year, unless the property owner requests a non-renewal or the contract is cancelled. If the contract is cancelled the property owner is assessed a fee of up to 12.5 percent of the property value.



## **Assembly Bill 1265**

If counties receive less than half of their foregone general fund property tax revenue from the Open Space Subvention Act Program the prior year, they are eligible to implement a provision of the Williamson Act (found in AB 1265) to allow contracts (both Williamson Act and Farmland Security Zone) to be amended from ten and 20 years to nine and 18 years, respectively. Shortening the length of owners' contracts triggers a statutorily authorized recapture of 10 percent of their participating landowners' property tax savings. Since the increased revenue is allocated exclusively to the counties, they would re-capture, on average, half of their forgone property tax revenue. In 2017, Glenn County elected to enact the tenets of AB 1265.

## **Farmland Security Zones**

In 1998 the state legislature established the Farmland Security Zone (FSZ) program. FSZs are similar to Williamson Act contracts, in that the intention is to protect farmland from conversion. The main difference however, is that the FSZ must be designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. The term of the contract is a minimum of 20 years. The property owners are offered an incentive of greater property tax reductions when compared to the Williamson Act contract tax incentives; the incentives were developed to encourage conservation of prime farmland through FSZs. The non-renewal and cancellation procedures are similar to those for Williamson Act contracts.

## **California Government Code Section 560643**

This section of the Government Codes defines "Prime agricultural land" as follows:

- Prime agricultural land means an area of land, whether a single parcel or contiguous parcels, that has not been developed for a use other than an agricultural use and that meets any of the following qualifications:
  - Land that qualifies, if irrigated, for rating as class I or class II in the USDA Natural Resources Conservation Service land use capability classification, whether or not land is actually irrigated, provided that irrigation is feasible.
  - Land that qualifies for rating 80 through 100 Storie Index Rating.
  - Land that supports livestock used for the production of food and fiber and that has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United States Department of Agriculture in the National Range and Pasture Handbook, Revision 1, December 2003.
  - Land planted with fruit or nut-bearing trees, vines, bushes, or crops that have a nonbearing period of less than five years and that will re-turn during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than four hundred dollars (\$400) per acre.
  - Land that has returned from the production of unprocessed agricultural plant products an annual gross value of not less than four hundred dollars (\$400) per acre for three of the previous five calendar years

## **Local Agency Formation Commission Boundary Controls**

The Glenn Local Agency Formation Commission (LAFCO) is responsible for coordinating orderly amendments to local jurisdictional boundaries, including annexations. Annexations would be subject to LAFCO approval, and LAFCO's decision is governed by state law (Gov't Code § 56001 et seq.) and the local LAFCO Policies and

Procedures. State law requires LAFCOs to consider agricultural land and open space preservation in all decisions related to expansion of urban development. LAFCO's definition of Prime agricultural land refers to California Government Code Section 56064.3, which is described above under the State Regulatory Setting.

### *LOCAL*

## **Glenn County General Plan**

The existing Glenn County General Plan identifies the following goals, policies, and implementation measures related to Agricultural resources:

### GOAL:

#### **NRG-1: Preservation of Agricultural land**

### POLICIES:

NRP-1: Maintain agriculture as a primary, extensive land use, not only in recognition of the economic importance of agriculture, but also in terms of agriculture's contribution to the preservation of open space and wildlife habitat.

NRP-2: Support the concept that agriculture is a total, functioning system which will suffer when any part of it is subjected to regulation resulting in the decline of agricultural productivity, unmitigated land use conflicts and/or excessive land fragmentation.

NRP-3: Recognize the value of rice lands for waterfowl habitat, watershed management, and for groundwater recharge in an effort to preserve such lands and to maintain necessary water supplies in Glenn County.

NRP-4: Support efforts underway to explore the potential to utilize rice lands as temporary storage reservoirs in winter months, thus increasing groundwater recharge and supplies of surface water for both agriculture and wildlife, and potentially providing an alternative to rice straw burning.

NRP-5: Continue participation in the Williamson Act, and allow new lands devoted to commercial agriculture and located outside urban limit lines to enter the program, subject to the specific standards for inclusion contained in this General Plan

NRP-6: Lobby on a continuing basis for maintenance and enhancement of the Williamson Act subvention in concert with other interested counties and organizations.

NRP-7: Recognize the importance of the dairy industry, as well as other confined animal agricultural uses, to the agricultural economy by actively supporting efforts to attract new dairies and to expand existing facilities.

NRP-8: Assure that future land use decision protect and enhance the agricultural industry while also protecting existing uses from potential incompatibilities.

NRP-9: Encourage use of agricultural lands preservation tools such as in-county transfer of development rights, conservation easements, exclusive agricultural zoning and continuation of minimum parcel sizes.

NRP-10: Limit the application of rural residential and similar zoning in the county, and follow standards for its application as contained in this General Plan, so as not to encourage the premature conversion of otherwise viable agricultural land to rural residential environments which can no longer be farmed, and are typically too dispersed to be served efficiently by government services.

NRP-11: Monitor requests for subdivision of agriculturally developed and zoned parcels, located outside urban limit lines, in order to determine if present minimum parcel sizes are working effectively to discourage agricultural lands conversion.

NRP-12: Review agricultural lands conversion findings as described in NPR-11 with decision makers annually.

NRP-13: Establish urban limit lines around existing and planned future communities, development nodes and other areas of urban use, in an effort to protect agricultural land and to encourage infill and economic growth.

NRP-14: Consult Important farmland maps and other sources of information on the relative value of agricultural lands when planning areas of growth, in order to direct growth and development toward lesser value agricultural lands.

NRP-15: Recognize that, in order to realistically provide for the necessary diversity and growth required in the local economy, some lands presently committed to agriculture may be consumed by other development activities, and plan for and monitor such conversion to assure that it does not hinder or restrict existing agricultural operations. Priority shall be given to industries related to agriculture.

NRP-16: Retain grazing land in large contiguous areas of the foothills, in recognition of its value to the livestock industry and as open space for watershed management, and its contribution to groundwater recharge, wildlife and waterfowl.

NRP-17: Recognize that limited conversion of grazing lands to other uses may be less harmful to agriculture than conversion of cropland, if the new uses are properly planned and serviced.

NRP-18: Support the U.S.D.A Soil Conservation Service effort to update soils survey information in Glenn County.

NRP-19: Support the erosion control programs, resource management programs, and agricultural conservation efforts of the Glenn County Resource Conservation District that benefit the county as a whole.

NRP-20: Recognize the potential restrictions urbanization places on nearby agricultural practices and mitigate such conflicts whenever possible. Continue to support the County's right "Right to Farm" ordinance and effort.

NRP-21: Require notices of nonrenewal for Williamson Act lands as a condition of land division and boundary line changes which result in parcel sizes below zoning minimums.

### **Glenn County Right to Farm Ordinance**

Chapter 15.580 of the County Code establishes the County's "Right to Farm" ordinance, which is intended to protect agricultural uses in the County. The ordinance establishes the County's policy to preserve, protect and encourage the use of viable agricultural land for the production of food and other agricultural products. Chapter 15.580 identifies where nonagricultural land uses extend into agricultural areas or exist side by side, agricultural operations are frequently the subject of nuisance complaints and are forced to cease or curtail operations.

Chapter 15.580 of the County's Code is intended to reduce the loss to the county of its agricultural resources by limiting the circumstance under which agricultural operations may be considered a nuisance. An additional purpose of this chapter is to promote a good neighbor policy between agricultural and nonagricultural property owners by advising purchasers and users of property adjacent to or near agricultural operations of

the inherent potential problems associated with such purchases or residence, including but not limited to the noises, odors, dust and chemicals, smoke and hours of operation that may accompany agricultural operations and be prepared to accept attendant conditions as the natural result of living in or near rural areas. In addition, prior to issuance of a county building permit for construction of a nonagricultural building, the owner of the property upon which the building is to be constructed is required to file a disclosure statement acknowledging the proximity of agricultural operations and the potential for inconvenience or nuisance associated with those uses.

## EXISTING SETTING

### Glenn County Agriculture

Glenn County occupies a north-central location in California's vast agricultural heartland, the Sacramento Valley. The County's Agricultural Commissioner's most recent published Agricultural Reports (2017 and 2018) contains the following information relating to agriculture in the county.

Glenn County has a total land area of 1,327 square miles, of which 1,314 square miles is land and 13 square miles is water. The total acreage of crop land in the county is approximately 347,652 acres. The gross value of agricultural production in Glenn County for 2017 was \$839,509,000, which represents a 12 percent increase from 2016 when gross production value totaled \$748,461,000. The 2018 gross production of agricultural commodities was valued at \$729,125,000. This represents a 13 percent decrease from 2017.

Table 5.8-1 lists the top eight commodities in Glenn County in 2017 and 2018.

**TABLE 5.8-1: SUMMARY COMPARISON OF CROP VALUES**

PRODUCT TYPE	2017 VALUE IN DOLLARS	2018 VALUE IN DOLLARS
Fruit and Nut Crops	\$484,205,000	\$368,296,000
Field Crops	\$165,220,000	\$170,027,000
Apiary Products	\$30,605,000	\$34,831,000
Seed Crops	\$41,177,000	\$49,368,000
Livestock and Poultry	\$40,557,000	\$39,534,000
Livestock and Poultry Products	\$59,838,000	\$55,599,000
Pasture and Rangeland	\$4,875,000	\$4,912,000
Nursery Products	\$7,006,000	\$2,134,000
Vegetable Crops	\$6,026,000	\$4,424,000

SOURCE: GLENN COUNTY ANNUAL CROP & LIVESTOCK REPORT, 2018

### AGRICULTURAL CAPABILITY

The California Department of Conservation Farmland Mapping and Monitoring Program identifies lands that have agriculture value and maintains a statewide map of these lands called the Important Farmlands Inventory (IFI). IFI classifies land based upon the productive capabilities of the land, rather than the mere presence of ideal soil conditions.

The suitability of soils for agricultural use is just one factor for determining the productive capabilities of land. Suitability is determined based on many characteristics, including fertility, slope, texture, drainage, depth, and salt content. A variety of classification systems have been devised by the state to categorize soil capabilities. The two most widely used systems are the Capability Classification System and the Storie Index. The Capability Classification System classifies soils from Class I to Class VIII based on their ability to support agriculture with Class I being the highest quality soil. The Storie Index considers other factors such as slope and texture to arrive at a rating. The IFI is in part based upon both of these two classification systems.

## Soil Capability Classification

The Soil Capability Classification System takes into consideration soil limitations, the risk of damage when soils are used, and the way in which soils respond to treatment. Capability classes range from Class 1 soils, which have few limitations for agriculture, to Class 8 soils that are unsuitable for agriculture. Generally, as the rating of the capability classification increases, yields and profits are more difficult to obtain. A general description of soil classifications, as defined by the Natural Resources Conservation Service (NRCS) is provided in Table 5.8-2 below.

A Custom Soil Survey was completed for the Planning Area using the NRCS Web Soil Survey program. Table 5.8-3 identifies the soils and soil classifications found in the County. The NRCS Soils Map is provided on Figure 5.4-2 in Section 5.5 (Geology and Soils) of this report.

**TABLE 5.8-2: SOIL CAPABILITY CLASSIFICATION**

CLASS	DEFINITION
I	Soils have slight limitations that restrict their use.
II	Soils have moderate limitations that restrict choice plants or that require moderate conservation practices.
III	Soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
IV	Soils have very severe limitations that restrict the choice of plants or that 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 plans and restrict their use to recreation, wildlife habitat, water supply, or aesthetic purposes.

SOURCE: USDA SOIL CONSERVATION SERVICE

**TABLE 5.8-3: SOIL CLASSIFICATION**

NAME	ACRES	PERCENT OF COUNTY	CAPABILITY CLASSIFICATION*
Alluvial Lands	2,105.79	0%	VI
Altamont	26,698.33	3%	III-VI
Arbuckle loam	23,431.28	3%	II-III
Artois loam	4,304.99	1%	III-IV
Ayar clay	1,715.71	<1%	III-IV
Burris clay	1,591.58	<1%	III-V
Capay clay	12,641.30	1%	III-IV
Castro clay	7,226.44	1%	IV-V
Clear lake clay	4,012.09	<1%	III
Colluvial Land	15,259	2%	VI
Columbia loams and sands	13,026	2%	I-V
Contra costa clay loams	9,039	1%	I-VI
Corning land complexes	4,328	1%	IV
Corning loams	10,274	1%	IV

<i>NAME</i>	<i>ACRES</i>	<i>PERCENT OF COUNTY</i>	<i>CAPABILITY CLASSIFICATION*</i>
Cortina loams	13,592	2%	III-V
Dubakella stony loam	68	<1%	VI
East park clay	498	<1%	V
Eroded land	4,476	1%	VI
Goulding rocky loam	1,479	<1%	VI
Gravel pits	306	<1%	VI
Henneke stony clay loam	12,199	1%	V-VI
Hillgate loams and complexes	39,635	5%	III-IV
Hohmann rocky loam	742	<1%	IV-VI
Hugo loam	1,517	<1%	III-V
Hulls gravelly loam	1,792	<1%	IV-VI
Jacinto loams	3,064	<1%	I-II
Josephine loams	4,250	1%	IV-V
Kimball loam and complexes	10,177	1%	III-V
Landlow clays and loams	9,500	1%	III-IV
Landslides	61	<1%	VI
Lobo loams and complexes	22,204	3%	III-VI
Los gatos loams	5,428	1%	V-VI
Los osos-yorkville complex	35	<1%	VI
Madonna complex	355	<1%	--
Marvin clays and loams	18,159	2%	III-V
Masteron loams	3,360	<1%	III-V
Maymen loams	69,243	8%	V-VI
Maywood loams	226	<1%	III
Millsholm loams and complexes	30,443	4%	IV-VI
Millsap loams	1,240	<1%	V-VI
Moda loam	586	<1%	IV
Montara clay	138	<1%	V
Myers clays, loams, and complexes	30,151	4%	II-III
Nacimiento loams, soils, complexes and association*	24,947	3%	III-V
Neuns loams and complexes	4,916	1%	IV-VI
Newville loams and complexes	37,740	4%	IV-VI
Orland - Unknown	616	<1%	--
Orland loams and complexes	7,830	1%	I-IV
Parrish loams and complexes	4,867	1%	IV-VI
Perkins loams	1,963	<1%	III
Plaza loams	18,423	2%	II-IV
Pleasanton loams	1,808	<1%	III
Polebar loams and complexes	2,172	<1%	III-V
Porterville clays	877	<1%	III-V
Redding gravelly loam	337	<1%	V
Riverwash	9,378	1%	VI
Riz loams	7,155	1%	IV-VI
Rock land and outcrop	3,185	<1%	VI
Sacramento clay	293	<1%	III

