







SUTTER COUNTY
GENERAL PLAN UPDATE

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General Plan Update
Technical Background Report

February 2008

PBS&J

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TECHNICAL BACKGROUND REPORT

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Key Steps of the General Plan Update Process

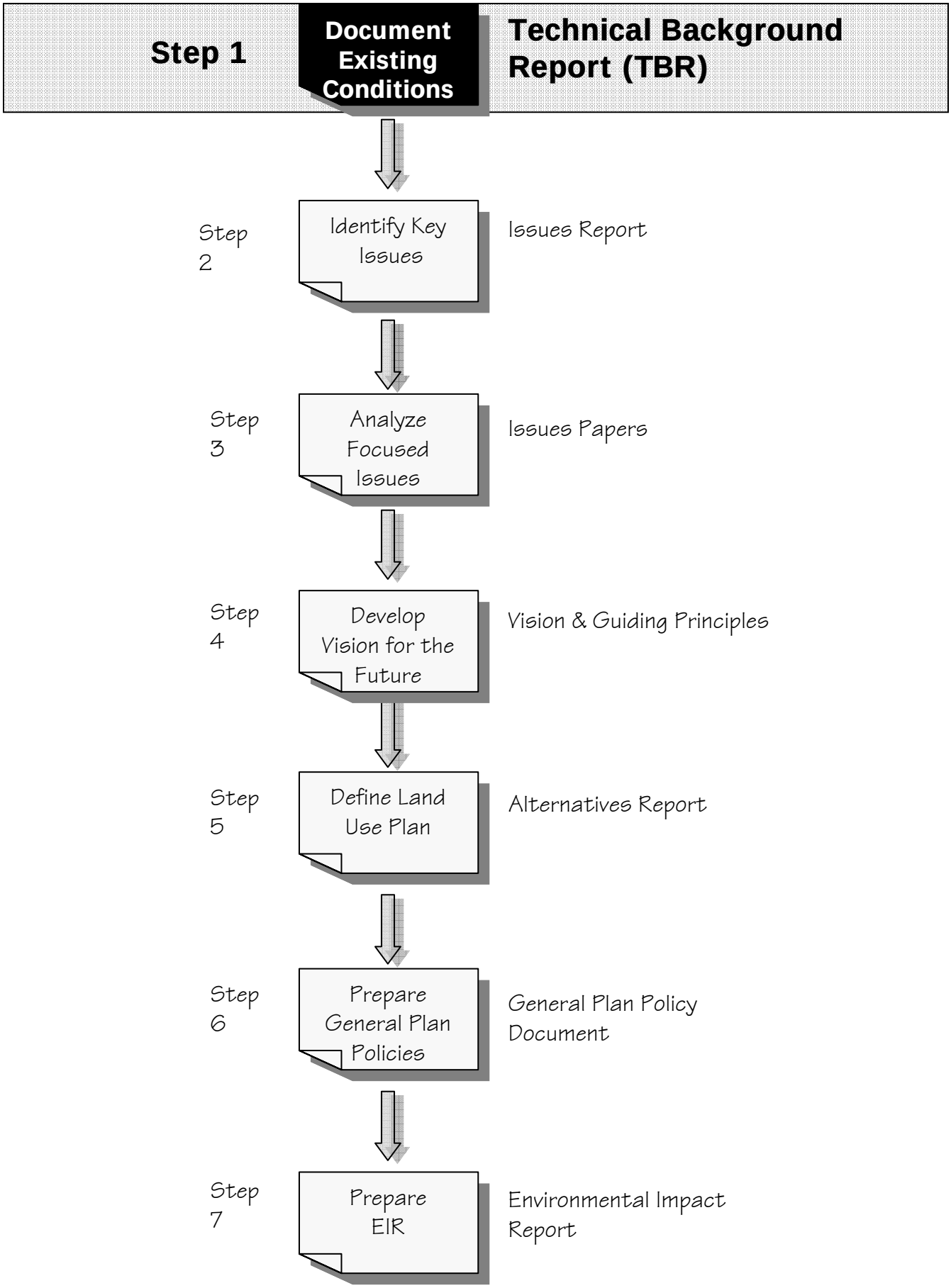


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Chapter 1 INTRODUCTION

Sutter County has initiated a comprehensive update of its General Plan to evaluate current conditions in the community, reaffirm a vision for the County's future, and outline a systematic set of actions by which to achieve that vision. The first major step in the General Plan Update process is the establishment of baseline conditions and trends in the County. This Technical Background Report (TBR) provides a descriptive profile of Sutter County's existing conditions and serves as the "environmental setting" for the General Plan Update Environmental Impact Report (EIR).

REGIONAL CONTEXT

Sutter County is situated in the Sacramento Valley, with the southern boundary located approximately 10 miles north of the City of Sacramento. The County is comprised of 607 square miles of land. The County is generally bordered on the west by the Sacramento River, on the east by the Feather and Bear Rivers and Placer County, on the north by Butte County, and on the south by Sacramento County. State Route 99 extends in a north-south direction through the County and is the primary corridor connecting Sutter County to the region. State Route 20 is the primary east-west connection through the County. Sutter County's regional location is reflected on Figure 1.1-1.

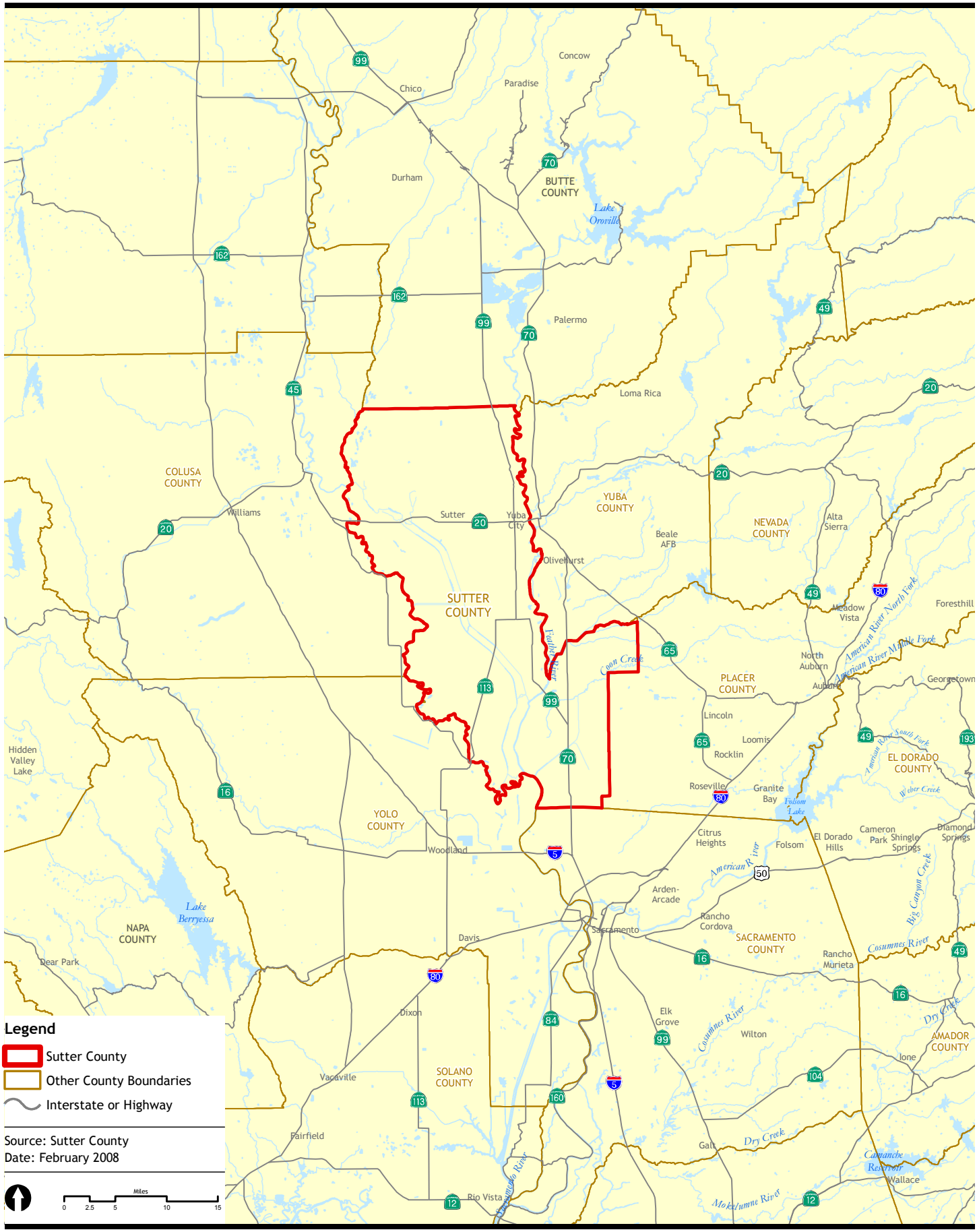
Sutter County can generally be divided into two geographic areas, the Sutter Buttes and the valley area. The Sutter Buttes are often referred to as the world's smallest mountain range and are a symbolic focal point of the County. The valley area is primarily flat and dominated by farming related operations. Overall, Sutter County's character is reflective of its rural tradition with a landscape dominated by extensive agricultural areas, significant natural and recreational resources, and relatively low population density.

Sutter County has experienced moderate growth over the last several decades, with its two incorporated cities, Yuba City and Live Oak, receiving the largest percentage of that growth. Similar to other areas in the region, however Sutter County is encountering considerable new growth pressures. These pressures are reflective of the County's positive quality of life and relative affordability, attractive to people and businesses relocating from the Bay Area and Sacramento.

THE GENERAL PLAN

Purpose of the General Plan

State law requires every county and city in California to prepare and maintain a planning document called a general plan. The general plan serves as the jurisdiction's "constitution" for decisions concerning land use and resource conservation. The general plan provides guidance to decision-makers regarding the allocation of resources and is the official statement of the jurisdiction regarding the extent and types of development needed to achieve the community's physical, economic, social, and environmental goals. All specific plans, subdivisions, public works projects, and zoning decisions must be consistent with the local jurisdiction's general plan.



Regional Location
Figure 1.1-1

Under State law, each county and city general plan must contain the following seven elements:

- Land Use
- Circulation
- Housing
- Conservation
- Open Space
- Noise
- Safety

California Government Code Section 65303 permits local jurisdictions to formulate other elements, which, in the "judgment of the legislative body, relate to the physical development of the county or city." These "optional" elements are as legally binding as the mandatory elements. Sutter County intends to include the following optional elements in its updated General Plan:

- Economic Development
- Infrastructure
- Community Services

Although the general plan consists of individual elements that address specific areas of concern, it also embodies a comprehensive and integrated planning approach for Sutter County.

Sutter County General Plan Update Process

The current General Plan for Sutter County was adopted in 1996. Various elements of the General Plan have been amended over time, but the plan has not been comprehensively updated since its adoption. Much of the data, analyses, and policies in the 1996 plan do not reflect the current conditions in the County. As a result, an update of the General Plan is necessary to reflect the current vision for accommodating future growth and conservation within Sutter County through 2030.

Sutter County initiated its General Plan Update process in late 2007. This process will lead to a vision and series of findings that form a framework for updating the plan and directing future County planning efforts.

The General Plan Update process includes the following four major steps:

Discovery: Establishment of the baseline conditions and trends from which the General Plan goals, policies, and implementation programs will be developed. This step includes preparation of (a) the Technical Background Report; and (b) a Planning Issues Report, synthesizing opportunities and constraints for which general plan policy will subsequently be formulated.

Visioning: Defining a commonly shared vision that articulates the fundamental values and aspirations for the future of the County. This step includes the preparation of a focused number of "Issue Papers" to explore in greater detail the key issues and options to be addressed in the update of the general plan; establishment of a framework of workshops, study sessions, and public involvement to create the County General Plan vision; and preparation of a "vision

statement" and corresponding "guiding principles" that provide the underlying influence and set of "rules" by which land use alternatives will be developed and updated plan policies will be written.

Policymaking: Development of a preferred physical plan for the future of the County and the establishment of policy to guide that future. This step consists of two primary components: (a) the formulation and evaluation of alternative land use/conservation scenarios for the County with the selection of a preferred land use scenario; and (b) the formulation of goals, policies, and implementation measures to reflect the defined issues, guiding principles, and selected land use scenario.

Documentation and Community Ownership: Preparation, review, and approval of planning and environmental documents for the updated general plan. This step includes preparation and approval of the County General Plan as well as certification of the program EIR.

Sutter County intends to promote a highly interactive process that engages the public throughout the General Plan Update process.

TECHNICAL BACKGROUND REPORT

Purpose of the Technical Background Report

The updated Sutter County General Plan will be divided into two documents: this Technical Background Report and a future Policy Document.

The purpose of this TBR is to provide a profile and analysis of existing conditions and trends focusing primarily on the unincorporated portion of Sutter County and those areas that influence the unincorporated County area. The TBR presents the physical, social, and economic information required to support the preparation of the general plan. It serves as the foundation document from which subsequent planning policies and programs will be formulated, and it will also be used as the "Environmental Setting" section of the General Plan EIR.

This TBR is based on data and information available as of December 2007. Supplementary information and comments received throughout the General Plan Update process will also be collected and used to support the County's General Plan and EIR.

Organization of the Technical Background Report

The TBR consists of eight chapters. The contents of each are described below.

Chapter 1 – Introduction: This chapter provides background information on the purpose of the Sutter County's General Plan Update and outlines the purpose and content of the TBR.

Chapter 2 – Community Development: Includes sections that address land use, demographic trends and conditions, economic development trends and conditions, and the agricultural economy.

Chapter 3 – Infrastructure and Community Services: Includes three major sections that discuss Infrastructure, Mobility, and Community Services and Facilities. Infrastructure addresses potable water systems and supply, agricultural water systems and supply, wastewater systems, stormwater and drainage, flood control and levees, solid waste management, energy resources, and telecommunications. Mobility addresses streets and highways, transit and rail, bikeways, and air travel and airports. Community Services and

Facilities addresses law enforcement; fire protection and emergency services; schools; parks and recreation; and general government, civic, and cultural facilities.

Chapter 4 – Environmental Resources: Includes sections that address biological resources; agricultural, soils, and mineral resources; hydrology and water quality; air quality; visual resources; and prehistoric and historic resources.

Chapter 5 – Community and Safety Hazards: Includes sections that address geologic and seismic hazards, fire hazards, hazardous materials management, and noise.

Format of the Technical Background Report Sections

Each section of the TBR includes the following:

Introduction: Provides a brief description of the issues covered in the section.

Summary of Key Findings: Presents key facts and preliminary issues from the section. These findings will serve as the basis for the identification of technical issues in the next phase of the General Plan Update.

Existing Conditions: Describes the existing conditions of each resource or issue area. The focus of the discussion is upon the unincorporated County area, with reference to the incorporated cities and surrounding region where appropriate.

Regulatory Context: Presents federal, State, and local regulations that are applicable to each resource or issue area.

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Chapter 2 COMMUNITY DEVELOPMENT

As a healthy growing county, Sutter County's focus is on how to accommodate growth and change while preserving and enhancing the qualities and characteristics that make it such a desirable place to live and work. The County recognizes that the quality of life in Sutter County is dependent on both protecting and preserving the viability of its agricultural resources which make a considerable contribution to the Sutter County economy, and on creating a compatible and complementary mix of residential, employment, commercial and service uses in Sutter County's urban areas that can sustain a vibrant economy and a healthy environment. This chapter describes the existing development trends in the county, in addition to demographic and economic trends. A special focus on the contribution of agriculture to Sutter County's economy is also included in this chapter.

The Community Development chapter is divided into the following sections:

2.1 Land Use

2.2 Demographic and Economic Analysis with subsections addressing Demographic Trends and Conditions (2.2.1), Economic Development Trends and Conditions (2.2.2), and Agricultural Economics (2.2.3).

2.1 LAND USE

INTRODUCTION

The Land Use section summarizes existing development trends and land uses within Sutter County. Information in this section primarily focuses on the unincorporated portions of Sutter County and those areas that influence the unincorporated county. The section describes the following items within the county:

- Existing planning boundaries;
- Existing land uses;
- Important farmlands;
- Zoning districts;
- Future development plans; and
- Physical form.

SUMMARY OF KEY FINDINGS

- The county is dominated by agricultural land uses. Exceptions are the land uses within the cities of Yuba City and Live Oak. The rural community of Sutter also contains a variety of non-agricultural land uses within its adopted boundaries.
- Communities within the county, including the incorporated cities, are located primarily along major transportation corridors.

- 49 ranchette projects were approved between 1998 and 2007. The potential impacts of ranchettes and large rural lots on agriculture include replacing previously productive farmland and/or creating incompatibilities between ranchette residents and agricultural operations.
- The cities of Yuba City and Live Oak are both in the process of expanding into their Sphere of Influences (SOI), which would remove those lands from the jurisdiction of the County's General Plan.
- Sutter County is in the process of reviewing a proposed specific plan for approximately 7,500 acres located in south Sutter County adjacent to the boundary of Sacramento County and near the boundary of Placer County. The area is currently used for agricultural purposes and includes two industrial facilities. The proposed plan will attract new employers to Sutter County and will include the development of employment uses, including both industrial and commercial uses, residential, parks and open space, as well as associated services and public utility facilities.
- The highest-intensity land uses within the county are found within and immediately surrounding the cities and communities.

BACKGROUND

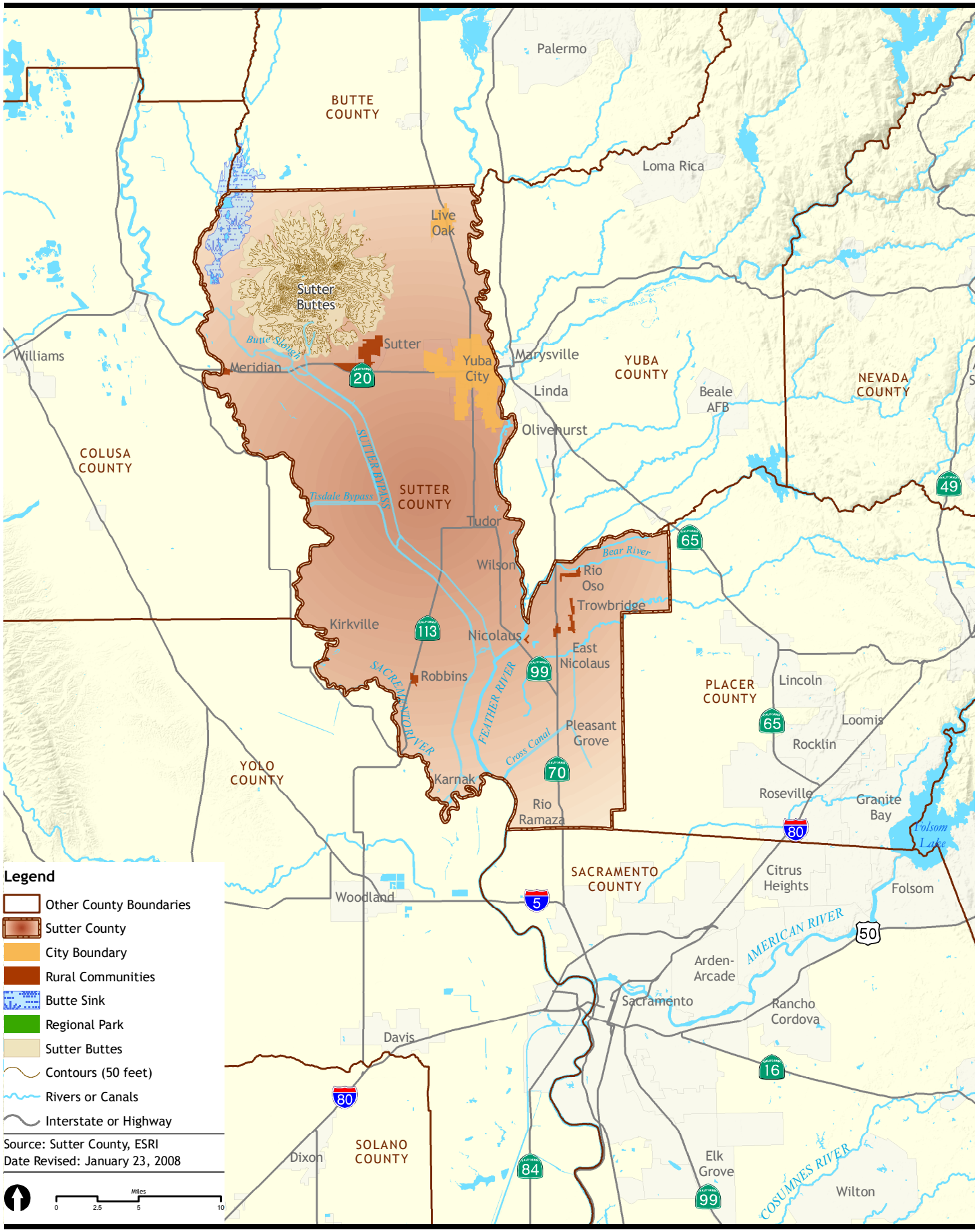
Regional Setting

Sutter County lies in a portion of north central California known as the Sacramento Valley. The County encompasses approximately 607 square miles (388,358 acres) and is considered to be a part of the six-county greater Sacramento region. Sutter County's jurisdictional boundaries are generally defined by Yolo and Colusa counties to the west, with the Sacramento River and Butte Sink forming the western boundary; Butte County forming the northern boundary; Yuba and Placer counties to the east with the Feather and Bear Rivers forming a portion of the eastern boundary; and Sacramento County to the south, with the southern boundary south of Riego Road. Figure 2.1-1 shows the County and its surrounding areas.

State Highway 99, which extends in a north-south direction through the County, defines the principal transportation corridor connecting the County to the region. State Route 20 is the principal east-west corridor between Highway 99 and Interstate 5, located west of the County. Other major transportation corridors within the county include Highway 113, which generally runs north-south through the southwestern portion of the County until it merges with Highway 99 south of Yuba City, and Highway 70, which also runs north-south in the southeastern portion of the County, where it splits from Highway 99 and runs north into Yuba County.