NAME	ACRES	PERCENT OF COUNTY	CAPABILITY CLASSIFICATION*
Sehorn soils, complexes and associations	56,600	7%	IV-V
Shedd Loams, Complexes and associations	3,885	<1%	III-IV
Sheetiron loams and complexes	91,445	11%	IV-VI
Stockton clays	5,925	1%	IV-V
Stonyford clays, loams and complexes	3,750	<1%	V-VI
Sunnyvale clays and loams	3,715	<1%	III-IV
Tehama loams and complexes	40,307	<1%	II-III
Terrace escarpments	1,005	5%	VI
Toomes loams and complexes	563	<1%	V-VI
Tyson loams	1,994	<1%	V-VI
Willows clay	29,128	<1%	IV-VI
Wyo loams	22,371	3%	I-II
Yolo loams	5,305	3%	I-IV
Yorkville loams	303	1%	V
Zamora clays and loams	28,950	<1%	II-IV
Water	6,874	3%	--
<b>Total</b>	<b>849,206</b>	<b>100%</b>	

\* *DEPICTS IRRIGATED VS NON IRRIGATED CAPABILITY RATING*

*SOURCE: NRCS CUSTOM WEB SOIL SURVEY, 2019.*

*SOURCE: NRCS CUSTOM WEB SOIL SURVEY, 2019*

## Important Farmlands

The Farmland Mapping and Monitoring Program (FMMP) is a farmland classification system administered by the California Department of Conservation. Important farmland maps are based on the Land Inventory and Monitoring criteria, which classify a land's suitability for agricultural production based on both the physical and chemical characteristics of soils, and the actual land use. The system maps five categories of agricultural land, which include important farmlands (prime farmland, farmland of statewide importance, unique farmland, and farmland of local importance) and grazing land, as well as three categories of non-agricultural land, which include urban and built-up land, other land, and water area.

The State of California Department of Conservation Farmland Mapping and Monitoring Program was used to illustrate the farmland characteristics for the Planning Area. Farmlands in the Planning Area are identified in Table 5.8-4 and are shown on Figure 5.8-1. The farmland classifications for the site and surrounding area are described below.

**TABLE 5.8-4: FARMLAND CLASSIFICATION**

LAND CLASSIFICATION	COUNTY	% OF TOTAL
D – Urban/Built Up Land	6,501	1%
L – Farmland of Local Importance	82,836	10%
P – Prime Farmland	158,117	19%
S – Farmland of Statewide Importance	88,669	10%
U – Unique Farmland	18,030	2%
O – Other Land	261,971	31%
G – Grazing Land	227,081	27%
W – Water	5,928	1%

*SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION; NRCS CUSTOM WEB SOIL SURVEY, 2019*

**Prime Farmland.** Prime farmland is farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date. Approximately 158,117 acres of Prime Farmland is located within the Planning Area.

**Farmland of Statewide Importance.** Farmland of statewide importance is farmland with characteristics similar to those of prime farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date. Approximately 88,669 acres of Farmland of Statewide Importance is located within the Planning Area.

**Unique Farmland.** 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. Land must have been cropped at some time during the four years prior to the mapping date. Approximately 18,030 acres of Unique Farmland is located within the Planning Area.

**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. Approximately 82,836 acres of Farmland of Local Importance is located within the Planning Area.

**Grazing Land.** This consists of land on which the existing vegetation is suited to the grazing of livestock. This category is used only in California and was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. Approximately 227,081 acres of Grazing Land is located within the Planning Area.

**Urban and Built-up Land.** Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes. Approximately 6,501 acres of Urban and Built-Up Land is located within the Planning Area.

**Other Land.** This consists Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than forty acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land. Approximately 261,971 acres of Other Land is located within the Planning Area.

**Water.** Water areas with an extent of at least 40 acres are mapped by the FMMP. Approximately 5,928 acres of Water Designated areas are located within the Planning Area.

### **Farmland Conversion in Glenn County**

Data from the Department of Conservation indicates that approximately 336 acres of Prime Farmland in the County were added between 2014 and 2016, resulting in an existing total of 158,117 acres of Prime Farmland (28 percent of agricultural land). The remaining agricultural land is comprised of Farmland of Statewide Importance (15 percent), Unique Farmland (3 percent), Farmland of Local Importance (14 percent), and Grazing Land (40 percent). The types and acreages of farmland in 2014 and 2016 are shown below in Table 5.8-5.



**TABLE 5.8-5: GLENN COUNTY FARMLANDS SUMMARY AND CHANGE BY LAND USE CATEGORY**

LAND USE CATEGORY	Total Acreage Inventoried		2014-16 Acreage Changes			
			ACRES LOST (-)	ACRES GAINED (+)	TOTAL ACREAGE CHANGED	NET ACREAGE CHANGED
	2014	2016				
	Prime Farmland	157,781	158,117	798	1,134	1,932
Farmland of Statewide Importance	87,938	88,669	455	1,186	1,641	731
Unique Farmland	17,626	18,030	566	970	1,536	404
Farmland of Local Importance	83,686	82,836	2,443	1,593	4,036	-850
IMPORTANT FARMLAND SUBTOTAL	347,031	347,652	4,262	4,883	9,145	621
Grazing Land	227,118	227,081	1,135	1,098	2,233	-37
AGRICULTURAL LAND SUBTOTAL	574,149	574,733	5,397	5,981	11,378	584
Urban and Built-up Land	6,450	6,501	2	53	55	51
Other Land	262,606	261,971	885	250	1,135	-635
Water Area	5,928	5,928	0	0	0	0
TOTAL AREA INVENTORIED	849,133	849,133	6,284	6,284	12,568	0

SOURCE: CA DEPARTMENT OF CONSERVATION, DIVISION OF LAND RESOURCES PROTECTION TABLE A-8, 2014-2016

## Farmland Conservation

The Williamson Act authorizes each County to establish an agricultural preserve. Land that is within the agricultural preserve is eligible to be placed under a contract between the property owner and County that would restrict the use of the land to agriculture in exchange for a tax assessment that is based on the yearly production yield. The contracts have a 10-year term that is automatically renewed each year, unless the property owner requests a non-renewal or the contract is cancelled. If the contract is cancelled the property owner is assessed a fee of up to 12.5 percent of the property value.

Farmland Security Zones (FSZs) are similar to Williamson Act contracts, in that the intention is to protect farmland from conversion. The main difference however, is that the FSZ must be designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. The term of the contract is a minimum of 20 years. The property owners are offered an incentive of greater property tax reductions when compared to the Williamson Act contract tax incentives; the incentives were developed to encourage conservation of prime farmland through FSZs. The non-renewal and cancellation procedures are similar to those for Williamson Act contracts.

Table 5.8-6 shows lands within the County that are under a Williamson Act contract or within a FSZ. Figure 5.8-2 shows Williamson Act Contracts and FSZs within the County. Of the 422,966 acres of Williamson Act Contract and/or FSZ lands, approximately 1,254 acres are in non-renewal.

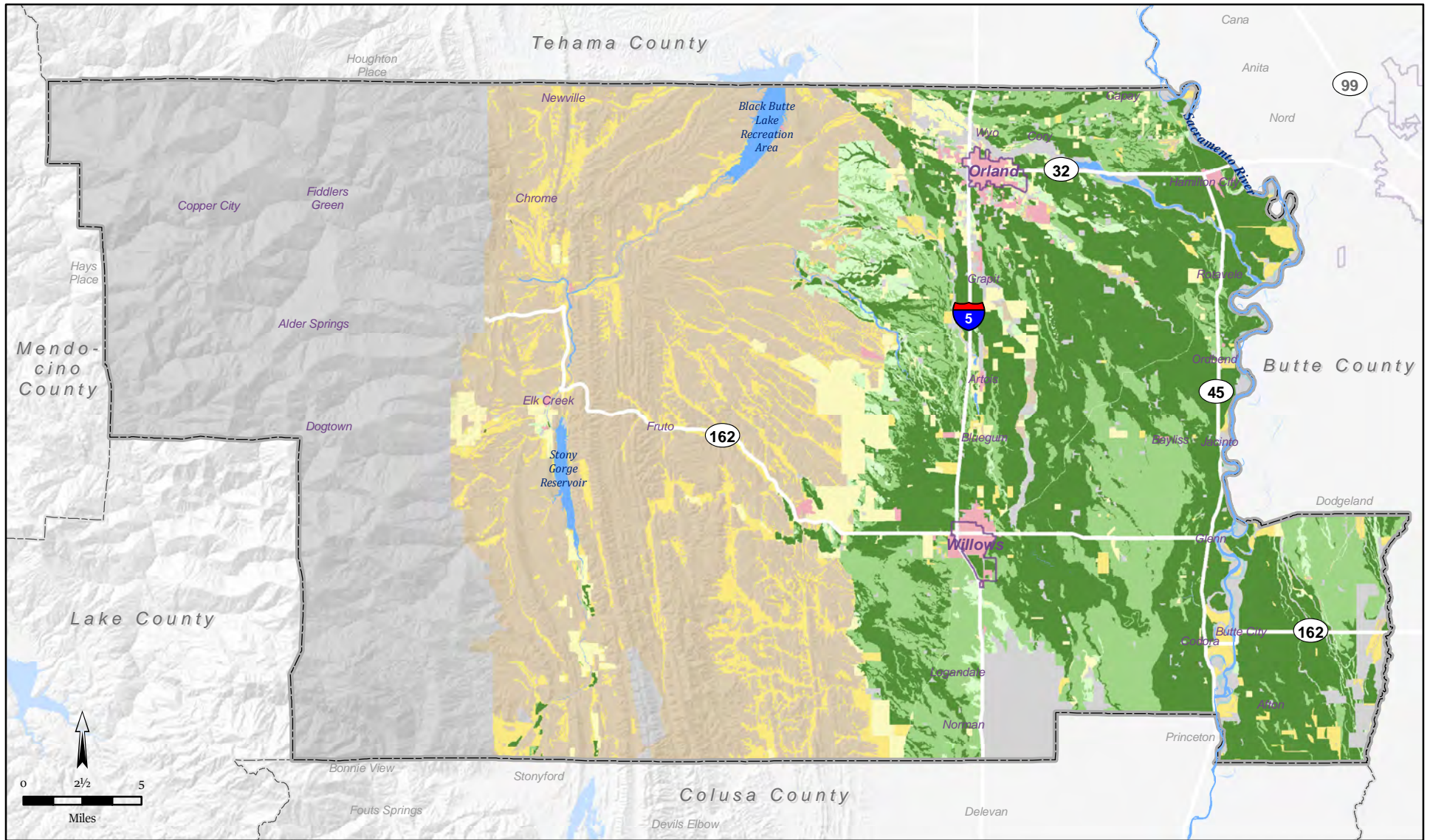
**TABLE 5.8-6: SUMMARY OF WILLIAMS ACT CONTRACTS**

<i>CONTRACT LOCATION AND TYPE</i>	<i>TOTAL ACRES</i>
WA-Prime	63,518
WA-Non-Prime	269,068
FSZ-Urban	14,112
FSZ-Urban-Non-Prime	500
FSZ-Non-Urban-Prime	73,541
FSZ-Non-Urban-Non-Prime	2,226
Total	422,966

*FARMLAND MAPPING AND MONITORING PROGRAM, GLENN COUNTY, 2016.*

## REFERENCES

- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2017. Web Soil Survey. Available at: <http://websoilsurvey.nrcs.usda.gov>
- Glenn County Agricultural Commission. 2016. Glenn County Annual Crop & Livestock Report
- Glenn County Agricultural Commission. 2017. Glenn County Annual Crop & Livestock Report
- Glenn County Agricultural Commission. 2018. Glenn County Annual Crop & Livestock Report
- California Department of Conservation. FY 2014/2016. California Land Conservation (Williamson) Act Status Report.
- California Department of Conservation. 2016. California Important Farmlands Map. Farmland Mapping and Monitoring Program, Glenn County, 2016;



Sources: California Department of Conservation, Farmland Mapping and Monitoring Program, Glenn County 2016. Map date: June 26, 2019.

COUNTY OF GLENN, CALIFORNIA

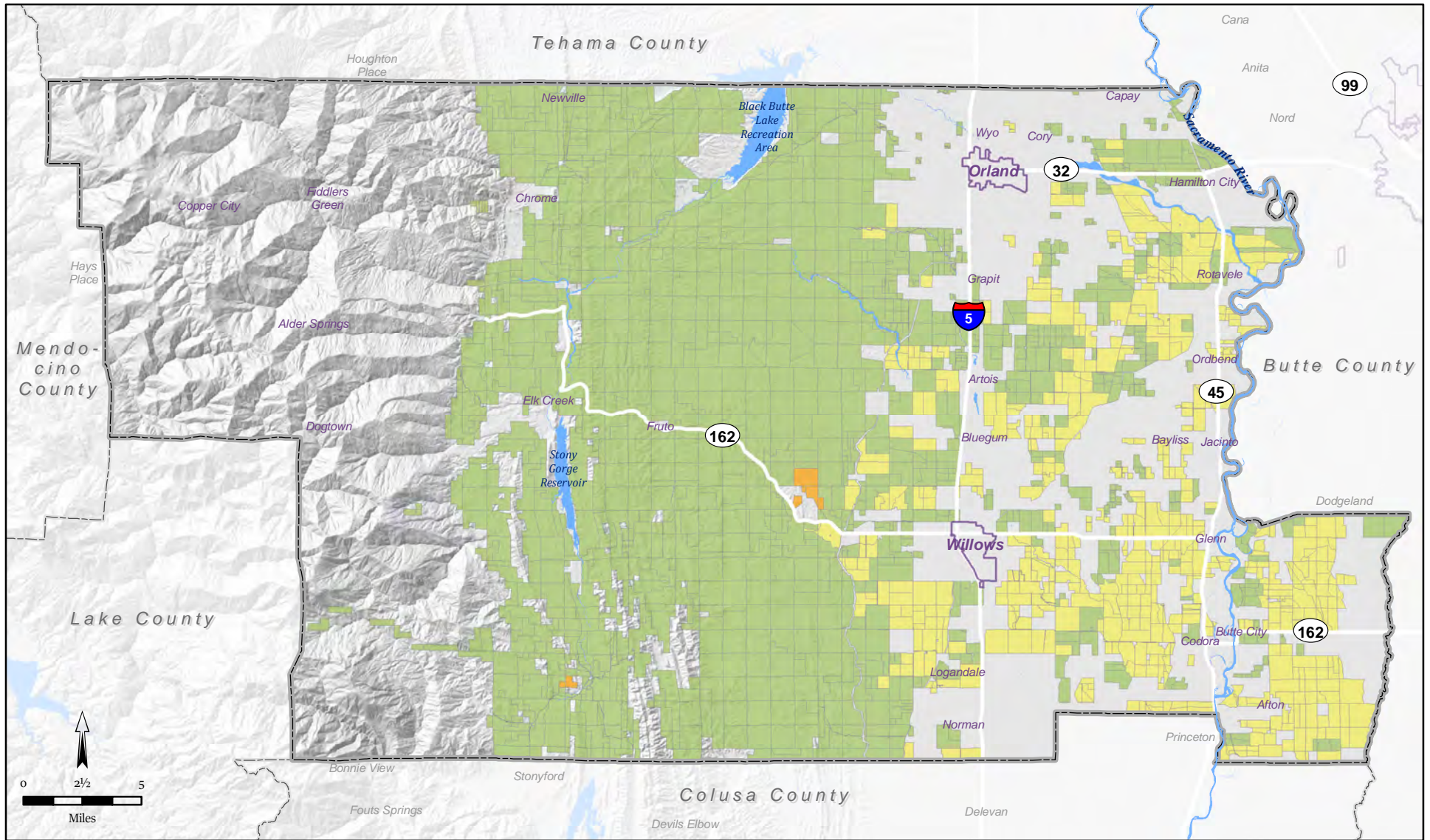
FIGURE 5.8-1. IMPORTANT FARMLANDS

**Legend**

- |   |  |
|---|--|
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #006400; border: 1px solid black; margin-right: 5px;"></span> Prime Farmland (±158,102 acres)                  | <span style="display: inline-block; width: 15px; height: 15px; background-color: #FFD700; border: 1px solid black; margin-right: 5px;"></span> Farmland of Local Potential (±54,358 acres) |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Farmland of Statewide Importance (±88,660 acres) | <span style="display: inline-block; width: 15px; height: 15px; background-color: #A9A9A9; border: 1px solid black; margin-right: 5px;"></span> Other Land (±261,950 acres)                 |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Unique Farmland (±18,023 acres)                  | <span style="display: inline-block; width: 15px; height: 15px; background-color: #FF6347; border: 1px solid black; margin-right: 5px;"></span> Urban and Built-Up Land (±6,499 acres)      |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #D2B48C; border: 1px solid black; margin-right: 5px;"></span> Grazing Land (±227,062 acres)                    | <span style="display: inline-block; width: 15px; height: 15px; background-color: #ADD8E6; border: 1px solid black; margin-right: 5px;"></span> Water Area (±5,928 acres)                   |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #FFFF00; border: 1px solid black; margin-right: 5px;"></span> Farmland of Local Importance (±28,473 acres)     |  |

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Sources: California Department of Conservation, Division of Land Resource Protection, Glenn Co, FY 2015-16. Map date: June 28, 2019.

COUNTY OF GLENN, CALIFORNIA

FIGURE 5.8-2. WILLIAMSON ACT LANDS

**Legend**

- Farmland Security Zone (±90,826 acres)
- Non-Renewal (±1,064 acres)
- Mixed Enrollment Agricultural Land (±333,004 acres)

## 5.9 AESTHETICS AND VISUAL RESOURCES

Glenn County possesses numerous scenic resources, many of which are found in the natural areas within the unincorporated county. These resources not only enhance the quality of life for Glenn County residents, but are a significant attraction that brings tourists to the region. Landscapes can be defined as a combination of four visual elements: landforms, water, vegetation, and man-made structures. Scenic resource quality is an assessment of the uniqueness or desirability of a visual element. This section reviews and summarizes Glenn County's key scenic resources. This section was prepared based on existing reports and literature for the Glenn County. Additional sources of information included the California Department of Transportation's (Caltrans) Designated Scenic Route map for Glenn County.

### KEY TERMS

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**Scenic Highway Corridor.** The area outside of a highway right-of-way that is generally visible to persons traveling on the highway.

**Scenic Highway/Scenic Route.** A highway, road, drive, or street that, in addition to its transportation function, provides opportunities for the enjoyment of natural and human-made scenic resources and access or direct views to areas or scenes of exceptional beauty (including those of historic or cultural interest). The aesthetic values of scenic routes often are protected and enhanced by regulations governing the development of property or the placement of outdoor advertising. Until the mid-1980's, General Plans in California were required to include a Scenic Highways Element.

**View Corridor.** A view corridor is a highway, road, trail, or other linear feature that offers travelers a vista of scenic areas within a city or county.

### REGULATORY FRAMEWORK

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#### STATE

#### **California Department of Transportation – California Scenic Highway Program**

California's Scenic Highway Program was created by the Legislature in 1963 to preserve and protect scenic highway corridors from change, which would diminish the aesthetic value of lands adjacent to highways. The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq.

The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. These highways are identified in Section 263 of the Streets and Highways Code. A list of California's scenic highways and map showing their locations may be obtained from the Caltrans Scenic Highway Coordinators.

If a route is not included on a list of highways eligible for scenic highway designation in the Streets and Highways Code Section 263 et seq., it must be added before it can be considered for official designation. A highway may be designated scenic depending on the extent of the natural landscape that 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.

When a local jurisdiction nominates an eligible scenic highway for official designation, it must identify and define the scenic corridor of the highway. A scenic corridor is the land generally adjacent to and visible from the highway. A scenic highway designation protects the scenic values of an area. Jurisdictional boundaries of the nominating agency are also considered, and the agency must also adopt ordinances to preserve the scenic

quality of the corridor or document such regulations that already exist in various portions of local codes. These ordinances make up the scenic corridor protection program.

To receive official designation, the local jurisdiction must follow the same process required for official designation of State Scenic Highways. The minimum requirements for scenic corridor protection include:

- Regulation of land use and density of development;
- Detailed land and site planning;
- Control of outdoor advertising (including a ban on billboards);
- Careful attention to and control of earthmoving and landscaping; and
- Careful attention to design and appearance of structures and equipment.

### *LOCAL*

#### **Glenn County Unified Development Code**

Chapter 15.570, Landscaping Standards, of the County Code contains several sections that regulate aesthetic or visual standards for development in the County. These include standards for landscaping of commercial and industrial developments; and requirements for the contents of landscape plans. Some of these standards including the following:

- All undeveloped land areas shall be maintained in permanent vegetative cover, or alternatively be landscaped with a combination of materials to control runoff. All yards shall be landscaped such that there shall be no accumulation of silt, mud or standing water causing unsightly or hazardous conditions, either within the yard or on adjacent properties, public roads or sidewalks.
- All development shall include an area or areas of the parcel for landscaping to serve as a visual screen and/or provide an increased aesthetic environment; except where street frontages are occupied by existing development.
- Landscaping shall not obstruct traffic or reduce sight distance at any driveway or intersection
- The rear of the lot shall be landscaped with a minimum of a five-foot-wide planted area when abutting any residential use or district; or a six-foot high wooden fence or masonry wall shall be constructed at the rear lot line.
- Where a parking lot contains five or more spaces and is visible from a street, not less than five percent of the parking lot, excluding the area of the landscaped strip. Such landscaping shall be distributed through the parking lot and shall not be concentrated in any one area. Landscaping shall be computed on the basis of the total amount of parking and driveways provided (except spaces provided for enclosed vehicle storage areas
- Protective measures including, but not limited to, concrete curbing, railroad ties or decorative rock shall border all landscaped areas.
- Existing or indigenous plant materials that meet the requirements of this section maybe counted as contributing to the total landscaping required when located within the proposed use area.

- Unless otherwise specifically indicated elsewhere all plant materials shall meet a following minimum standard.
- All landscaping shall be provided with a drip irrigation system or in-ground sprinkler system. If all plant materials are indigenous or drought-resistant, a temporary or portable irrigation system may be provided.

## EXISTING SETTING

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### Regional Scenic Resources

Visual resources are generally classified into two categories: scenic views and scenic resources. Scenic views are elements of the broader viewshed such as mountain ranges, valleys, waterways, and ridgelines. They are usually mid-ground or background elements of a viewshed that can be seen from a range of viewpoints, often along a roadway or other corridor. Scenic resources are specific features of a viewing area (or viewshed) such as trees, rock outcroppings, and historic buildings. They are specific features that act as the focal point of a viewshed and are usually foreground elements.

Aesthetically significant features occur in a diverse array of environments within the region, ranging in character from urban centers to rural agricultural lands to natural water bodies. Features of the built environment that may also have visual significance include individual or groups of structures that are distinctive due to their aesthetic, historical, social, or cultural significance or characteristics. Examples of the visually significant built environment may include bridges or overpasses, architecturally appealing buildings or groups of buildings, landscaped freeways, and a location where a historic event occurred.

### Scenic Highways and Corridors

Scenic highways and corridors make major contributions to the quality of life enjoyed by the residents of a region. The development of community pride, the enhancement of property values, and the protection of aesthetically-pleasing open spaces reflecting a preference for the local lifestyle are all ways in which scenic corridors are valuable to residents.

Scenic highways and corridors can also strengthen the tourist industry. For many visitors, highway corridors will provide their only experience of the region. Enhancement and protection of these corridors ensures that the tourist experience continues to be a positive one and, consequently, provides support for the tourist-related activities of the region's economy.

**Scenic Highways:** A scenic highway is generally defined by Caltrans as a public highway that traverses an area of outstanding scenic quality, containing striking views, flora, geology, or other unique natural attributes. A highway may be designated scenic depending upon 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.

According to the California Scenic Highway Mapping System, administered by Caltrans, there are no officially designated scenic highways or scenic corridors in Glenn County. In addition, there are no eligible State Scenic Highway Corridors in Glenn County that have not yet been officially designated.

**Scenic Corridors:** A scenic corridor is the view from the road that may include a distant panorama and/or the immediate roadside area. A scenic corridor encompasses the outstanding natural features and landscapes that are considered scenic. It is the visual quality of the man-made or natural environments within a scenic corridor that are responsible for its scenic value. Commonly, the physical limits of a scenic corridor are broken down



into foreground views (zero to one quarter mile) and distant views (over one quarter mile). In addition to distinct foreground and distant views, the visual quality of a scenic corridor is defined by special features, which include:

- Focal points - prominent natural or man-made features which immediately catch the eye.
- Transition areas - locations where the visual environment changes dramatically.
- Gateways - locations which mark the entrance to a community or geographic area.

The Glenn County General Plan does not specifically designate any scenic corridors within the county.

### **Natural Scenic Resources**

Glenn County encompasses an outstanding variety of natural vistas and landscapes. The following section describes the significant scenic resources found in the county.

The eastern third of the County is dominated by a “checkerboard” of large acreage farms, with land ownership and road alignments generally following square mile section lines. Views of agricultural lands in the eastern portion of the County are expansive, and framed primarily by the rolling foothills of the Coast Range to the west, the distant Sierra Nevada Mountains to the east and the jagged peaks of the Sutter Buttes to the southeast.

In the western portions of the County, large farms give way to much larger cattle and sheep ranches, cultivated fields give way to arid rangeland, and the flat terrain found throughout the eastern portions of the County transitions into rolling hills and spectacular upland valleys. Further west, the land becomes even more rugged and wild as elevations increase up to 7,000 feet in the Mendocino National Forest and the wilderness areas surrounding Snow Mountain.

**Snow Mountain.** Snow Mountain is a mountain with two 7,000+ summits named Snow Mountain East and Snow Mountain West, located on the border of Glenn County, Colusa County and Lake County in the southwestern portion of Glenn County. The mountain is part of the Pacific Coast Ranges mountain system and it is the first tall peak in the California Coast Ranges north of San Francisco. On clear days, the peak can be seen from Mount Diablo, and from several peaks in the Mayacamas Mountains, such as Mount Saint Helena, and Mount Konocti. Usually, the peaks are quite prominent from the California Central Valley, moreover the Sacramento Valley, such as from Interstate 5. On clear days the peaks can be seen from most vantage points in Glenn County. Like its name states, the summits and nearby high mountains get snowfall in winter, and the snowpack can last until June. The mountain gives its name to the 37,700-acre Mountain Wilderness in the Mendocino National Forest.

### **Other Scenic Resources Areas**

The Glenn County General Plan does not specifically designate any scenic viewsheds within the county. The existing Glenn County General Plan does however note the County's scenic environmental resources including the Sacramento River environment, and scenic vistas of the Coast Range and the Sierra.

**Water Resources:** Water resources are important visual resources that draw tourists to the area for recreational opportunities, provide critical habitat, and provide for scenic areas within and surrounding urban areas. The most visually significant water body in the region is the Sacramento River which forms the eastern boundary of the county.