Sutter County

The County's topography is primarily flat, with the exception being the Sutter Buttes rising out of the valley floor in the northern portion of the County. The Bear River converges with the Feather River in the southern portion of the County near the community of Nicolaus, and from there, the Feather River flows south through the south-central portion of the County, where it converges with the Sacramento River at the County's boundary with Yolo County. The County also contains several major flood control canals including the Sutter Bypass, running through the center of the County from north to south, the Tisdale Bypass, connecting the Sutter Bypass to the Sacramento River near the center of the County, Cross Canal and Natomas East Main Drainage Canal in the south, and Wadsworth Canal, east of the community of Sutter.



PBS&J

Sutter County & Surrounding Areas
Figure 2.1-1

Both generally run south from the Butte Sink, in the northwest corner of the County and next to the western edge of the Sutter Buttes, through the center of the County until they meet with the Sacramento River west of its convergence with the Feather River. The central portion of the County also includes the Tisdale Bypass, which runs east-west, connecting the Sacramento River and the Sutter Bypass.

The unincorporated area of the County includes several rural communities including: Meridian, adjacent to the western boundary in the north; Sutter, located in the north-central portion of the County abutting the Sutter Buttes; Robbins, located in the southwest between the Sacramento River and the Sutter Bypass along Highway 113; and the communities of Rio Oso, Trowbridge, Nicolaus, and East Nicolaus, all clustered near the convergence of the Bear and Feather Rivers in the southeast portion of the County. Other, smaller communities within the County that do not have adopted community boundaries include Tudor and Wilson, both located south of Yuba City along Highway 99; Kirkville, located along the Sacramento River in the southwest; Karnak, located in the south in the area where the Sutter Bypass meets the Sacramento River; and Pleasant Grove, in the southeast portion of the County.

In addition to the rural communities, the County is home to two incorporated cities; Yuba City and Live Oak. The City of Yuba City is the major urban center within the county and is located along the Feather River in the east-central portion of the County where Highway 99 and State Route 20 intersect. The City of Live Oak is located in the northeast corner of the County north of Yuba City. Highway 99 is the major transportation corridor through both cities. Figure 2.1-1 shows the locations of the cities and rural communities within the county. Table 2.1-1 provides the total acreages for each of the communities, with the exception of those that do not have adopted boundaries.

Table 2.1-1. Sutter County Cities and Rural Communities

	Acres
Incorporated Cities	
Yuba City	8,965
Live Oak	1,165
Total	*10,130*
Rural Communities	
Sutter	1,715
Trowbridge	320
Rio Oso	260
Robbins	188
East Nicolaus	163
Meridian	122
Nicolaus	47
Total	*2,815*

Source: Sutter County, 2008.

The cities of Yuba City and Live Oak each have their own General Plans, which guide development within each city's incorporated boundary. These cities also have adopted SOIs that extend beyond their incorporated boundaries. The cities' General Plans may include policy guidance for future annexations into these SOIs, but ultimately, unincorporated lands technically remain within the jurisdiction of the County. However, the County generally defers planning for these areas to the cities, although planning activities within the SOIs should be done in cooperation with the County.

General Plan History

Sutter County adopted its first General Plan in 1964. Since then, various new elements, amendments, and modifications have been made to the plan. The last comprehensive General Plan update was adopted in 1996.

EXISTING CONDITIONS

Existing Land Use

The following describes the different types of land uses that currently exist within the county. This information is based on the actual uses of the land, which differs from adopted General Plan land use designations and zoning, described in subsequent sections of this report, in that they describe the actual uses of the physical environment within the county, rather than the uses for which the land is intended.

Existing land uses in the county have been grouped into the following seven general categories:

- Agricultural – includes lands used for agricultural purposes, including agricultural preserve areas, ranchettes, and agricultural residential.
- Residential – includes single-family homes, multi-family homes, mobile homes, and vacant residential lands.
- Public and Vacant – includes cemeteries, churches, schools, government lands and facilities, day cares, hospitals, parks, and miscellaneous vacant lands.
- Commercial and Office – includes all commercial uses, general office uses, and vacant commercial lands.
- Industrial – includes low, general, and heavy industrial uses, and vacant industrial lands.
- Open Space – includes all of the County's designated open space lands, which may be used for agricultural, recreational, limited residential, and mining. These areas may also contain significant vegetation or wildlife areas.
- Transportation and Utilities – includes highways, airports, railroads, and natural gas and mining facilities.

As shown in Table 2.1-2 and on Figure 2.1-2, approximately 83 percent of the County's land is currently used for agricultural purposes, although these lands may not necessarily be in active agricultural production. In addition to lands currently used strictly for agricultural purposes, approximately 11 percent of the County (nearly 45,000 acres) is currently used as open space areas, primarily in areas susceptible to flooding, such as along rivers and within the Sutter Bypass and Tisdale Bypass. These areas may also act as lands used for agricultural purposes, which would make over 90 percent of the County agricultural, making this the predominant land use within the county.

The balance of the County's lands are used for a variety of purposes, including less than four percent for residential uses, and less than one percent for public, commercial, industrial, transportation and utilities uses.

Table 2.1-2. Existing Land Uses

Land Use	Acres[1]	Percentage of Total County Land Area
Agricultural	322,240	83%
Residential	14,645	4%
Public and Vacant	2,293	0.6%
Commercial	1,424	0.4%
Industrial	1,743	0.4%
Open Space	44,581	11%
Transportation and Utilities	2,517	0.6%
Total	**389,443**	**100%**

Source: Sutter County, 2008.
[1]Includes acreages within incorporated cities and rural communities.

The following describes the general distribution of existing land uses within Sutter County's boundaries, by area:

Unincorporated County

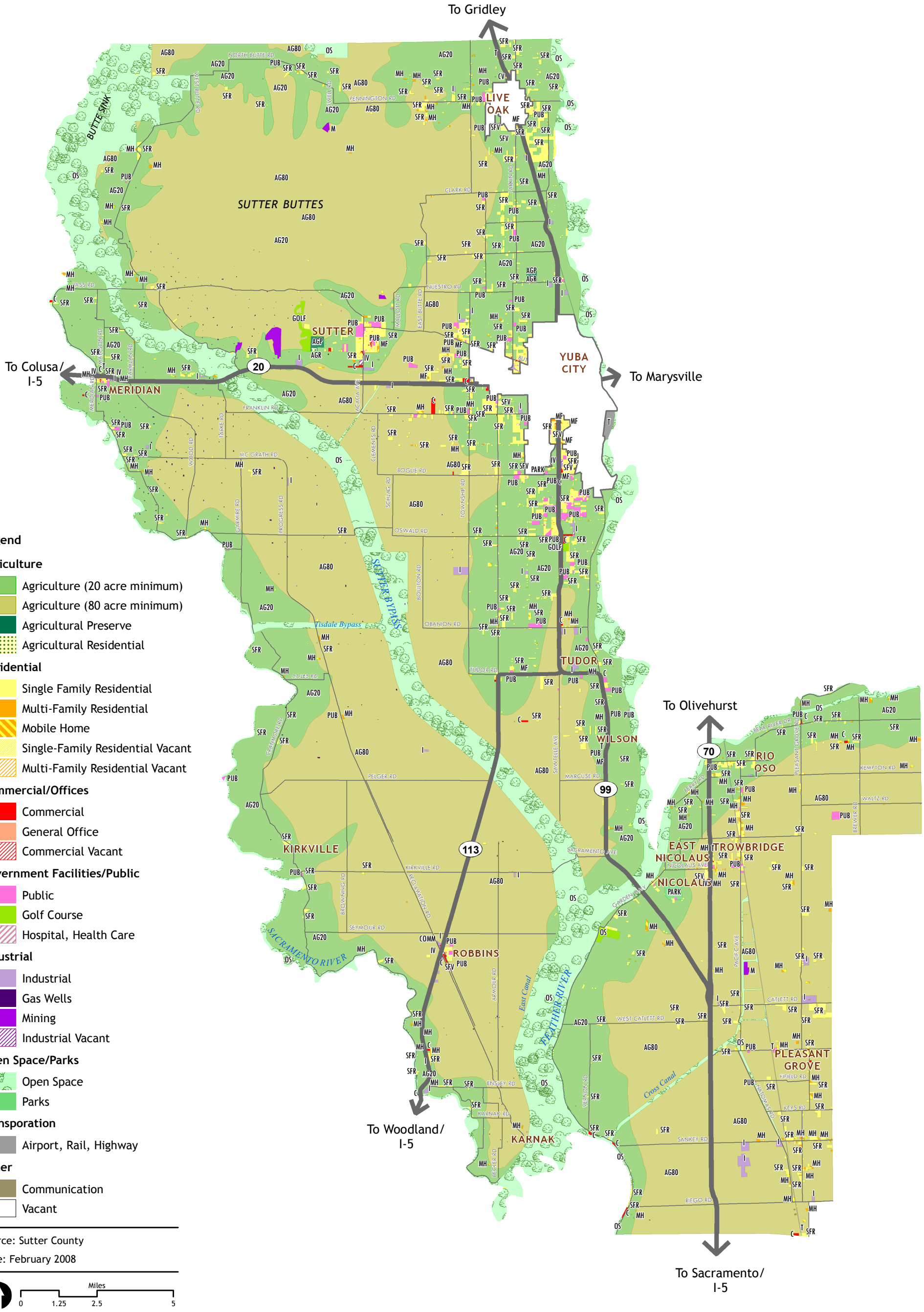
Land use throughout the unincorporated areas of the County is dominated by agriculture. The majority of the agricultural land, approximately 321,544 acres (not including the open space lands that may be used for agricultural purposes), is located in the unincorporated areas of the County outside of the boundaries of the unincorporated rural communities of Meridian, Sutter, Robbins, Nicolaus, East Nicolaus, Trowbridge, and Rio Oso. In addition, only 1,287 acres of agricultural land uses exist within the boundaries of the rural communities.

The second-most prominent land use within the unincorporated county is open space. Most of this open space is located within the Sutter Bypass. Open space areas are also located along the Sacramento, Feather, and Bear Rivers and Tisdale Bypass. Frequent flooding in most of these areas explains the difficulty of the County in placing other, more permanent uses on these lands.

Although residential uses are clustered in the cities and rural communities of the County, approximately 8,800 acres of residential uses are scattered throughout the remainder of the County. Most of these residential uses are located in unincorporated areas surrounding the cities, including the spheres of influence, and outside of the boundaries of the rural communities. Other clusters of residential land use occur along major transportation corridors, such as Highway 99 and State Route 20, as well as along each of the rivers and surrounding the Sutter Buttes.

Other smaller concentrations of industrial and public areas are also scattered throughout the unincorporated county, most often near the concentrations of residential uses mentioned above and outside of the rural communities' boundaries. Small clusters of commercial uses exist outside of the cities and rural communities, but in large, occur either within or immediately surrounding these areas. Other notable land uses located in the unincorporated portion of the County include: two active mines in the vicinity of the Sutter Buttes; another mine in the southeast portion of the County south of the community of Trowbridge; natural gas wells in areas southwest of the Sutter Buttes and southeast of the community of Meridian; and two golf courses, one west of the rural community of Sutter and one near the Feather River southwest of the community of Nicolaus.

SUTTER COUNTY
General Plan Update



Legend

Agriculture
- Agriculture (20 acre minimum)
- Agriculture (80 acre minimum)
- Agricultural Preserve
- Agricultural Residential

Residential
- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Single-Family Residential Vacant
- Multi-Family Residential Vacant

Commercial/Offices
- Commercial
- General Office
- Commercial Vacant

Government Facilities/Public
- Public
- Golf Course
- Hospital, Health Care

Industrial
- Industrial
- Gas Wells
- Mining
- Industrial Vacant

Open Space/Parks
- Open Space
- Parks

Transporation
- Airport, Rail, Highway

Other
- Communication
- Vacant

Source: Sutter County

Date: February 2008

Miles
0 1.25 2.5 5

PBS&J

EXISTING LAND USE
Figure 2.1-2

Rural Communities

Table 2.1-3 below shows the acreages of each existing land use within each of the rural communities. Each of the rural communities, except for Sutter, contains a majority of residential uses. Unlike the other rural communities within the County, Sutter contains a majority of agricultural uses. Sutter's existing land uses include 58 percent agricultural, 30 percent residential, 7 percent public and vacant, 2 percent industrial, and 2 percent commercial. Generally, each community, with the exception of Robbins and Sutter, is occupied by at least 40 percent residential uses or more. In most of the communities, the top land uses are residential, agricultural, and public uses. Communities such as Meridian and Robbins also have large industrial areas. For example, East Nicolaus is occupied by 53 percent residential, 16 percent agricultural, and 13 percent public and vacant land uses. Meridian has nearly the same distribution of land uses, with 44 percent residential, 18 percent agricultural, and 15 percent public and vacant. The distribution of land uses in the community of Trowbridge is also similar with 47 percent residential, 28 percent agricultural, and 19 percent public and vacant.

Table 2.1-3. Rural Communities Existing Land Uses

Community and Land Use	Acres[1]
East Nicolaus	
Agricultural	25
Residential	87
Public and Vacant	21
Commercial	3
Industrial	14
Open Space	0
Transportation and Utilities	13
Total	*163*
Meridian	
Agricultural	22
Residential	54
Public and Vacant	18
Commercial	3
Industrial	20
Open Space	>1
Transportation and Utilities	5
Total	*122*
Nicolaus	
Agricultural	13
Residential	29
Public and Vacant	3
Commercial	>1
Industrial	0
Open Space	>1
Transportation and Utilities	0
Total	*47*
Rio Oso	
Agricultural	85
Residential	171
Public and Vacant	>1
Commercial	0
Industrial	0
Open Space	0
Transportation and Utilities	3

Table 2.1-3. Rural Communities Existing Land Uses

Community and Land Use	Acres[1]
Total	*260*
Robbins	
Agricultural	57
Residential	66
Public and Vacant	12
Commercial	21
Industrial	27
Open Space	0
Transportation and Utilities	5
Total	*188*
Sutter	
Agricultural	995
Residential	523
Public and Vacant	113
Commercial	33
Industrial	40
Open Space	0
Transportation and Utilities	11
Total	*1,715*
Trowbridge	
Agricultural	90
Residential	150
Public and Vacant	60
Commercial	0
Industrial	2
Open Space	0
Transportation and Utilities	18
Total	*320*

Source: Sutter County, 2008.

Although most of the rural communities within the county have similar distributions and percentages of residential, agricultural, and public and vacant land uses, three communities differ substantially from the general trend. The communities of Nicolaus and Rio Oso are both dominated by residential and agricultural land uses, but other land uses within these communities are very minor. For example, Nicolaus contains 63 percent residential uses and 27 percent agricultural uses; the remaining 10 percent includes small areas of land spread between public and vacant uses, commercial, and open space uses. In Rio Oso, residential and agricultural land uses comprise 66 percent and 33 percent of the community's area, respectively. With other land uses making up only one percent of the community's area, this is the least diverse of the rural communities in terms of types of land uses.

On the other hand, the rural community with the most diversity in terms of land use distribution is Robbins. The community of Robbins contains a larger presence of industrial and commercial land uses than the other rural communities. While the residential and agricultural land uses are still the largest land uses within the community, the percentages of those land uses are smaller than they are in the other communities. Residential land uses make up 35 percent of the total land area of the community, followed by 30 percent agricultural, 15 percent industrial, and 11 percent commercial.

Ranchettes

Ranchettes, an existing land use found primarily south and west of the City of Yuba City, outside of Yuba City's SOI, are residences built on large lots generally in rural or agricultural areas. These large lot residences provide an attractive option to those seeking housing in a rural setting. As the price of urban and suburban housing increases, ranchettes and large rural lots have become more competitive as a housing alternative. Some agricultural activities may take place on ranchette properties.

Ranchettes have become an increasingly controversial issue in Sutter County, as well as in other agricultural and rural communities throughout California. Concerns have been expressed about such development leading to inefficient land use patterns, overloading limited rural infrastructure, and impacting the cost-effective delivery of services.

Depending upon their location, ranchettes may replace previously productive farmland and/or create a restrictive impact on adjacent commercial agricultural operations. Issues of compatibility often arise between the ranchette residents and agricultural operators leading to complaints about dust and noise from farm equipment; odors from livestock, fertilizers, and pesticide use; and issues with other common agricultural practices. Instances of trespassing and vandalism may also occur. In addition, the market demand for ranchettes and large rural lots may lead to the inflation of adjacent agricultural land prices. These issues all pose economic and legal risks for commercial agriculture.

Between 1998 and 2007, 49 ranchette projects have been approved by Sutter County resulting in 151 lots on 665 acres. The lots range in size from 3 to 10 acres. In most cases, they involve the subdivision of farmland or grazing land, but not prime farmland.

Cities

As the urban centers of the County, the cities of Yuba City and Live Oak contain the bulk of the urban-type land uses within the county, such as residences, commercial uses, industrial uses, parks, and public facilities. Yuba City's jurisdictional boundaries include approximately 14 square miles (8,965 acres) of land; the City of Live Oak is approximately two square miles (1,165 acres). Although the increased intensities of land uses found within the cities do not allow very large tracts of agricultural lands and open space, some of these areas do exist within the jurisdictional boundaries of Yuba City and Live Oak.

Specifically, the City of Yuba City contains approximately 598 acres of agricultural uses and 383 acres of open space; however, the agricultural parcels are not the large-tract agricultural parcels (80-acre minimum) found throughout much of the County, and the open space is located primarily along the river within the floodplain area. Residential uses are the largest land use within Yuba City, making up almost 5,000 acres, or nearly 56 percent, of the City's incorporated area, followed by nearly 1,100 acres of commercial and office uses, approximately 900 acres of public uses, and 800 acres of industrial uses.

The City of Live Oak contains approximately 98 acres of smaller agricultural parcels and no open space areas. The predominant land use in Live Oak is residential, making up approximately 70 percent of the City's existing land uses, followed by public uses, agricultural, transportation and utilities, commercial, and industrial uses.

Important Farmlands

In the early 1980s, the California Department of Conservation, Division of Land Resource Protection, began a Farmland Mapping and Monitoring Program (FMMP). This program was

designed to inventory important farm and grazing lands by preparing Important Farmland Series maps. Its purpose is to monitor conversion of the state's agricultural land to and from agricultural use, and to report such conversion to the Legislature, local governments, and the public. Advisory guidelines and preliminary maps were published by the Department of Conservation in 1984. The guidelines identify five categories of farmland: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Lands. These categories are described in Section 4.2, Agriculture, Soils, and Mineral Resources.

Table 2.1-4 summarizes the types of farmland within the county, which is also illustrated on Figure 4.2-3 in Section 4.2, Agricultural, Soils, and Mineral Resources.

Table 2.1-4. Sutter County Important Farmlands

FMMP Classification	Acres in County
Prime	169,749
Unique	20,239
State	111,242
Local	8
Grazing	50,826
Other	24,180
Urban	11,359
Total	**387,603**

Source: California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, 2006.

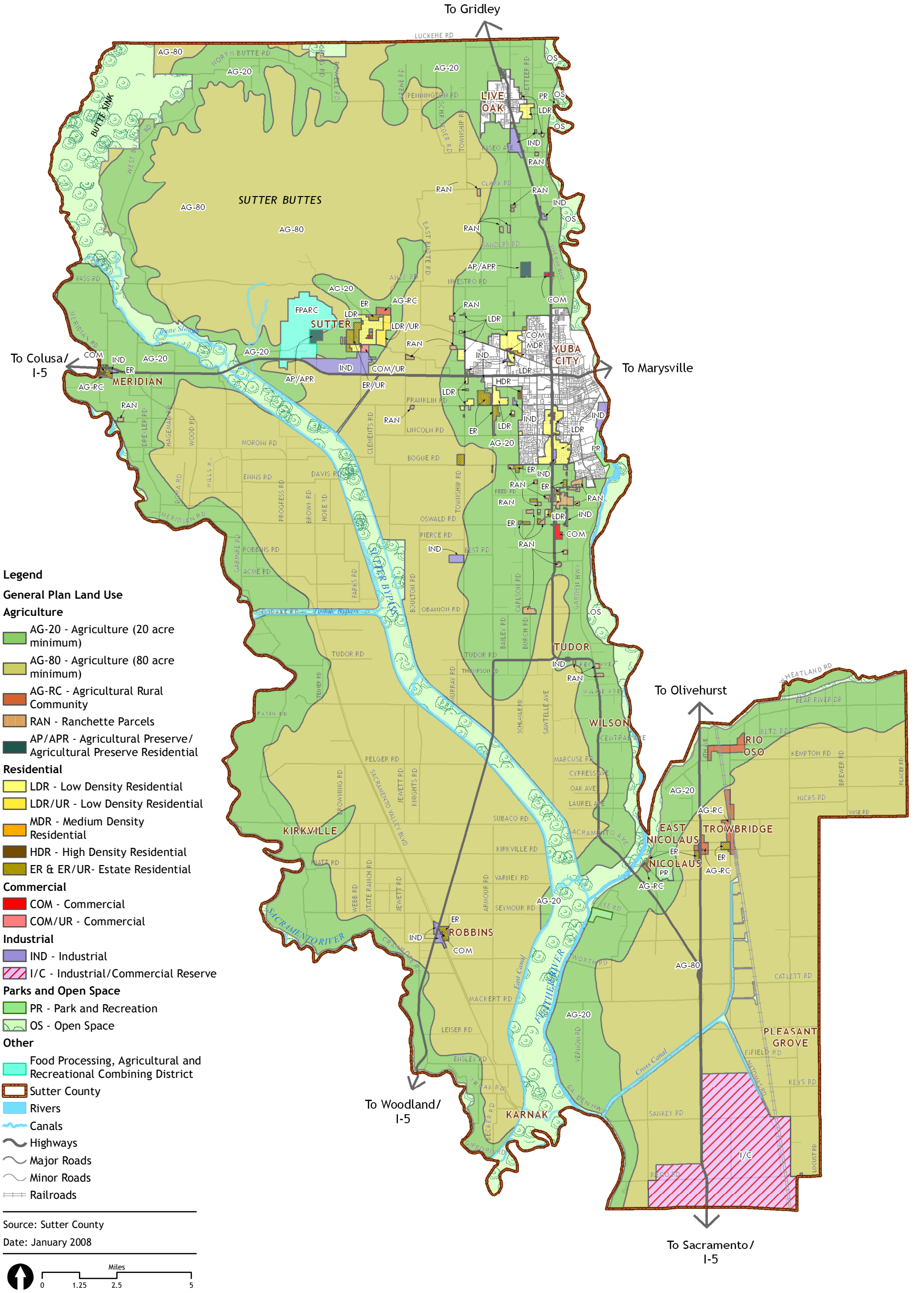
Williamson Act

The Williamson Act is a non-mandated State policy that creates contracts between private landowners and counties and cities to voluntarily restrict their land to agricultural and compatible open-space uses. In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use, rather then potential market value. As of December 31, 2007, Sutter County has 64,302 acres protected as agricultural land under the Williamson Act. These parcels are shown on Figure 4.2-3. The Williamson Act is described in more detail in Section 4.2, Agricultural, Soils, and Mineral Resources.