**Agricultural Resources:** Much of the undeveloped land within the County and areas surrounding the urbanized portion of Glenn County is predominantly farmland. Agricultural lands have become important visual resources that contribute to the community identity of Glenn County, surrounding areas, and the Valley

Region. Agricultural lands provide for visual relief from urbanized areas and act as community separators to nearby urban areas.

### **National Wildlife Refuges and Wildlife Management Areas**

The Sacramento National Wildlife Refuge Complex consists of five national wildlife refuges (NWR) and three wildlife management areas (WMA) that comprise over 35,000 acres of wetlands and uplands in the Sacramento Valley, California. In addition, there are over 30,000 acres of conservation easements in the Complex. The Refuges and easements are part of the USFWS; they serve as resting and feeding areas for nearly half the migratory birds on the Pacific Flyway.

**Sacramento National Wildlife Refuge.** The Sacramento National Wildlife Refuge is a 10,783-acre refuge consisting of about 7,600 acres of intensively managed wetlands, uplands, riparian habitat, and vernal pools. It typically supports wintering populations of more than 600,000 ducks and 200,000 geese. The refuge supports several endangered plants and animals, including transplanted colonies of palmate-bracted birds-beak, several species of fairy shrimp, vernal pool tadpole shrimp, giant garter snake, wintering peregrine falcon, bald eagle, and breeding tricolored blackbird. Resident wildlife includes grebe, heron, blackbird, golden eagle, beaver, muskrat, black-tailed deer, and other species typical of upland and wetland habitats. Approximately 9,000 people hunt on the refuge each year, and 73,000 people use the visitor center, auto tour route, and walking trail.

**Willow Creek-Lurline Wildlife Management Area.** The Willow Creek-Lurline Wildlife Management Area is part of the Sacramento National Wildlife Refuge Complex. It lies within the Colusa Basin, and is located approximately 10 miles south of the town of Willows in Glenn and Colusa Counties. It consists of conservation easements on privately-owned wetlands. The Willow Creek-Lurline Wildlife Management Area was established in 1985 with the primary purpose of preserving wetland habitat for wintering waterfowl and other wetland-dependent wildlife. It has an acquisition boundary which lies within a portion of Glenn and Colusa counties. The Willow Creek-Lurline WMA represents some of the last privately-owned historic wetlands in the Colusa Basin. These lands consist of a mosaic of managed seasonal and semi-permanent wetlands and native uplands surrounded by rice agriculture. Heavy alkali soils influence the wetlands and uplands of this region, often resulting in sparse emergent vegetation and salt-tolerant plant communities. These lands provide an important corridor of natural habitat helping to link the three Refuges mentioned above.

The Willow Creek-Lurline WMA supports tens of thousands of wintering waterfowl including a significant portion of the tule greater white-fronted goose population. In addition, the Lurline wetlands regularly support breeding tricolored blackbirds, a species of management concern.

Because the easement properties of the Willow Creek-Lurline WMA are under private ownership, public access is not permitted.

**North Central Valley Wildlife Management Area.** The North Central Valley Wildlife Management Area was established primarily to protect wintering habitat for waterfowl. Under the North Central Valley WMA the USFWS has the authority to purchase conservation easements on private lands located within an 11 county area of the Sacramento Valley. Within this management area, the Service has purchased conservation easements on 14,740 acres from willing landowners to protect wildlife habitat. In exchange for payment, the landowners agree to maintain wetlands and other habitats on their property in perpetuity. These Wildlife Management lands are privately owned and not open for public access.

### **State Recreation Areas**

**Butte City Park Project Property.** This property is new and may not be available for public use, pending necessary planning, facility development and staffing. The Butte City Park Property is along the Sacramento

River, currently includes picnic areas, and is within the vicinity of a boat launch facility in Butte City. Day use activities and facilities currently include fishing.

### **State Wildlife Areas**

**Sacramento River Wildlife Area.** These 4,014 acres of wildlife area is located in 14 separate units along the west and east side of the Sacramento River in Butte, Glenn, and Colusa Counties. The wildlife area is a riparian forest dominated by cottonwood, willow, ash, sycamore, and box elder trees with a dense understory of wild grape, pipevine, poison oak and grasslands, oxbow lakes, and gravel bars. Common wildlife along the river includes otters, beavers, gray fox, bobcat, western pond turtles, ash-throated flycatchers, great blue herons, egrets, and a variety of birds of prey. Hunting is allowed and opportunities are mostly for deer, quail, turnkey, and dove. Fishing, trapping, and bird watching are also common.

### **US Reclamation Projects**

**Stony Gorge Reservoir.** Completed in 1928, is on Stony Creek about 18 miles downstream from East Park Dam and 5 miles west of Fruto in western Glenn County. The dam is a concrete slab and buttress structure with a height of 139 feet and a crest length of 868 feet. A warm-water fishery with an 18-mile shoreline. Excellent boating and shoreline accessibility. One boat ramp useable most of the summer, depending on water level. Free camping except for group camping area. Available bass species include largemouth and smallmouth bass of Texan strain that grow faster and mature earlier; A thriving bluegill and crappie population; Catfishing good year-round.

**Tehama-Colusa Canal.** The Tehama-Colusa Canal is a canal that carries diverted water from the Red Bluff Diversion Dam along a 110-miles canal. The canal initially carries 2,530 cubic feet per second, and at its terminus 1,700 cubic feet per second. The canal was built from 1965 to 1980. An 80-foot dam called Northside Division Dam controls water flow along the Tehama-Colusa Canal. Funk Reservoir backs up behind the dam Five pump plants take water from the canal and feed it into the Glenn County water distribution grid.

### **National Forests**

**Mendocino National Forest.** The Mendocino National Forest is 913,306 acres and lies in parts of six counties, including Colusa, Lake, Glenn, Mendocino, Tehama, and Trinity. Elevations in the Forest range from 750 feet to 8,092 feet, with the average elevation about 4,000 feet. An estimated 60,000 acres of old growth occur here, including forests of Douglas-fir, Ponderosa Pine, White Fir, Tanoak, and Pacific madrone. The Mendocino National Forest is the only one of California's 18 national Forests that are not crossed by a paved road or highway and it is attractive to people seeking outdoor recreation. The Forest provides resources through logging and grazing, in addition to its recreational activities.

### **Rivers**

**Sacramento River.** The Sacramento River traverses the eastern portion of Glenn County in a north-south direction, stretching from the northern county border to the southern county border. The Sacramento River generally demarcates the County's eastern boundary. The Sacramento River corridor in Glenn County provides numerous opportunities for recreational activities such as hiking, camping, hunting, fishing, boating and other water sports. The river corridor is home to countless plant, animal and aquatic species and numerous habitat types. Areas of the river corridor have been developed with parks and boat launch facilities to provide for public access to the river. The Sacramento River feeds, and is fed by, numerous creeks, streams and tributaries throughout Glenn County and neighboring Counties

## REFERENCES

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California Department of Transportation. 2018. Officially Designated State Scenic Highways. Available: <http://www.dot.ca.gov/hq/LandArch/scenic/schwy1.html>.

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# Chapter 6

## Health & Environmental Justice



The Environmental Justice chapter addresses a wide range of topics related to the health and well-being of County residents and workers. This section describes components of the built environment that may impact human health disproportionately. Environmental Justice is related to a number of environmental categories and topics. Therefore, this section contains numerous references to other sections in this report. For example, conditions regarding transit options, bicycle facilities, and pedestrian facilities are addressed in greater detail in Section 2.0 (Transportation and Circulation). Parks and recreational facilities are discussed in Section 3.0 (Community Services and Facilities). Hazards and hazardous materials and applicable regulations are addressed in Section 4.0 (Hazards, Safety, and Noise). Air quality and air quality regulations as well as water quality and water quality regulations, are addressed in Section 5.0 (Conservation).

This Chapter includes the following topics:

- Environmental Justice Background and Overview
- Environmental Justice Determinants in Glenn County



## 6.0. ENVIRONMENTAL JUSTICE

This section addresses environmental justice in Glenn County, provides an overview of existing environmental conditions for disadvantaged communities in Glenn County, and describes components of the built environment that may impact human health disproportionately. Environmental Justice is related to a number of environmental categories and topics. Therefore, this section of the Glenn County General Plan Existing Conditions Report contains numerous references to other sections in this report. For example, conditions regarding transit options, bicycle facilities, and pedestrian facilities are addressed in greater detail in Section 2.0 (Transportation and Circulation). Parks and recreational facilities are discussed in Section 3.0 (Community Services and Facilities). Hazards and hazardous materials and applicable regulations are addressed in Section 4.0 (Hazards, Safety, and Noise). Air quality and air quality regulations as well as water quality and water quality regulations, are addressed in Section 5.0 (Conservation).

### ENVIRONMENTAL JUSTICE- BACKGROUND AND OVERVIEW

#### BACKGROUND

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The negative effects of environmental degradation and pollution are well-documented and include severe impacts to human health and longevity, depending on the level of exposure. Within the United States, certain communities have historically been disproportionately disadvantaged by environmental threats and the negative health impacts of environmental degradation. These disproportionately disadvantaged communities include, but are not limited to: communities of color, low-income communities, members of tribal nations, and immigrant communities. Increased exposure to environmental pollutants, unsafe drinking water, and contaminated facilities/structures have contributed to poorer health outcomes for these communities. Local and regional policies, intersectional structural inequalities, land-use planning, enforcement deficiencies, and lack of community engagement and advocacy are all critical facets of the disproportionate layout of negative environmental externalities. The field of environmental justice is focused on addressing these disproportionate impacts and improving the wellness of all communities by bolstering community planning efforts and promoting the fair treatment of all people regardless of their race, ethnicity, national origin, or income.

Environmental Justice practices across the United States have worked to improve the status of disadvantaged communities, through effective planning and policy decisions. Effective planning and policy decisions at the federal, state, and local levels can help ensure that equal protection from environmental hazards is prioritized for all people.

#### DEFINING DISADVANTAGED COMMUNITIES

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The term ‘Disadvantaged Community’ is a broad designation that may include any community that lacks appropriate resources, or is confronted with any exceptional economic, health, or environmental burden. In relation to environmental justice, disadvantaged communities are typically those communities that disproportionately face the burdens of environmental hazards. The *Planning for*



*Healthy Communities Act of 2016 (Senate Bill 1000)*, establishes a set criterion for identifying a Disadvantaged Community (DAC). The definition of a DAC for the purposes of the bill is as follows:

*“An area identified by the California Environmental Protection Agency (CalEPA) pursuant to Section 39711 of the Health and Safety Code or an area that is a low-income area that is disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation.”*

California cities and counties that are updating two or more elements of their General Plans concurrently must include environmental justice if one or more disadvantaged communities is identified within their Planning Area. Using the CalEPA definition of a disadvantaged community, Senate Bill 1000 provides stakeholders with the CalEnviroScreen 3.0 map to identify communities that are disproportionately disadvantaged by environmental hazards. The CalEnviroScreen 3.0 map is a science-based tool developed by the Office of Environmental Health Hazards Assessment on behalf of CalEPA that uses existing environmental, health, and socioeconomic data to rank all census tracts in California with a CalEnviroScreen score designating disadvantaged communities as the highest 25% scoring census tracts. CalEnviroScreen scores for Glenn County are shown on Figure 6.0-1. As shown on this figure, Glenn County does not designate any tract as a Disadvantaged Community.

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### REGULATORY SETTING

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#### *STATE*

#### **Senate Bill 1000**

Senate Bill 1000 (SB 1000), also known as The Planning for Healthy Communities Act, is a comprehensive state legislation that requires California cities and counties to include an Environmental Justice element or a set of environmental justice policies into their General Plans when updating two or more elements concurrently on or after January 1, 2018.

The Bill was established as a state regulation on September 24, 2016, with the goal of improving the health of California cities and counties and addressing pertinent issues of environmental justice related to community wellness. SB 1000 outlines strategies to promote the protection of sensitive land uses within the state, and simultaneously mandates that cities and counties address the needs of disadvantaged communities. Through this bill, environmental justice is a mandated consideration in all cities and county’s local land-use planning. SB 1000 was authored by Senator Connie Leyva, and co-sponsored by the California Environmental Justice Alliance (CEJA), and the Center for Community Action and Environmental Justice (CCEAJ).

To aid city and county governments in meeting the requirements of SB 1000, the California Environmental Justice Alliance (CEJA) has created a strategic toolkit. The SB 1000 Implementation Toolkit serves as a guide for key stakeholders by clarifying legislation requirements and providing tools,

best practices, and resources to support these stakeholders as they begin to incorporate the law into local practice. To effectively meet the mandates of the bill, cities and counties must formally identify disadvantaged communities (DACs) and work to reduce health risks specific to these communities by outlining methods and programs within their plan that address the needs of DACs. Each General Plan must address the following topics in order to meet the requirements of SB 1000:

- Pollution Exposure and Air Quality
- Public Facilities
- Food Access
- Safe and Sanitary Homes
- Physical Activity
- “Civil” or Community Engagement
- Improvements and Programs (that address the needs of Disadvantaged Communities)

### **Senate Bill 535**

In 2012, the Legislature passed SB 535, directing that 25 percent of the proceeds from the Greenhouse Gas Reduction Fund (GGRF) (established by the California Global Warming Solutions Act of 2006 AB 52’s cap and trade program) go to projects that provide a benefit to disadvantaged communities.

### **Assembly Bill 1550**

In 2016, the Legislature passed AB 1550, which amended SB 535 to require all GGRF investments that benefit DACs to also be located within those communities. The law also requires that an additional 10% of the fund be dedicated to low-income households and communities, of which 5% is reserved for low-income households and communities living within a half-mile of a designated DAC.

### **Senate Bill 673**

In 2015, the Legislature passed SB 673 directing the Department of Toxic Substances Control (DTSC) to include criteria such as cumulative impact and neighborhood vulnerability when issuing or renewing facility permits. The law provides the DTSC with an opportunity to use tools such as CalEnviroScreen when making decisions on hazardous waste permitting.

### **Assembly Bill 523**

Approved in 2017, AB 523, allocates at least 25% of the Electric Program Investment Charge (EPIC) funds administered by the California Energy Commission (CEC) to support technology demonstration and deployment projects located in and benefiting “disadvantaged communities,” and dedicates at least 10% of the fund to activities located in and benefiting “low-income” communities as defined by AB 1550.

### **Senate Bill 43**

Approved in 2013, SB 43, establishes the Green Tariff Shared Renewables program, administered by the California Public Utilities Commission (CPUC), which enables utility customers to meet their energy

generation needs through offsite generation of renewable energy projects. The program requires 100 MW of renewable energy projects to be sited in the top 20% of CalEnviroScreen CES scores based on each investor-owned utility (IOU) service territory.

### **Assembly Bill 693**

Approved in 2015, AB 693 allocates \$100 million per year for 10 years to fund solar installations on multifamily affordable housing. To qualify, a multifamily affordable housing property must be: (1) located in a DAC as defined by SB 535 using the most recent version of CalEnviroScreen CES; or (2) have at least 80% of tenants with incomes at or below 60% of area median income (AMI).

### **Assembly Bill 2722**

Approved in 2016, AB 2722 requires the California Strategic Growth Council to award competitive grants to specified eligible entities for the development and implementation of neighborhood-level transformative climate community plans that include greenhouse gas emissions reduction projects that provide local economic, environmental, and health benefits to disadvantaged communities, as defined. AB 2722 created the Transformative Climate Communities (TCC) program administered through the California Strategic Growth Council (SGC). The TCC is a GGRF-funded program that supports innovative, comprehensive, and community-led plans that reduce pollution and achieve multiple co-benefits at the neighborhood level.

### **Senate Bill 244**

Approved in 2011, SB 244 requires cities and counties to address the infrastructure needs of unincorporated disadvantaged communities in city and county general plans and LAFCo Municipal Service Reviews (MSRs) and annexation decisions. SB 244 defines an unincorporated disadvantaged community as a place that: contains 10 or more dwelling units in close proximity to one another; is either within a city SOI, is an island within a city boundary, or is geographically isolated and has existed for more than 50 years; and has a median household income that is 80 percent or less than the statewide median household income. For cities and counties, SB 244 requires that before the due date for adoption of the next housing element after January 1, 2012, the general plan land use element must be updated to: identify unincorporated disadvantaged communities; analyze for each identified community the water, wastewater, stormwater drainage, and structural fire protection needs; and identify financial funding alternatives for the extension of services to identified communities. For LAFCos, SB 244 generally prohibits approval of city annexations greater than 10 acres that are contiguous to a disadvantaged unincorporated community unless the city applies to annex the disadvantaged unincorporated community as well.

### **California Department of Transportation's Active Transportation Program (ATP)**

California Department of Transportation (CalTrans) the Active Transportation Program (ATP) aims to enhance public health and advance California's climate goals by increasing safety and mobility for non-motorized active transportation such as biking and walking. Twenty-five percent of program funds are set aside for ATP projects in "disadvantaged communities" (defined as census tracts within the top 25%

of CalEnviroScreen (CES) scores along with several other options), while an additional 2% is set aside to fund active transportation planning in DACs.

### *LOCAL*

#### **Glenn County General Plan**

Specific goals and policies included within the Glenn County General Plan that are most related to the topics of environmental justice and disadvantaged communities include:

#### GOALS:

**HE.G.1 Assurance of choice of housing location for all residents of the Glenn County unincorporated area.**

**HE.G.2 Development, through public and private resources, of sufficient new housing to ensure the availability of safe affordable housing for all residents in the unincorporated areas of Glenn County.**

**HE.G.6 Promote equal access to safe and decent housing for all income groups.**

**HE.G.7 Increase opportunities for special needs groups (elderly, large families, families with female heads of household, farm workers, disabled, developmentally disabled, and homeless) to obtain adequate housing.**

#### POLICIES:

HE.P.6 Encourage development of a range of housing types for all income levels in proximity to existing and planned employment centers.

HE.P.8 Encourage and participate in efforts to achieve economies and efficiencies which will facilitate the production of quality affordable housing.

HE.P.9 Manage development of land within and adjacent to existing neighborhoods to avoid potentially adverse impacts on the living environment.

HE.P.10 Make ending homelessness a priority.

HE.P.23 Encourage enforcement of fair housing laws throughout the county.

HE.P.24 Encourage full use of federal and state housing assistance programs which can enable those persons with unmet housing needs to obtain decent housing at prices they can afford.

HE.P.25 Support the development of housing plans and programs, including new publicly subsidized housing, which maximize housing choice for special needs groups and lower-income households commensurate with need.

HE.P.26 Ensure all new multi-family construction meets the accessibility requirements of federal and state fair housing acts through local permitting and approval process.

### ENVIRONMENTAL JUSTICE DETERMINANTS IN GLENN COUNTY

The CalEnviroScreen 3.0 tool is the standard metric for determining the location and presence of designated disadvantaged communities within an area. As shown on Figure 6.0-1, based on a screening of existing census tracts within Glenn County, all census tracts defined by county boundaries are not considered CalEnviroScreen-designated Disadvantaged Communities (DACs). As described previously, there are seven primary environmental justice focus areas defined within *The Planning for Healthy Communities Act* that must be used in addressing the unique or compounded health risks in disadvantaged communities (Pollution Exposure and Air Quality, Public Facilities, Food Access, Safe and Sanitary Homes, Physical Activity, Community Engagement, and Improvements and Programs). The existing conditions for these focus areas within Glenn County are assessed below.

#### POLLUTION EXPOSURE AND AIR QUALITY

Air quality and pollution exposure is an aspect of environmental quality that may disproportionately impact disadvantaged communities (DACs). This is often due to the existence and maintenance of pollution-emitting sources within close proximity to DACs. If disadvantaged communities have unequal or excessive exposure to sources of pollution including; air pollution, water contamination, and hazardous waste exposure, this exposure must be addressed using appropriate planning measures. Disproportionate exposure to pollutants is linked to negative health impacts including asthma, cardiovascular illness, and other fatal conditions.

Air quality is a mandated environmental justice focus area under SB 1000. As mentioned previously, all census tracts within the boundaries of Glenn County are not defined as CalEnviroScreen-designated Disadvantaged Communities (DACs). This section serves to assess pollution exposure and air quality in Glenn County. A detailed assessment of existing air quality and air quality regulations as well as water quality and water quality regulations within Glenn County, are addressed in Section 5.0 (Conservation) and Section 3.0 (Community Services & Facilities).

#### Air Quality

As described in Section 5.0 of this document, pollution potential in the Glenn County area is relatively high due to the combination of air pollutant emissions sources, transport of pollutants into the area and meteorological conditions that are conducive to high levels of air pollution. Elevated levels of particulate matter (primarily very small particulates or PM<sub>10</sub>) and ground-level ozone are of most concern to regional air quality officials.

Table 6.2-1 depicts the State and national attainment status for Glenn County. As evident in the table Glenn County has a State designation of Nonattainment for O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> and is either Unclassified or Attainment for all other criteria pollutants. The County has a national designation of Nonattainment for O<sub>3</sub> and PM<sub>2.5</sub>. In accordance with the California Clean Air Act (CCAA), areas of the state are

designated as attainment, nonattainment, or unclassified with respect to applicable standards dependent upon the status of pollutant concentrations. “Attainment” refers to instances where pollutant concentrations did not violate the applicable standard in that area. A “nonattainment” designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. A detailed analysis of criteria pollutants within Glenn County is available in Section 5.0 (Conservation).

**TABLE 6.2-1: STATE AND NATIONAL ATTAINMENT STATUS**

CRITERIA POLLUTANTS	STATE DESIGNATIONS	NATIONAL DESIGNATIONS
Ozone	Nonattainment	Nonattainment
PM <sub>10</sub>	Nonattainment	Attainment
PM <sub>2.5</sub>	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified
Sulfates	Attainment	
Lead	Attainment	
Hydrogen Sulfide	Unclassified	
Visibility Reducing Particles	Unclassified	

SOURCE: California Air Resources Board (2018). [www.arb.ca.gov/design/adm/adm.htm](http://www.arb.ca.gov/design/adm/adm.htm)

### Asthma Rates

Table 6.2-2 includes data from California Health Interview Survey (CHIS) administered by the UCLA Center for Health Policy Research for asthma rates, symptoms and hospitalizations for Glenn County, and the State.

**TABLE 6.2-2: ASTHMA RATES AND HOSPITALIZATIONS (2016)**

REGION	EVER DIAGNOSED WITH ASTHMA	EMERGENCY OR URGENT CARE IN PAST 12 MONTHS FOR ASTHMA (CURRENT ASTHMATICS)	HAD ASTHMA EPISODE / ATTACK IN PAST 12 MONTHS (CURRENT ASTHMATICS)	HAD ASTHMA SYMPTOMS WITHIN PAST 12 MONTHS (CURRENT ASTHMATICS)
Glenn County	17.3%	19.2%*	34.6%	100%
California	14.8%	13.1%	28.7%	90.3%

SOURCE: CALIFORNIA HEALTH INTERVIEW SURVEY. CHIS 2016 ASTHMA SOURCE FILE. LOS ANGELES, CA: UCLA CENTER FOR HEALTH POLICY RESEARCH. \* INDICATES POSSIBLE STATISTICALLY UNSTABLE VALUES DUE TO SAMPLE SIZE.

As shown in Table 6.2-2 above, 17.3 percent of Glenn County residents have been diagnosed with asthma at some point in their lives, and of those who have been diagnosed, all have had asthma

symptoms in the past 12 months (from the time the 2016 CHIS survey was conducted). In addition, county hospitalizations due to asthma are slightly higher than statewide averages at 19.2 percent and 34.6 percent respectively.<sup>1</sup> The percentage of people diagnosed with asthma in Glenn County is slightly higher than the statewide average.

### **Water Quality**

According to the California Water Quality Control Monitoring Council, there are areas designated as Section 303(d) impaired waterbodies within Glenn County. According to the California Water Quality Control Monitoring Council, which is part of California Environmental Protection Agency, there are many areas within Glenn County which are considered Section 303(d) impaired waterbodies. Nine watersheds within Glenn County have Section 303(d) listed impaired water bodies. The impaired water bodies are located within the Middle Butte Creek, Sacramento River, Colusa Drain, Upper Stony Creek, Middle Stony Creek, Lower Stony Creek, Walker Creek, Black Butte River, and Corbin Creek-Eel River hydrologic areas. These hydrologic areas extend beyond the county boundary so not all impaired water body segments are located within Glenn County. The pollution source is predominantly agricultural and crop related, although mercury, and resource extraction is also a pollution source. There are a few pollution sources that are not currently known. To maintain water quality, storm drainage services are provided by storm drain maintenance districts and a County Service Area has been formed in Glenn County to dispose of storm waters.

In regard to water treatment and wastewater; the Central Valley Regional Water Quality Control Board (RWQCB) has adopted policies and requirements pertaining to on-site sewage disposal systems, commonly referred to as the Basin Plan. Wastewater in Glenn County is treated and disposed of using one of several methods. The primary methods are onsite disposal, commonly referred to as septic systems, and centralized disposal. The communities of Orland, Willows, Hamilton City, Northeast Willows, and Parkway Estates are served by community systems for wastewater disposal and treatment. Section 5.0, (Conservation), and Section 3.0 (Community Services and Facilities) includes additional information related to water quality, and water quality facilities.

### **Drinking Water Quality Reporting**

Groundwater is the primary source for drinking water in Glenn County (USEPA 2005). Larger drinking water purveyors in Glenn County are Cal Water-Willows, Cal Water-Hamilton City, and the City of Orland Public Works. Glenn County has 89 small water systems that deliver water to smaller groups of users in the county. Glenn County Department of Agriculture (GCDA), Glenn County Department of Environmental Health (GCDEH), Glenn County Resource Conservation District (GCRCDD), and Glenn County Flood Control Department (GCFCD) regulate drinking water quality or participate in activities to improve drinking water quality. Drinking water purveyors are responsible for adhering to water quality regulations and county guidelines.

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<sup>1</sup> Possible statistically unstable values due to sample size.

## Water Supply

The county's water supply needs are met primarily through pumping water from groundwater basins. There are seven groundwater basins within Glenn County: the Stonyford Town Area, Funks Creek, Squaw Flat, Stony Gorge Reservoir, Elk Creek Area, Chrome Town Area, and Sacramento Valley Groundwater Basins. Groundwater management in Glenn County is conducted in accordance with the management objectives in the Glenn County Groundwater Management Plan. The Glenn County Groundwater Management Plan requires basin management objectives (BMOs) for minimum groundwater levels, minimum water quality and maximum inelastic subsidence be established for each of the 17 subareas within the plan area which generally includes areas of the county where irrigated agriculture is conducted; primarily in the Valley portion of the county. A detailed discussion of the groundwater basins within Glenn County is available in Section 3.0 (Community Services and Facilities) and Section 5.0 (Conservation).

## PUBLIC FACILITIES

Access and availability of public facilities is an aspect of the built-environment that may disproportionately limit the opportunities of disadvantaged communities (DACs). If disadvantaged communities have unequal access to public facilities, or if a county does not provide adequate facilities for public use, DACs may be limited in their ability to access necessary key resources. Adequate planning of parks, and transportation infrastructure can ensure that all communities within a county have equal access to resources. Limited access to resources as a result of inadequate public facilities can lead to reduced lifespan, poorer health outcomes, and diminished mental well-being.

Public Facilities is a mandated environmental justice focus area under SB 1000. As mentioned, all census tracts within the boundaries of Glenn County are not defined as CalEnviroScreen-designated Disadvantaged Communities (DACs). Regardless of the absence of DACs throughout the county, this section serves to assess the adequacy of public facilities in Glenn County.