Existing General Plan Land Use Designations

A General Plan defines a jurisdiction's policy for land use development within its boundaries. General Plan land use designations identify the proposed distribution, location, and extent of planned uses to guide development within the county. Land use designations provide guidelines for the maximum intensity and density of development, such as the number of dwelling units per acre in residential areas and building square footage in non-residential areas, typically expressed as floor areas ratios (FAR). General Plan land use designations are not always consistent with actual land uses, as they are used as a tool in the planning process to guide future development. In many cases, future development plans may differ from actual existing land uses.

The adopted General Plan land use designations for the unincorporated county areas are shown below on Figure 2.1-3 and in Table 2.1-5.



Legend

General Plan Land Use

Agriculture
- AG-20 - Agriculture (20 acre minimum)
- AG-80 - Agriculture (80 acre minimum)
- AG-RC - Agricultural Rural Community
- RAN - Ranchette Parcels
- AP/APR - Agricultural Preserve/ Agricultural Preserve Residential

Residential
- LDR - Low Density Residential
- LDR/UR - Low Density Residential
- MDR - Medium Density Residential
- HDR - High Density Residential
- ER & ER/UR- Estate Residential

Commercial
- COM - Commercial
- COM/UR - Commercial

Industrial
- IND - Industrial
- I/C - Industrial/Commercial Reserve

Parks and Open Space
- PR - Park and Recreation
- OS - Open Space

Other
- Food Processing, Agricultural and Recreational Combining District
- Sutter County
- Rivers
- Canals
- Highways
- Major Roads
- Minor Roads
- Railroads

Source: Sutter County

Date: January 2008

Miles
0 1.25 2.5 5

EXISTING GENERAL PLAN LAND USE
Figure 2.1-3

The incorporated cities of Yuba City and Live Oak each have their own adopted General Plans to guide development within their boundaries. The cities' General Plans may also include development plans for areas outside of their current city boundaries, but within their spheres of influence. Areas within the spheres of influence are generally slated for eventual annexation into the cities, but until such time, are still within the jurisdiction of the County and its General Plan. The County General Plan guides development in the unincorporated area of Sutter County, which includes all rural communities.

Table 2.1-5. General Plan Adopted Land Use Designations

Land Use Designation	Code	Acres in County
Agriculture (20-acre minimum)	AG-20	111,614
Agriculture (80-acre minimum)	AG-80	205,237
Agriculture Rural Community	AG-RC	754
Agricultural Preserve / Agricultural Preserve Residential	AP/APR	224
Commercial	COM	201
Commercial / Urban Reserve	COM/UR	39
Estates Residential	ER	842
Estates Residential / Urban Reserve	ER/UR	78
Food Processing, Agriculture and Recreational	FPARC	1,819
High Density Residential	HDR	42
Industrial / Commercial Reserve	I/C	9,400
Industrial	IND	1,479
Low Density Residential	LDR	2,017
Low Density Residential / Urban Reserve	LDR/UR	194
Medium Density Residential	MDR	27
Open Space	OS	44,063
Park and Recreation	PR	640
Ranchette	RAN	643
Live Oak	Live Oak	1,165
Yuba City	Yuba City	8,965
Total		**389,443**

Source: Sutter County, 2008.

Descriptions of the County's land use designations are described below:

- Agriculture (AG) (20-acre minimum). This designation identifies land for the production of food and fiber, including areas of prime agricultural soils, and other productive and potentially productive lands where commercial agricultural uses can exist without creating conflicts with other land uses, or where potential conflicts can be mitigated. Lands designated AG 20 typically has soils with characteristics that are particularly suited for orchard crops as defined or described in the USDA Soil Survey for Sutter County. Typical land uses allowed include: crop production, orchards, grazing, pasture and rangeland, resource extraction activities, facilities that directly support agricultural operations such as agricultural products processing, limited residential, and necessary public utility and safety facilities.
- Agriculture (AG) (80-acre minimum). This designation identifies land for the production of food and fiber, including areas of prime agricultural soils, and other productive and potentially productive lands where commercial agricultural uses can exist without creating conflicts with other land uses, or where potential conflicts can be mitigated. Lands designated AG 80 typically have soils with characteristics that are particularly suited for field crops, row crops, and range land as defined or described in Sutter County's Soil Survey. Typical land uses allowed include: crop

production, orchards, grazing, pasture and rangeland, resource extraction activities, facilities that directly support agricultural operations such as agricultural products processing, and necessary public utility and safety facilities.

- Agriculture Rural Community (AG-RC). This designation identifies land in rural communities that can be utilized for small scale ranching and farming operations with 2½ acre minimum parcel sizes. Typical allowed uses include: single family dwellings and one permanent or temporary secondary unit per existing lot, agricultural uses such as crop production and grazing, equestrian facilities, and public utility and safety facilities.

- Ranchette (RAN). This designation is intended to accommodate small farms and large lot residential areas in rural portions of the County. This designation allows for expanded agricultural uses than are permitted by the Estates Residential (ER) land use designation, located on parcels ranging from 3 to 10 acres in size.

- Agriculture Preserve/Agricultural Preserve Residential (AP/APR). This designation is applied to areas where, instead of subdividing a large agricultural parcel to its 20 or 80 acre minimum underlying parcel size, the subdivider has chosen to cluster the permitted residential density onto small residential parcels and to retain a large agricultural preserve parcel. This land use designation is subject to certain criteria contained in the Zoning Code. By allowing the permitted residential density of the agricultural parcel to be clustered together into small parcels and requiring that an agriculture preserve parcel be created, it is intended that the agricultural use of the preserve parcel will be retained. Typical land uses allowed include: crop production, orchards, grazing, pasture and rangeland on the agricultural preserve parcel and detached single family dwellings on the residential parcels.

- Estates Residential (ER). This designation is applied to areas located within rural communities and the Yuba City sphere of influence. This designation is comprised of dispersed residential development on larger parcels with densities ranging from 0.5 to 3.0 dwelling units per acre (1/3 to 2 acre parcel size). The primary use is large lot single family residences including guest houses. Secondary uses include: crop and tree farming, private stables, public parks and playgrounds, schools and necessary public utility and safety facilities.

- Low Density Residential (LDR). This designation is applied to suburban and urban areas suitable for single-family residential neighborhoods, with individual homes on lots ranging in area from 5,000 square feet to one-half acre. The density range is between 2 to 8 dwelling units per acre. Typical land uses include: detached single family dwellings, and residential accessory uses; churches, schools, parks, child care facilities, and necessary public utility and safety facilities. Secondary dwelling units may be permitted subject to County standards.

- Medium Density Residential (MDR). This designation is applied to those areas within the urban areas suitable for multi-family residential neighborhoods. The density range is 8 to 25 dwelling units per acre. Typical land uses allowed include: attached single-family dwellings, secondary dwellings, and a wide range of multi-family dwellings, and residential accessory uses; churches, schools, parks, child care facilities, and necessary public utility and safety facilities.

- High Density Residential (HDR). This designation is intended to provide for residential neighborhoods of multi-family units such as apartments and/or condominiums. The density range is 25 to 45 dwelling units per acre. This

designation is applied within urban areas of the County where residential development will be near transportation corridors, downtowns, village centers, other major commercial centers, schools and community services. Typical land uses would include: attached single-family dwellings, all types of multi-family dwellings (e.g., apartments, senior housing projects, etc.) and residential accessory uses; churches, schools, parks, child care facilities; and necessary public utility and safety facilities.

- Commercial (COM). This designation is intended to encompass the existing community and regional commercial areas where general commercial and retail sales facilities are necessary for public service and convenience. Typical land uses include: highway service types of commercial uses such as service stations, restaurants, motels, trailer courts, retail nursery sales, and agricultural product sales. It also accommodates retail business or service enterprises such as: banks, business offices, food, drug, and clothing stores, business colleges, music and dancing studios, catering shops, art and antique shops, hotels, theaters, auditoriums, social clubs, specialty commercial-recreational uses such as racing facilities, amusement parks or other outdoor recreation oriented uses, commercial printing shops, mortuaries, bakeries, studios, clinics, public utility offices and substations, and communication equipment buildings. Types of commercial industrial uses with this land use designation may include: repair garages, automobile sales and service, warehouses and wholesale distribution, garden supply and pre-cut retail lumber sales within buildings and storage within fenced yards, adult entertainment businesses, and public utilities and safety facilities.

- Industrial (IND). This area is intended to accommodate industrial type uses. Typical uses include: manufacturing, assembling, processing, fabricating, bulk handling of products, storage, warehousing, heavy trucking, refining, repairing, packaging or treatment of goods. Light and heavy industries would conduct their operations in designated areas and minimize the external effect of traffic congestion, noise, glare, air pollution, fire, and safety hazards on adjoining districts.

- Park and Recreation (PR). This designation is intended to identify and protect mountainous, river bank, lake shore, or other such areas identified by the County as having particular natural beauty, historical importance, or other importance for use as public or private parks or outdoor recreational facilities. Typical land uses allowed within this designation include outdoor recreational activities such as golf courses, campgrounds, marinas, natural and undeveloped recreation areas, parks, off-highway vehicle parks, riding clubs and stables.

- Open Space (OS). This designation is intended to identify and protect important open space lands within Sutter County, including: non-agricultural areas which contain significant vegetation, wildlife, and/or habitat resources, areas which present conditions hazardous to rural and urban development, and areas required for the managed production of mineral resources. Typical land uses allowed within Open Space areas include agriculture, mining, limited residential and public recreation. Necessary public utility and safety facilities are also permitted.

- Food Processing, Agricultural and recreational Combining District (FPARC). This designation provides an area where food processing and associated industries, together with appurtenant functions thereof, may locate outside the urban centers and in close proximity to recreation and open space areas in a manner which

minimizes adverse environmental impacts and protects and enhances agricultural productivity.

Unincorporated County

In general, the unincorporated areas of the County outside of the rural communities are designated for agricultural uses in the existing General Plan. The distribution of the agricultural land is similar to that distribution described above under Existing Land Uses, with the larger parcel agricultural designations being located toward the center portions of the County, and the smaller parcel agricultural General Plan designations being located along the rivers at the edges of the County. The Sutter Buttes are designated as large-parcel (80-acre minimum) agricultural parcels, and the Sutter Bypass and Butte Sink are designated as Open Space, similar to the existing land uses in those areas.

Although General Plan land use designations may not necessarily coincide with actual existing land uses, in Sutter County, they are generally matched or compatible. A major exception to this is a large area of approximately 10,500 acres, located in south Sutter County adjacent to the Sacramento and Placer County borders. This area is designated in the General Plan as Industrial/Commercial Reserve (I/C), approximately 7,500 acres of which is intended to be developed as the Sutter Pointe Specific Plan area in the future. This area is currently used primarily for agriculture, although it does contain a 50-acre warehousing and distribution center operated by Sysco Corporation, as well as a Holt Tractor Manufacturing facility.