## Parks and Cultural Centers

Equitable access to public parks, schools and cultural centers within a community is critical to the promotion of public health and well-being. Lack of recreational and open spaces is a significant driver of poor physical and mental health. Parks and public facilities provide opportunities for exercise, recreation, and community engagement that is necessary to bolster resident health. Parkland within the county is detailed and displayed in Section 3.0 Community Services and Facilities (Table 3.7-1 and Figure 3.6-1).

The California Statewide Park Program (Public Resources Code §5642) defines underserved communities as having a ratio of less than three acres of parkland per 1,000 residents.<sup>2</sup> This measure identifies areas where surrounding population density may overwhelm limited park space. As described in Section 3.0

<sup>2</sup> California Department of Parks and Recreation. SCORP 2015. Available at: [http://www.parksforcalifornia.org/data/Calif\\_SCORP2015\\_ScreenRes.pdf](http://www.parksforcalifornia.org/data/Calif_SCORP2015_ScreenRes.pdf)



(Community Services and Facilities) the county has approximately 281.2 acres of parkland. Therefore, with a 2017 population of approximately 29,132 the current distribution of park acreage per 1,000 residents is 9.65, which is far above the Statewide Park Program standard.

An additional factor that determines the equitability and accessibility of parks and public facilities within an area is the distance between these public facilities and the home. If this distance to public facilities is perceived as “walkable”, residents may be more likely and willing to walk to those amenities. A distance of 1/4 mile is a commonly cited threshold for how far most people are willing to walk for neighborhood services. Conversely, a national survey of bicyclist and pedestrian attitudes and behavior, by the National Highway Traffic and Safety Administration and the Bureau of Transportation Statistics, surveyed almost 10,000 people over the age of 16 and found that only 5 percent of walking trips were for getting to work. Of the other trips, 38 percent were for personal errands, 28 percent were for exercise, and 21 percent were for recreation or leisure and the average trip length was 1.3 miles. The validity of both the quarter-mile, and or longer distances, may be dependent on perceptions of the built environment, safety, and time constraints, distance, as well as connectivity. As shown of Figure 3.6-1, the majority of developed residential uses within incorporated cities fall within the half-mile radius, and most are also within a quarter-mile of public parks. In the unincorporated county, parkland is outside the half-mile radius from most developed residential areas.

**Public Transit**

Public transit within a county increases accessibility to resources for disadvantaged communities and ensures that those without automobile access or without the ability to operate an automobile can maintain mobility. In this way, public transit provides a way of promoting equity within the built-environment.

Within Glenn County, Glenn Transit Service (GTS) is the primary provider of bus transit. GTS provides connections, through Glenn Ride (an intercity fixed route), throughout Glenn County and the cities of Willows, Orland, Artois, Hamilton City and Chico. GTS also provides paratransit, also known as dial-a-ride or door-to-door service, for people who are unable to independently use the transit system due to a physical or mental disability. Additionally, GTS offers a program for eligible Glenn County residents who are unable to provide for their own transportation to and from medical appointments outside of the Glenn Ride bus system and Dial-A-Ride service areas. Standard priced bus fare within Glenn County is shown in Table 6.2-3 below.

**TABLE 6.2-3: GLENN RIDE BUS FARE**

<i>FARE</i>	<i>COST</i>
1 one way pass within county	\$2.00
1 one way pass Tehama TRAX	\$2.50
1 one way to/from Chico	\$3.00
30 Day Pass	\$50.00

*GLENN TRANSIT SERVICE (2019)*

The affordability and competency of the public transit network within a county is critical for ensuring equitable resource access. Expanding the network of bus routes and maintaining discounted fare rates will promote equitable mobility within Glenn County. Additional information on public transportation and circulation within Glenn County is available in Section 2.0 (Circulation).

### **Bike Lanes**

Bike access is a facet of transportation that offers a mobility option for those residents who do not have access to a car and/or those who prefer active transportation. Increased accessibility of bike lanes may help reduce congestion, contribute to community physical health, and improve air quality. Communities that do not have available bike lanes may be disadvantaged by limited resource access and diminished opportunity for physical exercise. Maintaining facilities that allow for bicycle mobility is important for community vitality. This is especially true in disadvantaged communities where transportation via car may be less accessible.

Due to the rural nature of Glenn County, longer travel distances, and the lack of existing bikeway facilities, current and future bikeway use will be relatively low when compared with urban areas. School age children are expected to be the highest category of commuter bikeway system users. A field survey of bicycle parking available at small communities was conducted in June, 1996. In general, bicycle parking is not abundant or even readily available; parking is most commonly found at schools and major shopping areas.

Several short range and long-range bicycle facility projects are identified in the 2015 Glenn County Regional Transportation Plan. Upon completion, these projects will provide a continuous and comprehensive system of bikeways that improves connectivity and encourages biking. This outline for proposed bike paths within the county offers a bicycle circulation network that provides access to bike paths for the entire Glenn County.<sup>3</sup>

Class 1 bike lanes are paved pathways that are completely separated from streets. There are not many existing Class 1 bike lanes currently within Glenn County and none are proposed within the Glenn County Transportation Plan. Class 2 bike lanes are a striped lane for one-way bike travel on a street. Class 3 bike lanes are streets designated for bicycle travel and shared with motor vehicles. Bicycle facilities proposed in Glenn County include the following:

- Class II bike lanes improvements proposed on:
  - Tehama County Line to County Road 9
  - County Road 9 to State Route 32
  - State Route 32 to County Road 16
  - County Road 16 to County Road 25
  - County Road 25 to County Road 33

<sup>3</sup> Glenn County Transportation Commission. Glenn County Regional Transportation Plan. Available at: <https://static1.squarespace.com/static/5be9b3b8da02bcbc1061463a/t/5beb0ede70a6add56b311e18/1542131459642/glenn-rtp-2015.pdf>

- County Road 33 to County Road 35
- County Road 35 to County Road 48
- County Road 48 to County Road 57
- County Road 57 to County Line
- I-5 to Road 200A
- State Route 32 to Colusa County Line
  
- Class III bike route path improvements proposed on:
  - County Road 99 W to State Route 45
  - County Road D to County Road 99 W
  - County Road 25 to County Road 68
  - State Route 32 to County Road 61
  - County Road 99 W to County Road 203
  - Cutter Road to State Route 32
  - County Road 306 to County Line
  - State Route 45 east to County Line
  - County Road 33 to County Road 15
  - County Road 99 to State Route 45
  - County Road D to County Road M
  - County Road 99 W to State Route 45
  - County Road D to County Road 99 W
  - State Route 162 to County Line
  - Colusa County Line to Tehama County Line
  - County Road 406 to Mendocino County Line
  - State Route 162 to County Road 307

In general, the county has a limited amount of bike lanes and bike infrastructure currently in existence for residents to travel. Increasing bike infrastructure and meeting the goals of the existing Glenn County Regional Transportation Plan to increase accessibility to necessary resources for residents will be one of the objectives of the General Plan Update. More information on bicycle and transportation-related facilities is available in Section 2.0 (Circulation).

### FOOD ACCESS

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Ensuring adequate food access is challenging in many communities in California. Some communities within California cities and counties have limited access to adequate and/or healthy food. Often, low-income areas may lack healthy food options or adequate supermarkets. An inability to access nutritious foods can lead to poor health outcomes in disadvantaged communities. Food-insecurity, or the uncertainty of having adequate food, is especially harmful for children and pregnant women who are

most in need of nutrient-rich foods. Communities that are most often impacted by food insecurity include low income communities and communities of color.<sup>4</sup>

Food Access is a mandated environmental justice focus area under SB 1000. As mentioned, all census tracts within the boundaries of Glenn County are not defined as CalEnviroScreen-designated Disadvantaged Communities (DACs). Regardless of the absence of DACs throughout the county, this section serves to assess the existing conditions of food accessibility in Glenn County.

### **Food Insecurity**

Food insecurity is the uncertainty about the availability or adequacy of nutritional and safe foods. Based on the USDA available food security data and data from the 2017 American Community Survey, Feeding America estimates the number of food insecure people within a given county. These estimates are located in the Feed America Map the Meal Gap Report. Feeding America estimated that the number of food insecure individuals in Glenn County was 3,620, with a food insecurity rate of 13.0% for the year 2017. The State estimate for these same measures was 11.0%. Therefore, the rate of food insecurity within Glenn County is higher than the rate of food insecurity within California as a whole.

Of the food insecure population within Glenn County, 100% were from households which were below the Federal poverty threshold used for nutrition assistance programs and are therefore eligible for food assistance from the federal government<sup>5</sup>. These residents who qualify for federal nutrition assistance programs can utilize assistance at any store that accepts WIC and SNAP purchases. At the county level, the UCLA Center for Health Policy Research and the California Health Interview Survey (CHIS) reported that 44.6% of adults in Glenn County are food insecure due to low income. In comparison, the same measure for the state of California is 40.8%<sup>6</sup>. Based on the data from both the CHIS and Feeding America, it is evident that the Glenn County food insecurity rate is slightly above the average for cities and counties in California.

### **Food Access**

The Healthy Food Financing Initiative (HFFI) Working Group considers a food desert as a low-income census tract where a substantial number or share of residents has low access to a supermarket or large grocery store. Additionally, the USDA developed a Food Access Research Atlas that identifies “Food Deserts” in the United States at the census tract level. The 2008 U.S. Department of Agriculture (USDA) Farm Bill defined a food desert as an “area in the United States with limited access to affordable and nutritious food, particularly such an area composed of predominantly lower income neighborhoods and communities.”

<sup>4</sup>Elsheikh, E.; Barhoum, N. (2013). Structural Racialization and Food Insecurity in the United States. Prepared for the U.N. Human Rights Committee on the International Covenant on Civil and Political Rights.

<sup>5</sup>Gundersen, C., et al. (2018). Map the Meal Gap 2018: Food insecurity and child food insecurity estimates at the county level. Feeding America. Accessible at: [http://www.feedingamerica.org/research/map-the-meal-gap/2016/overall/CA\\_AllCounties\\_CDs\\_MMG\\_2016.pdf](http://www.feedingamerica.org/research/map-the-meal-gap/2016/overall/CA_AllCounties_CDs_MMG_2016.pdf)

<sup>6</sup>California Health Interview Survey. CHIS 2017 Food Security Source File. Los Angeles, CA: UCLA Center for Health Policy Research. Available at: [http://ask.chis.ucla.edu/AskCHIS/tools/\\_layouts/AskChisTool/home.aspx#/results](http://ask.chis.ucla.edu/AskCHIS/tools/_layouts/AskChisTool/home.aspx#/results) Accessed September 10, 2019.

The California Department of Public Health, Nutrition Education and Obesity Prevention designates portions of Glenn County as a Food Desert. As shown on Figure 6.0-2, food deserts are associated within small portions of the county located within U.S. Census Tract 6021010200, which is located in the northernmost portion of the county around the City of Orland; and U.S. Census Tract 6021010400, which is located in the central portion of the county around the City of Willows<sup>7</sup>.

In addition to the proximity of grocery and food sources within an area, the types of food sources available are important for determining adequacy of food access. The USDA Food Research Atlas data shows that there were approximately 9 grocery stores in Glenn County as of 2014, and approximately 34 of stores were SNAP authorized as of 2016. In addition, the same data set shows that the County had 14 fast food restaurants as of 2014.<sup>8</sup>

### SAFE AND SANITARY HOMES

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The condition of the housing stock in a disadvantaged community may have negative impacts on the well-being of community residents. These health impacts stem from issues such as poor indoor air quality, toxic building materials, exposure to climate variation such as excess heat or cold, improper ventilation, and structural insecurity. Unsafe housing conditions can be a result of the age of the dwelling structure, which increases the likelihood of incorporation of dangerous materials like lead and asbestos, that have significant negative health impacts.<sup>9</sup> Disadvantaged communities often have a larger amount of older units within their housing stock and therefore, residents of these communities are more likely to be exposed to the harmful health impacts that are associated with older housing. Other factors that can contribute to unsafe housing conditions include improper regulation and overcrowding. Ensuring the safety and sanitation of housing stock within a community ensures that there are proper living conditions for all residents.

Safe and Sanitary Homes is a mandated environmental justice focus area under SB 1000. As mentioned, all census tracts within the boundaries of Glenn County are not defined as CalEnviroScreen-designated Disadvantaged Communities (DACs). Regardless of the absence of DACs throughout the county, this section serves to assess the existing conditions of home safety and home sanitation in Glenn County.

#### Age of Housing Stock

The age of a housing unit is a primary factor in the building conditions of the dwelling unit, therefore the age of a community's housing stock is a good indicator of the condition of the housing stock. Data from the 2003-2017 ACS indicates that 53.6 percent of units within Glenn County have been built in 1970 or later. Error! Bookmark not defined. Table 1.2-4, located in Section 1.0 (Land Use), shows development trends by year built based on County Assessor data. According to the CDC, a substantial amount of existing United States housing regulation and bans related to the use of toxic materials were developed in the 1970s;

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<sup>7</sup> California Department of Public Health, Nutrition Education and Obesity Prevention

<sup>8</sup> <https://www.ers.usda.gov/data-products/food-environment-atlas/go-to-the-atlas>

<sup>9</sup> SB 1000 Toolkit

including regulations on the use of lead paint and asbestos.<sup>10</sup> Additionally, older housing units are more likely to have structural and material damage. Therefore, the relatively young age of Glenn County's housing stock indicates that overall housing conditions are generally good.

### Housing Conditions

In 2002 a Housing Conditions Survey was conducted throughout the County, with the exception of the Hamilton City and Elk Creek Community Services Districts; as those areas had been previously surveyed. Based on data collected during the field study a value was given to denote the condition of the residence based on observation of the foundation, roofing, siding, windows and electrical from County roads.

In some cases, the surveyors were unable to view residences due to visibility barriers or proximity to the road. These represented less than one percent of the total number of houses surveyed, and thus were omitted from the survey totals.

In 2015, the county updated their housing element and included the review of housing conditions that. The information collected during the 2002 survey is summarized in Table 6.2-4, Glenn County Housing Stock Conditions 2002.

**TABLE 6.2-4: GLENN COUNTY HOUSING STOCK CONDITIONS 2002**

Condition	Wood Frame		Mobile		Modular		TOTAL	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Sound	1,675	40.8%	91	2.2%	220	5.4%	1,986	50%
Minor*	809	19.7%	90	2.2%	186	4.5%	1,085	27%
Moderate*	430	10.5%	150	3.7%	115	2.8%	695	17%
Substantial**	79	1.9%	20	0.5%	10	0.2%	109	3%
Dilapidated***	95	2.3%	8	0.2%	14	0.3%	117	3%
<b>Total</b>	<b>3,088</b>	<b>77.4%</b>	<b>359</b>	<b>9.0%</b>	<b>545</b>	<b>14.0%</b>	<b>3,992</b>	<b>100%</b>

\*MINOR AND MODERATE: REPAIRS ARE HANDLED BY THE HOMEOWNER.

\*\*SUBSTANTIAL: REHABILITATED DWELLING OR UNDER A HOUSING PROGRAM ADMINISTERED BY THE HUMAN RESOURCES AGENCY, SOCIAL SERVICES DIVISION. \*\*\*DILAPIDATED: NEED TO BE REPLACED.

SOURCE: GLENN COUNTY HOUSING ELEMENT, 2015; GLENN COUNTY LOCAL HOUSING CONDITIONS SURVEY, 2002

Based on data from the 2002 housing survey depicted in Table 6.2-4, the majority of the county's housing stock surveyed (3,992 units surveyed,) 77% were determined to be in sound or minor condition, and any repairs needed are primarily aesthetic improvements.

### Overcrowding

Overcrowding within a housing unit is a primary cause of unsafe housing conditions. The World Health Organization notes that overcrowding is a potential health risk as it contributes to the transmission of

<sup>10</sup> Centers for Disease Control and Prevention, National Center for Environmental Health, 2018. Retrieved from: <https://www.cdc.gov/nceh>

disease by creating unsanitary conditions.<sup>11</sup> A housing unit is considered overcrowded if there is more than one person per room and severely overcrowded if there are more than 1.5 persons per room. Table 6.2-5 taken from the U.S. Census 2017 American Community Survey depicts overcrowding data for Glenn County.

**TABLE 6.2-5: OVERCROWDING BY TENURE (2017)**

PERSONS PER ROOM	OWNER		RENTER		TOTAL	
	Number	Percent	Number	Percent	Number	Percent
1.00 or less	5,579	97.5%	3,876	92.0%	9,455	95.2%
1.01 to 1.50	134	2.3%	294	7.0%	428	4.3%
1.51 or more	11	0.2%	42	1.0%	53	0.5%
TOTAL	5,724	100%	4,212	100%	9,936	100%
<b>Overcrowded</b>	<b>145</b>	<b>2.5%</b>	<b>336</b>	<b>8.0%</b>	<b>481</b>	<b>4.8%</b>

SOURCE: US CENSUS, 2013-2017 ACS

According to the data from the U.S. Census ACS 2017, 97.5 percent of owner occupied housing units were not considered overcrowded (had one or fewer persons per room) and 92 percent of rental units were not overcrowded. Rental units had a higher rate of severe overcrowding (1.0 percent) compared to owner units (0.2 percent).

### Policies

The existing Glenn County Housing Element was adopted in 2015 and contains policies that are focused on supporting low- and moderate-income families and special needs families and individuals. The Housing Element also includes policies to promote the construction of housing that is affordable to all income levels and policies to ensure healthy and safe housing.

### PHYSICAL ACTIVITY

Residents of Disadvantaged Communities (DACs) are often more likely to have negative health outcomes. Increased physical activity levels are associated with a decreased risk for numerous health conditions and chronic illnesses. The built environment in DACs can often be limited by land use planning and lack of investment, leaving less opportunities for formal and informal physical activity. Increasing the opportunity for physical activity within a community can work to positively impact the health of DACs.

Physical activity a mandated environmental justice focus area under SB 1000. As mentioned, all census tracts within the boundaries of Glenn County are not defined as CalEnviroScreen-designated DACs.

<sup>11</sup> World Health Organization (WHO). Accessed on September 10, 2019. Water Sanitation and Hygiene. What are the health risks related to overcrowding?. Available at: [http://www.who.int/water\\_sanitation\\_health/emergencies/qa/emergencies\\_qa9/en/](http://www.who.int/water_sanitation_health/emergencies/qa/emergencies_qa9/en/)

Regardless of the absence of DACs throughout the county, this section serves to assess the existing conditions of physical activity in Glenn County.

### Physical Fitness and Health Demographics

Lack of physical activity is a major risk factor for many diseases and causes of death, including heart disease, obesity, mental-health conditions, diabetes, stroke, and Alzheimer's. The Glenn County 2012 Community Health Needs Assessment includes data regarding health measures for children and adults in Glenn County. As shown in Table 6.2-6 below, for almost all listed indicators (Smoking status, heart disease prevalence, self-reported health quality, and obesity rates), Glenn County had higher percentages of residents with physical activity-related health problems than those same measures for the State of California.

**TABLE 6.2-6: HEALTH INDICATORS (GLENN COUNTY AND STATEWIDE)**

INDICATOR	GLENN COUNTY	CALIFORNIA
Adults with Currently Smoking Status	19%	13.2%
Diabetes Prevalence (Age-adjusted)	7.8%	8.3%
Adult Heart Disease Prevalence <sup>12</sup>	9.9%	6.6%
Poor Mental Health <sup>13</sup>	16.1%	18.6%
Adults with Self-Reported Poor or Fair Health (Age-adj) <sup>14</sup>	18.8%	16.6%
Adult Obesity Prevalence (BMI > 30)	32.4.0%	24.2%
Child Overweight & Obesity Prevalence (BMI>25)	41.0%	30.2%

SOURCE: ADAPTED FROM THE COLUSA-GLENN COUNTY 2012 COMMUNITY HEALTH NEEDS ASSESSMENT<sup>15</sup>

In addition, the California Health Interview Survey includes data regarding activity levels for children and teens in Glenn County. As shown in Table 6.2-7 below, approximately 33.5 percent of Glenn County children ages 5-11 identified being physically active every day of the week for at least one hour, which is roughly 4 percentage points higher than the Statewide average for children. In addition, approximately 7.1 percent of children in the County reported zero days per week of more than one hour of physical activity, compared to a Statewide average of 8.6 percent. Most of the children in Glenn County, approximately 40.2 percent, reported two days per week of more than one hour of physical activity, compared to a Statewide average of 10.5 percent.

This data also indicates that exercise and activity levels may decrease from childhood ages to teen ages. 19.9 percent of teens in the county reported being active for at least one hour, seven days a week, compared to 33.5 percent of children, however it should be noted that these values may be statistically unstable due to limited sample sized in several topic areas.

<sup>12</sup> California Health Interview Survey, 2016-2017

<sup>13</sup> California Health Interview Survey, 2004-2005

<sup>14</sup> California Health Interview Survey, 2016-2017

<sup>15</sup> Glenn County Medical Center. 2012 Community Health Needs Assessment. Available At: [https://www.glennmed.org/pages/pdf/GlennMedicalCtr\\_CHNA\\_12.pdf](https://www.glennmed.org/pages/pdf/GlennMedicalCtr_CHNA_12.pdf)



## 6.0 ENVIRONMENTAL JUSTICE

**TABLE 6.2-7: NUMBER OF DAYS PER WEEK PHYSICALLY ACTIVE AT LEAST ONE HOUR (2017)**

DAYS PER WEEK	GLENN COUNTY CHILDREN (5-11)	CALIFORNIA CHILDREN (5-11)	GLENN COUNTY TEENS	CALIFORNIA TEENS
0	7.1%*	8.6%	--	9.9%
1	--	4.6%	--	11.1%
2	40.2%*	10.5%	--	15.2%
3	3.3%*	15.6%	23.2%*	13.4%
4	--	10.8%	--	12.1%
5	4.2%*	15.9%	32.0%*	16.1%
6	10.9%*	4.7%	--	9.0%
7	33.5%*	29.4%	19.9%*	13.0%

SOURCE: CALIFORNIA HEALTH INTERVIEW SURVEY. CHIS 2012 CHILDREN AND TEEN SOURCE FILE. LOS ANGELES, CA: UCLA CENTER FOR HEALTH POLICY RESEARCH. \* INDICATES POSSIBLE STATISTICALLY UNSTABLE VALUES DUE TO SAMPLE SIZE. -- =NONE REPORTING.

### PHYSICAL FITNESS TESTING

Another indicator of physical activity and fitness for children and teens is the California Department of Education’s Physical Fitness Testing (PFT) Program, which is administered by local school districts to all fifth, seventh, and ninth graders annually.<sup>16</sup> The test assesses six major fitness areas, including aerobic capacity (cardiovascular endurance), body composition (percentage of body fat), abdominal strength and endurance, trunk strength and flexibility, upper body strength and endurance, and overall flexibility. The PFT Program provides a statewide snapshot of physical fitness. However, its data is collected at the local school district level by people who are not health professionals, and tests for each of the fitness areas are difficult to administer consistently. Consequently, its results are prone to some margin of error over time and from place to place. California Physical Fitness Test PFT Results for Glenn County, and statewide results for the 2017-18 academic year are shown in Table 6.2-8.

**TABLE 6.2-8: STUDENT PHYSICAL FITNESS TESTING (PFT) RESULTS (2017-2018)**

PHYSICAL AREAS	GLENN COUNTY OVERALL % WITHIN HEALTHY FITNESS ZONE HFZ			STATEWIDE % WITHIN HEALTHY FITNESS ZONE HFZ		
	Gr. 5	Gr. 7	Gr. 9	Gr. 5	Gr. 7	Gr. 9
Aerobic Capacity	62.4%	63%	62%	61.9%	63.6%	61.7%
Body Composition	49.7%	56.6%	54.8%	59.5%	61%	62.7%
Abdominal Strength	48.4%	86.6%	88.1%	70.1%	78.4%	82.4%
Trunk Extension Strength	79.1%	89.1%	74.7%	83.9%	86.6%	89.6%
Upper Body Strength	55.3%	63.3%	68.2%	62%	64.7%	69.7%
Flexibility	79.6%	77.8%	82.4%	71.5%	79.4%	84.3%

SOURCE: CALIFORNIA DEPARTMENT OF EDUCATION, PHYSICAL FITNESS TESTING RESULTS (2017-2018).

As shown in Table 6.2-8 above, the PFT results for 5<sup>th</sup>, 7<sup>th</sup> and 9<sup>th</sup> graders in Glenn County, between 2017-18 show that generally local children fall below the statewide averages in all testing areas, with the exception of Aerobic Capacity and Abdominal Strength.

<sup>16</sup> California Department of Education. Physical Fitness Testing Results, Accessed on September 10, 2019. Accessible at: <http://www.cde.ca.gov>

## Sidewalks

Pedestrian facilities are similarly lacking due to the rural nature of the County and generally longer travel distances. The incorporated communities of Orland and Willows are both well-connected gridular communities. Both communities are relatively compact; Orland is approximately 3 miles across and Willows is approximately 2.8 miles across. Sidewalks are infrequent in most areas of the communities; however, wide shoulders provide an area for pedestrian use. In addition, a large majority of homes in Orland and Willows are found within one mile of schools, making walking to school a feasible option for school-aged children. Despite this, walking remains an underutilized mode of transportation.

In 2013, Glenn County developed an Active Transportation Plan (ATP) to create walkable environments within the county and incorporated cities and work towards fulfilling the requirements set forth in Title II of the Americans with Disabilities Act. To ensure environmental justice is achieved, disabled community members must have adequate access to public facilities. By meeting ADA sidewalk and facility requirements and providing safer pedestrian routes, a county can promote the physical fitness, accessibility and safety of all of its community members. The ADA states that a public entity must reasonably modify its policies, practices, or procedures to avoid discrimination against people with disabilities. The ATP prepared by Glenn County was developed to assess existing issues and promote policies that will reduce physical barriers to accessibility while promoting pedestrian safety.

The County does not have a comprehensive inventory of pedestrian facilities such as sidewalks, street crossings, lighting, shade trees, or benches. Therefore, assessing the baseline for pedestrian facilities within the county is difficult. However, the unincorporated community of Hamilton City recently added 3,837 feet of curb and 23,344 feet of sidewalk in March 2013, improving the facilities available for pedestrian use. Due to the rural nature of the County, most other unincorporated communities lack sidewalks, causing safety concerns for pedestrians. Improvements to pedestrian and bicycle facilities like this help to encourage active modes of transportation and are consistent with the ATP adopted by California in 2013. Active Transportation is any form of transportation that is human powered, including walking, biking, roller-skating, skateboarding, and wheelchairs. The goals of the ATP are:

- Increase the proportion of trips accomplished by biking and walking.
- Increase safety and mobility for non-motorized users.
- Advance the active transportation efforts of regional agencies to achieve Greenhouse Gas (GHG) reduction goals.
- Enhance public health.
- Ensure that disadvantaged communities fully share in the benefits of the program.
- Provide a broad spectrum of projects to benefit many types of active transportation users.

More information on existing policies and action plans for non-motorized modes of travel, pedestrian safety and improving ADA accessibility is available in Glenn County 2013 Active Transportation Plan.

## Active Transportation Use

Active transportation is any form of transportation that is non-motorized. The use of active

transportation during a daily commute increases physical activity levels. Increased physical activity has positive health benefits; including mortality risk reduction, disease prevention, cardiorespiratory fitness, and metabolic health.<sup>9</sup> Disadvantaged communities often have disproportionately poorer health outcomes. Increasing opportunities for active transportation within a county can improve the overall health outcomes of DACs.

Data from the 2019 California Department of Finance (DOF) Population and Housing Estimate Report and 2013-2017 American Community Survey (ACS) were utilized to illustrate journey to work (JTW) statistics for Glenn County. Table 6.2-9 provides an overview of Glenn County's JTW mode split data compared to statistics for the State of California.