Rural Communities

The rural community of Sutter contains a variety of General Plan land use designations, but is dominated by industrial and low density residential. The community also contains land use designations for estates residential, agriculture (20 and 80-acre minimum), and commercial.

The southern portion of the community of Sutter contains a large area of land designated in the General Plan as industrial along State Route 20. West of the community of Sutter is the County's only area containing the FPARC land use designation.

Other rural communities within the county do not have the same diversity of General Plan land use designation as the community of Sutter. Overall, General Plan land use designations within the boundaries of the rural communities, with the exception of Sutter, are dominated by General Plan land use designations for very low density residential housing, such as the Agricultural-Rural Community (AG-RC) and Estates Residential (ER) designations. Some of the communities, such as East Nicolaus and Meridian, include smaller areas designated for commercial and industrial uses. Unlike any of the other rural communities, Meridian also has a few small areas designated for High Density Residential (HDR). Robbins has a small area designated in the General Plan as Commercial (COM) and a relatively large area (104 acres) designated as Industrial (IND). Table 2.1-6 includes the acreages for each of the General Plan land use designations found within the boundaries of the rural communities (see Figure 2.1-1 for location of these rural communities within Sutter County).

It should be noted that due to the individual nature of each of the rural communities, the County's 1996 General Plan included separate specific land use policies for each rural community. As a result, the County determined that additional land use planning for these areas would be carried out on an individual basis.

Cities

The City of Yuba City adopted a new General Plan in 2004. According to the General Plan Diagram, last updated in April 2006, the City's General Plan land use designations are primarily for low density residential uses, although areas of medium and medium/high density residential do occur within the City's planning area. In particular, the higher-density residential uses are found in the older portions of the City closest to the Feather River, along major transportation corridors such as Highway 99 and State Route 20, as well as nearby commercial centers. Commercial, public, and light industrial land use designations in the City tend to be distributed in a similar fashion: older portions of the City and along Highway 99 and State Route 20.

Table 2.1-6. Rural Communities GP Land Use Designations

Community and Land Use	Acres
East Nicolaus	
AG-RC	104
COM	7
ER	37
IND	15
Total	*163*
Meridian	
AG-RC	22
COM	5
ER	67
HDR	2
IND	26
Total	*122*
Nicolaus	
AG-RC	25
COM	2
ER	20
Total	*47*
Rio Oso	
AG-20	1
AG-RC	259
Total	*260*
Robbins	
COM	4
ER	80
IND	104
Total	*188*
Sutter	
AG-RC	74
COM	11
COM/UR	39
ER	187
ER/UR	78
IND	710
LDR	422
LDR/UR	194
Total	*1,715*
Trowbridge	
AG-RC	270
ER	50

Table 2.1-6. Rural Communities GP Land Use Designations

Community and Land Use	Acres
Total	*320*

Source: Sutter County, 2007.

Open space and park land use designations are primarily located along the Feather River, although some park areas are distributed throughout the City. Areas within Yuba City's sphere of influence are dominated by low density residential land use designations, along with supporting uses, such as public uses like schools and parks, as well as neighborhood-supporting commercial areas.

The City of Live Oak is currently in the process of updating their General Plan. The new General Plan will account for major growth and changes in land use that have occurred in the City since the last update of the General Plan that occurred in the mid-1990s. At this time, the General Plan update process has two potential alternatives for the new General Plan land use designation diagram. Both alternatives include the addition of some commercial, civic, historical, and mixed use land use designations to the City's central area, within the current city limits. Outside of the City's boundary, both alternatives propose primarily single family residential land use designations, with some areas designated for higher density residential, along with supporting uses, such as schools, parks, and commercial spread throughout the sphere of influence. Although the various land use designations vary slightly between the two alternatives, both are quite similar in the general distributions.

Area Plan and Future Development

Existing Area Plan

In 1982, Sutter County voters approved Measure A, which created the approximately 1,800 acre Food Processing, Agriculture and Recreation Combining (FPARC) Area Plan. The original purpose of the plan was to provide a place for a food processing plant, powered by a co-generation facility that utilized wastewater from the processing facility to irrigate a golf course. While the food processing plant was not constructed, the golf course has since been developed. The plan area is located west of the community of Sutter along the foothills of the Sutter Buttes, including an area south of South Butte Road and north of Highway 20. The FPARC Area Plan boundaries are shown on Figure 2.1-3.

Future Development

Lincoln East Specific Plan

Most of the County is of a rural, agricultural nature, so large-scale development projects are rarely outside of the Yuba City and Live Oak City limits. However, such projects are anticipated to occur within the cities' spheres of influence in the future. Until these areas are annexed into the cities, they remain under the jurisdiction of the County. The Lincoln East Specific Plan is in the process of being prepared by the City of Yuba City, which would include the annexation and development of approximately 1,160 acres of unincorporated county land located adjacent to the City's southwest boundary. The Specific Plan area is bound by Franklin Road to the north; George Washington Boulevard to the west; Bogue Road to the south; and Sanborne Road, Cherry Street, and Harding Road to the west. The plan includes primarily single family residential uses and some medium to high density residential use, along with parks, schools, public facilities, and neighborhood-serving commercial uses. This area is currently within the

City's sphere of influence, and upon annexation into the City, the County's General Plan will no longer have jurisdiction over these lands.

Sutter Pointe Specific Plan

The Sutter Pointe Specific Plan is a large-scale development project that is currently on file with, and being processed by, Sutter County. This plan area is located in the southernmost portion of the County adjacent to the Sacramento County line and a portion of the Placer County line, within the Industrial/Commercial Reserve (I/C) area designated under the 1996 General Plan. The plan area includes the development of approximately 7,500 acres. This plan is the result of the approval of Measure M in 2004, an advisory ballot measure approved by Sutter County voters. In an attempt to attract new employers to the County to provide jobs, industry, commerce, education, housing, recreation, and open space are included in the proposal. The plan includes a maximum of 3,600 acres of commercial and industrial parks; a minimum of 1,000 acres for schools, parks, open space, libraries, and other community facilities; and 2,900 acres or less of residential uses, as well as all necessary infrastructure and public service facilities necessary to serve the plan area.

Sacramento Area Council of Governments Blueprint Project

The Sacramento Region Blueprint Transportation Land Use Study was a regional planning effort initiated by the Sacramento Area Council of Governments (SACOG) in 2002 that examined how transportation and land use planning could be better linked to accommodate future growth. Through a two-year process, SACOG, in concert with participating jurisdictions in the six-county region, developed a number of land use growth scenarios, depicting how the region could accommodate an additional population of 1.7 million people, and associated homes and jobs, by the year 2050. The effort culminated in December 2004 when SACOG adopted a "Preferred Scenario" for growth in the region's six counties, which included seven key growth principles. These growth principles include providing transportation choices for development projects, promoting mixed use developments, compact development, providing housing choice and diversity, promoting the use of existing assets such as development on infill or vacant lands, quality design, and natural resource conservation.

The Preferred Blueprint Scenario assumes certain levels and locations of both "reinvestment" (i.e., additional development on already-built parcels) and greenfield development (i.e., large-scale development on vacant land). The purpose of this mapping is to illustrate, generally, the amount and locations for these types of growth. It is not intended to indicate that a specific parcel should or should not be developed in a particular manner. That level of planning is the responsibility of local governments, and is beyond the specificity appropriate for regional-scale, long-term scenario planning.

As part of the Blueprint effort, transportation projects were added to the region's road and transit systems to help evaluate the various land use development scenarios being studied. An objective of each scenario was to match the transportation system with the land use parameters. While a list of projects was developed and is available for the Preferred Scenario, the purpose of the project list is to provide a generalized priority of transportation investments that fit with the location and amount of development and with the smart growth planning concepts. Application of these concepts in places like Sutter County will better integrate land use and transportation planning to reduce the emission of criteria air pollutants, thus improving air quality in the region. For further information, refer to Section 4. 4, Air Quality, of this TBR.

Zoning

Zoning is an implementation tool that establishes districts of permitted and prohibited uses to control the physical development of land consistent with the General Plan. In addition to permitted uses, zoning may also establish development standards relating to issues such as minimum lot sizes, maximum lot coverage, setbacks, building height, and parking. Zoning districts determine specific intensity and density of development allowed on a given parcel and may be more restrictive than the General Plan. California law requires that zoning be brought into conformance with the General Plan within a reasonable time period. Projects submitted for review and approval are evaluated for consistency with both the General Plan and Zoning Code.

As of February 2007, the Sutter County Zoning Code provides for a total of 28 zoning districts, including 24 base districts and four special “combining districts.” The four special "combining districts" included in the Zoning Code are districts not used by themselves, but when added to other zone districts, can provide specific additional uses and/or requirements. For example, adding the A (Agricultural) Combining District to the R-1 (Single Family Residential) District would result in a R-1-A District which would provide for the addition of certain limited agricultural uses such as keeping of animals (i.e., horses and cows) not normally permitted in the standard R-1 District. In addition to the combining districts, Sutter County has an overlay zone specifically for the Sutter Buttes. Similar to the combining districts, this overlay zone provides additional development standards within these lands.

The following information from the February 2007 Sutter County Zoning Code identifies each zoning district and summarizes the primary uses occurring in each of the districts and the shortened map code used for reference.

Agricultural Zoning Districts

- Upland Agricultural District (U-A). This district classification is intended to be applied in the mountainous and foothill areas of the County in which light agriculture and grazing are desirable predominant uses, and in which protection of the uplands from fire, pollution, erosion, and other detrimental effects is important to the general welfare. This district is consistent with the AG 80 General Plan land use designation.

- Exclusive Agricultural District (A-2). This district classification is intended to be applied in the fertile valley and foothill areas of the County in which intensive agriculture is and should continue to be the predominant land use, and in which the protection of this use is important to the general welfare. This district is consistent with the AG-20 or AG-80 General Plan land use designation.

- General Agricultural District (AG). The AG District is established to provide areas for general farming, low density uses, open spaces, and by use permit limited retail service uses which in the opinion of the Planning Commission support the local agricultural industry. It is intended that this classification may be applied to rural communities where the predominance of land use is of a general agricultural nature, however, the needs of the agricultural community may require the location of retail, commercial and service establishments. This district is consistent with the AG-20 or AG-80 and AG-RC General Plan land use designations.

- Agricultural Preserve Residential and Agricultural Preserve District (APR/AP). This district classification, comprised of two “categories”, is intended to be applied to subdivision requests of agriculturally zoned land that propose parcels

for residential use that are less than the minimum designated parcel size while still meeting overall General Plan density requirements for the subject parcel. The district allows residential density permitted by the agricultural designation at the time of the subdivision to be clustered onto small residential lots provided that a large agricultural "preserve" parcel with a limited number of permitted agricultural uses is retained. The residential parcels shall have the APR classification while the AP classification will be placed on the agricultural preserve parcel. It is intended that the residential parcels will not adversely affect surrounding agricultural operations. This district is consistent with the Agricultural Preserve (AP) General Plan land use designation.