**TABLE 6.2-9: DEMOGRAPHIC AND JOURNEY TO WORK DATA**

	GLENN COUNTY		CALIFORNIA	
Population <sup>1</sup>	29,132		39,927,315	
Employed persons <sup>2</sup>	10,337		17,589,758	
MODE SPLIT	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
Drove alone	7,850	75.9%	12,950,487	73.6%
Carpooled	1,286	12.4%	1,830,968	10.4%
Public transit	45	0.4%	909,679	5.2%
Walked	402	3.9%	470,101	2.7%
Other	162	1.6%	450,486	2.6%
Worked at home	592	5.7%	978,047	5.6%

<sup>1</sup>POPULATION DATA OBTAINED FROM 2019 CALIFORNIA DEPARTMENT OF FINANCE POPULATION AND HOUSING ESTIMATE REPORT.

<sup>2</sup>EMPLOYMENT AND MODAL CHOICE DATA OBTAINED FROM 2013-2017 AMERICAN COMMUNITY SURVEY 5-YEAR ESTIMATES.

The ACS reports that the majority of workers living in Glenn County, 75.9 percent, drove to work alone, whereas alternative modes of transportation accounted for approximately 24.1 percent of commute trips. Of the commute trips using alternative modes of transportation, only 3.9 percent of commuters reported walking to work and only 0.5 percent were reported using other means of transportation, such as bicycling, to work. This data indicates that most commuters in Glenn County do not use active transportation as a means of getting to work. Approximately 88.7% of all trips made by Glenn County's employed residents are made by automobile. Utilizing active transportation is an effective way of engaging in physical exercise and can be a factor in improving community health outcomes in disadvantaged communities. More details on active transportation use and bicycle facilities can be found in Section 2.0 (Circulation).

### CIVIC AND COMMUNITY ENGAGEMENT

An important aspect of planning for environmental justice is the development of effective policies and programs that enable all residents to participate in local decision making. Disadvantaged communities can often be excluded from decision-making when officials and policies do not focus on involving these communities in a strategic manner. SB 1000 emphasizes that community engagement must be promoted in a local jurisdiction through the development of objectives and policies that seek to involve

members of DACs specifically. By involving and engaging DACs in decision-making processes, policy-makers can effectively meet the needs of these community members. Disadvantaged communities often have culturally-specific needs that must be made a priority within local policy to ensure community success. These needs are often distinct from those of the general population. The US EPA Environmental Justice Policy requires the "... meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." The establishment of appropriate opportunities for those who are low-income, minorities, and linguistically isolated to engage in local decision making will help ensure that environmental justice issues are identified and resolved. In addition, community programs that address the needs of disadvantaged communities are critical to ensuring environmental justice is achieved for these communities within a county.

Promoting civic engagement and programs for DACs is a mandated environmental justice focus area under SB 1000. As mentioned, all census tracts within Glenn County are not defined as CalEnviroScreen-designated Disadvantaged Communities (DACs). Regardless of the absence of DACs, this section serves to assess the levels of civic engagement and existing community programs in Glenn County.

### **Levels of Civic Engagement**

At the local level, there were 12,730 total registered voters in Glenn County 15 days before the general election in 2018.<sup>17</sup> At the same time there were 18,520 people of voting age living within Glenn County. This indicates that for one measure of voter participation, the participation rate for residents of voting age within Glenn County was about 69%. It should be noted that not all residents of voting age are eligible to vote in the state of California.

According to the Glenn County Registrar of Voters, there were 12,835 registered voters in Glenn County in 2016 and there 18,459 residents who were eligible to vote in the general election. This puts the voter turnout rate for Glenn County at 66.3%. As for the year 2014, the general election rate was only 51.0%. It is expected that voter turnout rate drops significantly on years where there is no presidential election.

## **IMPROVEMENTS AND PROGRAMS**

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### **DAC Programs**

A critical aspect of planning to achieve environmental justice is prioritizing projects and policies that directly benefit disadvantaged communities. As stated previously, in Glenn County, all areas within the General Plan Planning Area are not designated as DACs, however, it is often the case that individual disadvantaged communities are not considered in regard to public investment decisions and new public programs. When disadvantaged communities are overlooked for public programs and investments, the specific needs of these communities are not met and the conditions in which they live often worsen. To

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<sup>17</sup> California Secretary of State (2018). Voter Registration Statistics: 15 Day Report of Registration. Available at: <http://www.sos.ca.gov/elections/voter-registration/voter-registration-statistics/>

promote environmentally just planning, cities and counties should incorporate programs and policies that are specific to the needs of DACs.

As describe previously in the regulatory setting, the Glenn County General Plan includes a variety of goals and policies to support disadvantaged communities and environmental justice issues through policies aimed at improving the transportation network to accommodate bicycle and pedestrian travel, supplying the county residents with high quality parks, recreation opportunities, community services and facilities, improving housing conditions and affordability, and promoting air and water quality throughout the planning area.

As previously mentioned, Glenn County developed an Active Transportation Plan to work towards meeting ADA requirements, promoting pedestrian safety, and ensuring that mobility and accessibility are promoted for disabled residents.

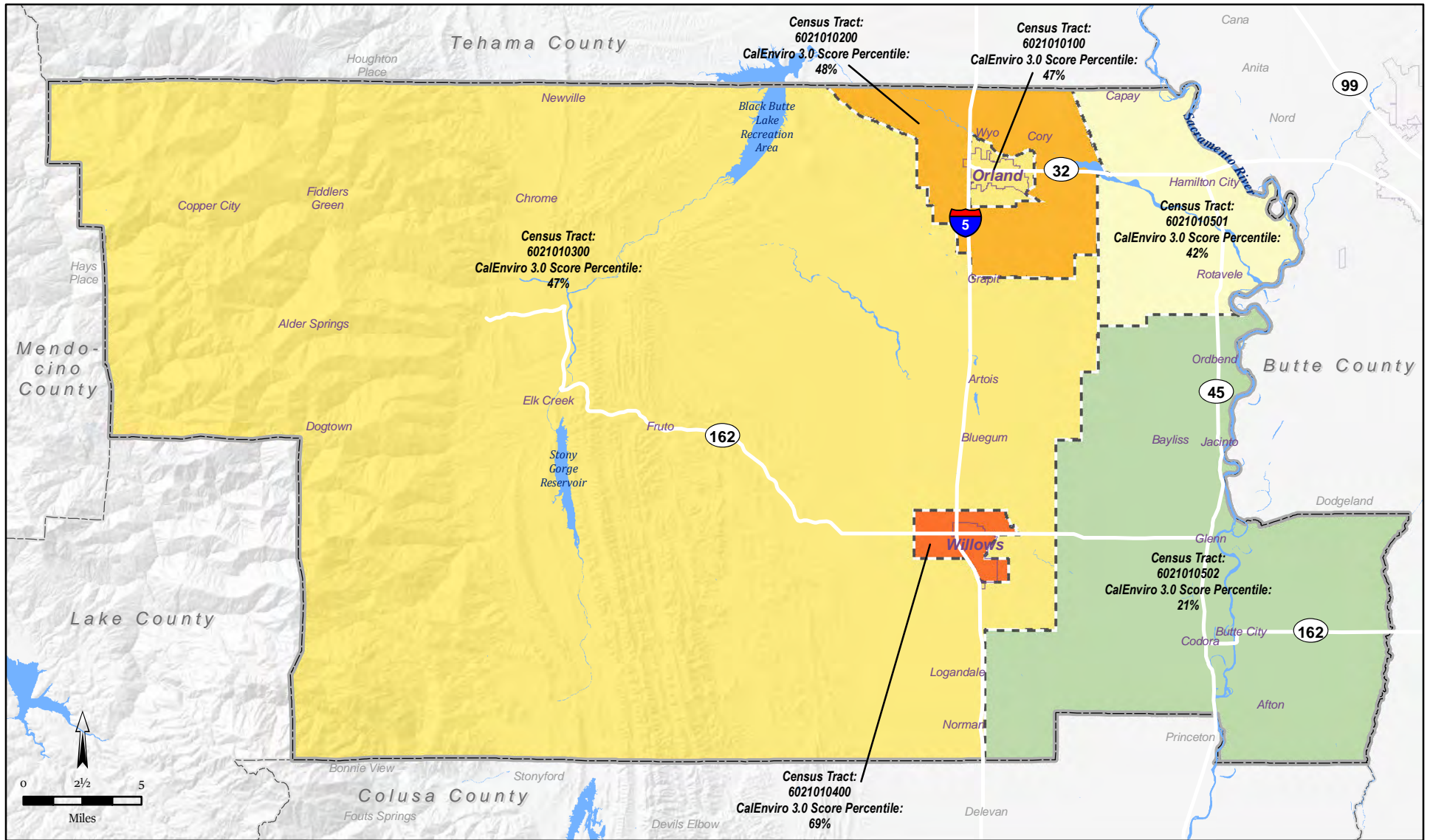
Furthermore, Glenn County's 2015 housing element contains policies that are focused on supporting low- and moderate-income families and special needs families and individuals. The Housing Element also includes policies to promote the construction of housing that is affordable to all income levels and policies to ensure healthy and safe housing. The County has taken a proactive approach within the Housing Element to ensure the safety and sanitation of housing for its residents.

## REFERENCES

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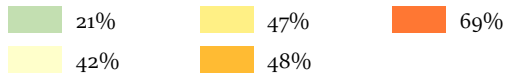


Sources: OEHHA CalEnviroScreen 3.0, June 2018. Map date: October 23, 2019.

**Legend**

--- Census Tract

**CalEnviroScreen 3.0 Score Percentile**



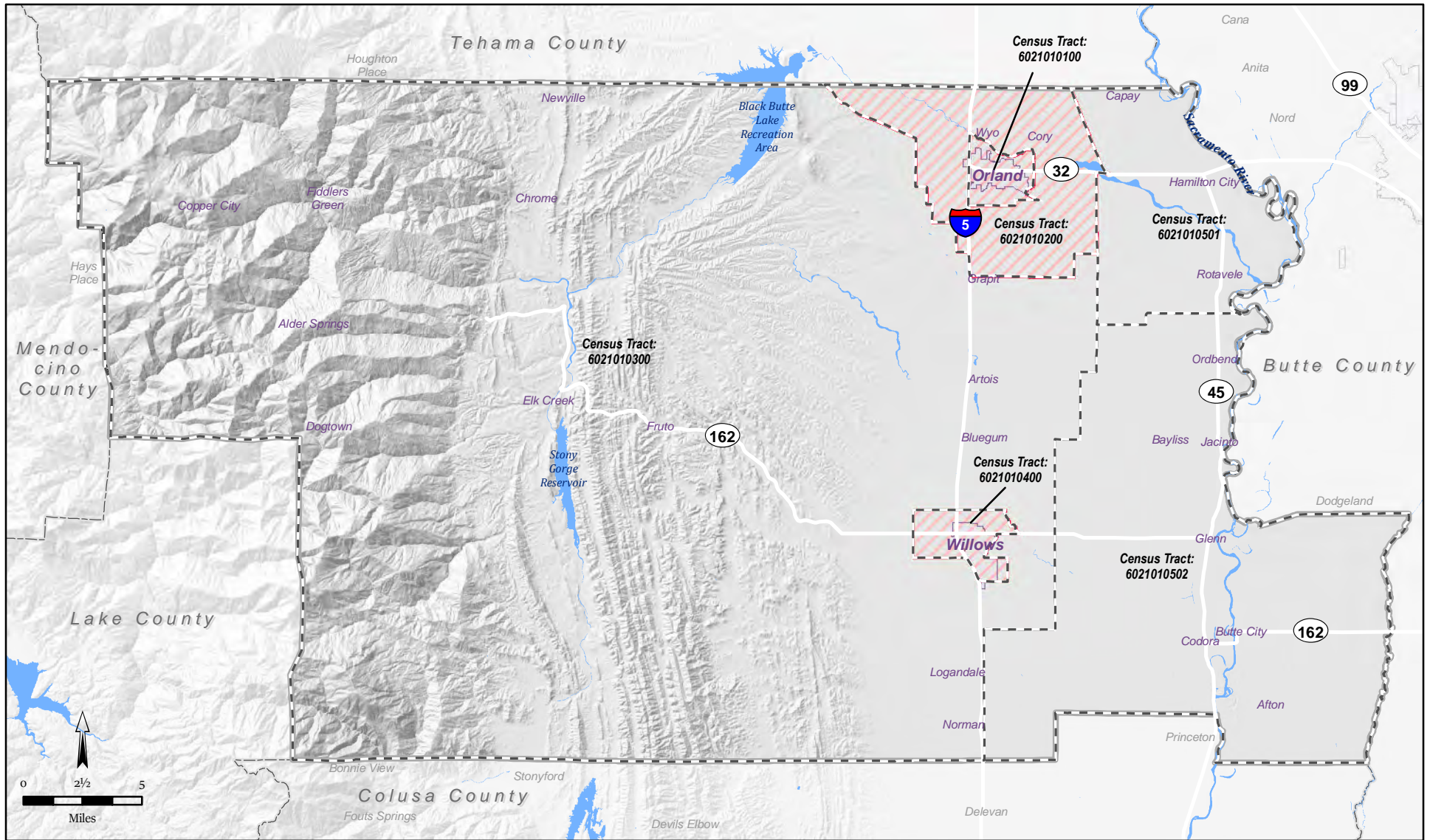
\* There are no Disadvantaged Communities within Glenn County

COUNTY OF GLENN, CALIFORNIA

**FIGURE 6.0-1. CALENVIROSCREEN 3.0 DISADVANTAGED COMMUNITIES\***



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Sources: California Department of Public Health, Nutrition Education and Obesity Prevention Branch GIS Map Viewer; Glenn County GIS. Map date: October 23, 2019.

COUNTY OF GLENN, CALIFORNIA

FIGURE 6.0-2. FOOD DESERTS

Legend

-  Census Tract
-  Food Desert