- Ranchette District (RAN). This district classification is intended to be applied to areas located outside of rural communities and the Yuba City and Live Oak spheres of influence, which are suitable for rural residential development and small scale farming operations. These areas should be compatible in character with neighboring properties and located where such development will have minimal impact on surrounding agricultural operations. Ranchette applications are considered with a strict reliance upon meeting the evaluation criteria and development standards. The evaluation criteria and procedures are established by resolution to require a unique review process to ensure suitability of the site for ranchette development. This district allows limited residential uses with a density between 0.1 and 1/3 dwelling units per acres (3-10 acres parcel size). The Ranchette District will allow a smaller than 20-acre parcel to be divided into four or fewer parcels. This is intended to allow small-scale agricultural uses and residential development with a more rural character than the R-E district. This district is consistent with the AG-20 and AG-80 General Plan land use designations.

  A point system has been established to determine the suitability of property proposed to be rezoned for ranchettes. This point system focuses on whether the surrounding area has already been fragmented into parcels too small for commercial agriculture, the location of proposed lots to minimize exposure to conflicts with agricultural operations, proximity to schools and public services, and other factors. A proposed project must score at least 70 percent on the ranchette evaluation criteria to be considered for approval. The County continues to monitor and reevaluate this system.

Residential Zoning Districts

- Residential Estates District (RE). This district classification is intended to be applied in the Yuba City Sphere of Influence and rural communities in areas which are particularly suited to large lot developments for one family residences. This district is consistent with the Estate Residential General Plan land use designations.

- One-Family Residence District (R-1). This district classification is intended to provide areas for low density residential development within an urban environment that has adequate services and amenities which will support a desirable and stable living environment. The R-1 District is consistent with the Low Density Residential and Estates Residential General Plan land use designations.

- Two-Family Residence District (R-2). This district classification is intended to provide areas for low to medium density residential development within an urban environment that has adequate services and amenities which will support a

desirable and stable living environment. To provide affordable housing in a similar atmosphere as in the R-1 District and also provide for the lowest density of attached residences. This district is consistent with the Low Density Residential General Plan land use designations.

- Neighborhood Apartment District (R-3). This district classification is intended to provide areas for medium density residential development within an urban environment that has adequate services and amenities which will support a desirable and stable living environment as well as providing opportunities to meet affordable housing needs. The R-3 District is consistent with the Medium Density Residential General Plan land use designation.

- General Apartment District (R-4). This district classification is intended to provide areas for high density residential development within an urban environment that has adequate services and amenities which will support a desirable and stable living environment as well as providing opportunities to meet affordable housing needs and provide for the general welfare. This district is consistent with the High Density Residential General Plan land use designation.

- Mobile Home Subdivision District (M-H-S). This district classification is intended to be applied to those portions of the county where the public interest may be served by the establishment of a mobile home on individual lots within a recorded subdivision as a means of human habitation; such use shall be subject to performance standards considered necessary for the public health, safety, general welfare and for the orderly growth and development of the area. The MHS District is consistent with the Low Density Residential General Plan land use designation.

Commercial Zoning Districts

- Highway Service Commercial District (CH). This district classification is intended to provide for commercial services along main roads and highways for the traveling public in developments designed for safety, convenience and fitting appearance. This district is consistent with the Commercial General Plan land use designation.

- Neighborhood Commercial District (C-1). This district classification is intended to provide for small commercial areas that cater to the daily convenience shopping and service needs of the surrounding residential neighborhood. The scale and design of buildings within this district must be compatible with the neighboring residential uses and generally located on collector or local streets. This district is consistent with the Commercial General Plan land use designation.

- General Commercial District (C-2). This district is established to provide for a full range of retail sales and personal services to meet the needs of the residents of the entire county and provide for the general welfare. The facilities may range from a single building to a neighborhood center with a supermarket as the primary tenant to a community center that may have several major tenants and should be located along major thoroughfares and arterials. This district is consistent with the Commercial General Plan land use designation.

- Commercial-Industrial District (C-M). This district is established to provide opportunities to combine commercial and industrial uses. The district provides for selected sales and services that are often considered inappropriate in primary retail areas due to size or operating characteristics or because products are

manufactured onsite, as well as, various light industrial type uses. This district is not intended to provide typical retail sales normally found in the retail districts. This district is consistent with the Commercial and Industrial General Plan land use designations.

Industrial Zoning Districts

- Light Industrial District (M-1). This district classification is intended to provide suitable areas for low intensity assembly, processing or manufacturing activities, product distribution, and related activities, all of which do not create nuisance or otherwise unacceptable levels of noise, dust, odor, smoke, bright light or vibration in order to provide for the general welfare. This district is consistent with the Industrial General Plan land use designation.

- General Industrial District (M-2). This district classification is established to provide areas for a full range of industrial, manufacturing and related uses to expand the economic base, employment opportunities and provide for the general welfare. Due to potential high intensity operational characteristics and features, this district should be located away from residential neighborhoods and other potentially sensitive uses. This district is consistent with the Industrial General Plan land use designation.

- Limited Manufacturing District (M-L). This district is designed to accommodate a limited group of business, professional, research and technical manufacturing uses which may have unusual requirements for space, light and air, and the operations of which are clean and quiet in order to provide for the general welfare. This district is consistent with the Industrial General Plan land use designation.

- South Sutter County Commercial District/South Sutter County Industrial District (SSCC/SSCI). This district classification is established to implement that portion of Section 9 of the Sutter County General Plan relating to the South Sutter County Industrial/Commercial Reserve area. The district is intended to allow large scale industrial and commercial development in South Sutter County because of the area's proximity to major transportation corridors, metropolitan areas, and the Sacramento International Airport. The establishment of this district is also intended to provide for the general welfare and increase the economic base and employment opportunities. This district is consistent with the South Sutter County Industrial/Commercial Reserve General Plan land use designation.

Miscellaneous Zoning Districts

- Food Processing, Agricultural and Recreational Combining District (FPARC). The FPARC District was established by a vote of Sutter County citizens in 1982. The FPARC District provides an area where food processing and associated industries, together with appurtenant functions thereof, may locate outside the urban centers and in close proximity to recreation and open space areas in a manner which minimizes adverse environmental impacts and protects and enhances agricultural productivity.

- Airport District (AV). This district classification is intended to be applied to properties used, or planned to be used, as airports, and where special regulations are necessary for the protection of life, property and the general welfare. The AV District is consistent with the Industrial General Plan land use designation.

- Public District (P). This district classification is intended to provide for the general welfare with areas for public facilities in which parks, governmental, educational, utility, and other community facilities of a public nature are the principal use. The district may be used for private facilities when combined together with Planned Development Combining District (PD). This district is consistent with all General Plan land use designations.

- Park-Recreation District (PR). This district classification is intended to be applied in mountainous, river bank, lake shore and other such areas as may contain natural resources or potential park or recreation features, in which agriculture may be a desirable secondary use, and in which protection for such uses is in the public interest. This district is consistent with the Park and Recreation and Open Space General Plan land use designations.

Special Combining Districts and Overlay Zones

- Sutter Buttes Overlay Zone (SB). The Board of Supervisors finds that the Sutter Buttes constitute a significant historic, cultural, scenic, and geographic feature of the area. Dubbed "the smallest mountain range in the world," the Sutter Buttes rise to over 2,100 feet above sea level and provide the only geographic relief in the otherwise level Sacramento Valley. This range is considered by the Maidu (a Native American people) as the spiritual center from which life originated. Development in certain areas of high or critical visual sensitivities, such as on ridgelines, is particularly damaging to the Sutter Buttes' scenic and cultural qualities. It is therefore in the best interest of the residents of Sutter County, in preserving the cultural, historic, geologic, and visual values of the Sutter Buttes, that specific development standards be applied in the Sutter Buttes.

- Agricultural Combining District (A). This district is established in order to provide for additional uses common to residential areas located in the more rural areas of the county.

- Planned Development Combining District (PD). The purposes of this district are: (a) To encourage creative and more efficient approaches to the use of land through lot design, use of open space, mixture of land usage and/or densities, adjustment of setbacks or other means to create a better environment; or (b) To allow development whose type, or design, require special consideration in order to assure compatibility with adjacent land use.

- Special Building Site Combining District (B). The Special Building Site District is established to provide assurance that General Plan policies are achieved and development standards suited to a particular site are maintained. In any district with which a B District is combined, the following regulations shall apply in lieu of the respective regulations as to building site lot areas, depth of front yards, and widths of side yards as set forth in the principal district; provided however, application of the B District shall not be made when any of the following regulations are less restrictive than the corresponding regulations in the principal district.

- Historic Preservation Combining District (HP): The Historic Preservation Combining District is established to implement the Cultural Resource policies of the General Plan; to promote the preservation, rehabilitation, restoration, reconstruction, and protection of historic and cultural resources; to encourage and promote public knowledge, understanding, appreciation of the County's history; to promote appreciation and use of historic resources; to encourage

preservation of resources, which may potentially be considered eligible for historic preservation zoning; to promote public awareness of the benefits of preservation; and to encourage public participation in identifying and preserving historic resources, thereby increasing community pride and awareness of the County's cultural and historical heritage.

- Special Flood Plain District (FP). To provide for the welfare of county residents by identifying those lands within Sutter County that are not protected by flood control systems and are subject to flood hazards and/or seasonal inundation that limit(s) the practical uses of the property otherwise permitted within the primary district with which the "FP" District is combined. In any such district, the regulations of Section 1500-7912 shall apply in addition to those specified for such district, provided that if conflict in regulations occurs, the regulations of Section 1500-7912 shall govern.

Table 2.1-7 shows the various zoning districts of the Sutter County Zoning Code that can be used to consistently implement each of the land use designations used in the Sutter County General Plan. In addition, these basic zone districts have a variety of overlay zones or combining districts described in the zoning ordinance that can be used to implement the General Plan. Figure 2.1-4 shows the distribution of these zones throughout the unincorporated areas of the County. Approximate acreages for each of the zoning districts, special combining districts, and the overlay zone are shown below in Table 2.1-8. As one can see, the County's unincorporated lands are overwhelmingly zoned for agricultural purposes. It should be noted that areas zoned as agricultural may contain other uses, as long as the uses are compatible with the requirements for the zoning district. Approximate zoning acreages for each of the rural communities is also provided in Table 2.1-9.

PHYSICAL FORM AND COMMUNITY CHARACTER

This section describes the structure and appearance of Sutter County's physical environment. The physical environment is a key component in planning for future county growth since it contributes directly to the perceived desirability of the county as a place to live and work, as well as shape possible development patterns and influence a community's identity or character. This, in turn, has consequences for the economic vitality of the county in that it affects the types and quantity of businesses and residents that ultimately will settle in Sutter County. For this reason, it is important to consider issues of form and character when considering the formulation of the County's land use policies.

The concept of "physical form" encompasses the physical qualities of a place at different scales: regional, sub-regional, and local. In addition, individual perception of the county's form and character is influenced by context and intent. For example, individual sense of physical form can be influenced by the way a region appears on a map, by sub-regional geographic features observed during automobile travel, or by architectural qualities observed when walking a local neighborhood street. All three experiences contribute to the sense of the County as a unit.

Sight is the dominant sense used to identify physical features in the environment, but the mental pictures or images we form of the places in which we live, work or travel are not objective images like photographs. A sense of place is subjective; perceptions are colored by values, intentions, and intellect. People tend to remember the environment because of elements of contrast or change that mark the landscape and make it distinctive. For example, the openness and flatness of the valley floor made memorable (i.e., distinctive) by the visibility of distant features such as the Sutter Buttes and the Coast Ranges. Memorable characteristics can be

positive or negative in their effect. For this reason, the visual quality and character of a place is often referenced in discussions of physical form.

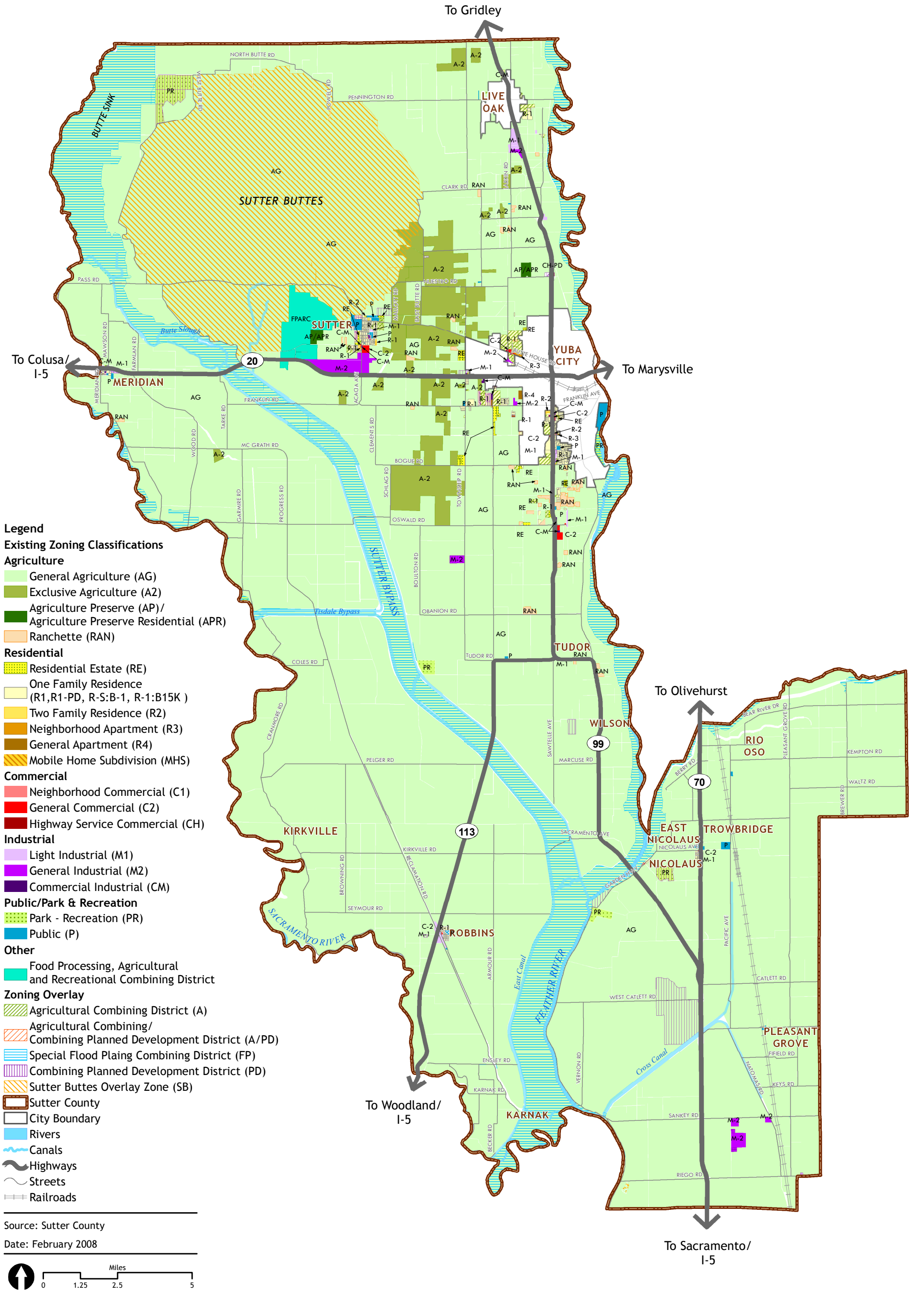
Components of Physical Form

Physical form and visual character are the result of the interaction of natural and man-made boundaries and elements. Natural elements, including topography, hydrology, vegetation, and climate, create the basic physical context, which can in turn, shape development of a region. For example, communities that are divided by a river, freeway, or mountain range can develop very different characters, although they may be located in the same geographic region, and influence a person's perception of a place. Man-made elements, including buildings, roads, infrastructure, and settlement patterns, are secondary elements that act upon the natural context to establish a particular physical or visual environment. While planning cannot significantly alter the natural context, it can do much to influence the interaction between the natural and the man-made, and help to establish a balance which enhances the quality of life for County residents and visitors. The following discussion examines in more detail the natural and man-made components and describes their contribution to the County's physical form and community character.

Table 2.1-7. General Plan Land Use Designations and Implementing Districts

General Plan Land Use Designation	Implementing Zoning Districts
Agriculture-80 acre minimum (AG-80)	General Agricultural (AG), Exclusive Agricultural (A2), Upland Agricultural (UA), Public (P), Ranchette (RAN)
Agriculture-20 acre minimum (AG-20)	General Agricultural (AG), Exclusive Agricultural (A2), Upland Agricultural (UA), Public (P), Ranchette (RAN)
Agriculture Rural Communities (AG-RC)	General Agricultural (AG), Public (P)
Agriculture Preserve/Agricultural Preserve Residential (AP/APR)	Agriculture Preserve Residential (APR), Agriculture Preserve (AP)
Estates Residential (ER)	Residential Estate (RE), One Family Residence (R1), Public (P)
Low Density Residential (LDR)	Residential Estate (RE), One Family Residence (R1), Two Family Residence (R2), Mobile Home Subdivision (MHS), Public (P)
Medium Density Residential (MDR)	Neighborhood Apartment (R3), Public (P)
High Density Residential (HDR)	General Apartment (R4), Public (P)
Commercial (COM)	Neighborhood Commercial (C1), Highway Service, Commercial (CH), General Commercial (C2), Commercial Industrial (CM), Public (P)
South Sutter County Industrial/Commercial Reserve (SSCI/C)	South Sutter County Industrial/Commercial District (SSCI/C), Public (P), General Agricultural (AG)
Industrial (IND)	Airport (AV), Commercial Industrial (CM), Light Industrial (M1), General Industrial (M2), Limited Manufacturing (ML), Public (P)
Park-Recreation (PR)	Park-Recreation (PR), Public (P)
Open Space (OS)	General Agricultural (AG), Exclusive Agricultural (A2), Upland Agricultural (UA), Park-Recreation (PR), Public (P)

Source: Sutter County General Plan Policy Document, November 26, 1996, Land Use, Table 3, p. 9.



Legend

Existing Zoning Classifications

Agriculture
- General Agriculture (AG)
- Exclusive Agriculture (A2)
- Agriculture Preserve (AP)/ Agriculture Preserve Residential (APR)
- Ranchette (RAN)

Residential
- Residential Estate (RE)
- One Family Residence (R1,R1-PD, R-S:B-1, R-1:B15K)
- Two Family Residence (R2)
- Neighborhood Apartment (R3)
- General Apartment (R4)
- Mobile Home Subdivision (MHS)

Commercial
- Neighborhood Commercial (C1)
- General Commercial (C2)
- Highway Service Commercial (CH)

Industrial
- Light Industrial (M1)
- General Industrial (M2)
- Commercial Industrial (CM)

Public/Park & Recreation
- Park - Recreation (PR)
- Public (P)

Other
- Food Processing, Agricultural and Recreational Combining District

Zoning Overlay
- Agricultural Combining District (A)
- Agricultural Combining/ Combining Planned Development District (A/PD)
- Special Flood Plaing Combining District (FP)
- Combining Planned Development District (PD)
- Sutter Buttes Overlay Zone (SB)
- Sutter County
- City Boundary
- Rivers
- Canals
- Highways
- Streets
- Railroads

Source: Sutter County

Date: February 2008

Miles
0 1.25 2.5 5

PBS&J

EXISTING ZONING DISTRICTS
Figure 2.1-4

Table 2.1-8. County Zoning Districts

Zoning District	Map Code	Acres	Percentage of County[1]
Upland Agricultural	UA	0	
Exclusive Agricultural	A-2	10,168	
General Agricultural	AG	345,345	
Ag Preserve/Ag Preserve Res	AP/APR	223	
Total Agricultural		***355,736***	**92%**
Neighborhood Commercial	C-1	3	
General Commercial	C-2	145	
Commercial-Industrial	C-M	82	
Highway Service Commercial	C-H	5	
Highway Service Commercial/Planned Development	C-H-PD	11	
Total Commercial		***246***	**>1%**
Food Processing, Agricultural and Recreation Combining	FPARC	1,878	
Total Food Processing, Agricultural and Recreation Combining		***1,878***	**>1%**
Light Industrial	M-1	341	
General Industrial	M-2	1,102	
Limited Manufacturing	M-L	0	
Total Industrial		***1,443***	**>1%**
South Sutter County Commercial	SSCC	0	
South Sutter County Industrial	SSCI	0	
Total South Sutter County Industrial/Commercial District		***0***	**0%**
Airport	AV	0	
Public	P	436	
Park-Recreation	PR	1,409	
Total Public/Park-Recreation		***1,845***	**>1%**
Mobile Home Subdivision	MHS	3	
One-family Residence	R-1	1,901	
One-family Residence/Agricultural	R-1-A	4	
One-family Residence/Planned Development	R-1-PD	1	
One-family Residence/Special Building Site, 15,000 sf lot minimum	R-1:B-15K	6	
One-family Residence/Special Building Site, 1-acre lot minimum	R-1:B-1	21	
Two-family Residence	R-2	35	
Neighborhood Apartment	R-3	21	
General Apartment	R-4	38	
Ranchette	RAN	651	
Residential Estates	RE	289	
Total Residential		***2,970***	**>1%**
Combining Districts			
Combining Planned Development	PD	n/a	n/a
Agricultural Combining	A	n/a	n/a
Special Building Site	B	n/a	n/a
Special Flood Plain	FP	n/a	n/a

Source: Sutter County, 2008.
[1]Percentages are based on total County acreage rather than zoned acres.

Table 2.1-9. Rural Communities Zoning Districts

Community and Zoning District	Acres
East Nicolaus	
AG	79
C-2	4
M-1	11
P	17
R-1	25
R-2	>1
Meridian	
AG	24
C-2	>1
C-M	4
M-1	23
P	11
R-1	32
R-4	1
Nicolaus	
AG	24
C-2	2
R-1	15
Rio Oso	
AG	253
Robbins	
AG	8
C-2	2
M-1	70
P	6
R-1	41
Sutter	
AG	337
C-2	41
C-M	7
M-1	6
M-2	678
P	81
R-1	327
R-1:B 15K	6
R-2	15
RE	31
Trowbridge	
AG	253
P	47

Source: Sutter County, 2008.

Natural Features

In the rural setting of Sutter County, geographic features including the Sutter Buttes; the Feather, Sacramento and Bear rivers, and associated levee system; localized drainage courses; oxbow lakes; the Butte Sink; and the expansive valley floor give shape and profile to the natural environment, which then shapes how a region develops. Climate, vegetation and geography interact to differentiate sub-regional landscape units within the larger environmental context. The county can be divided into two major geographic units: the valley and uplands. The following discussion identifies six major categories of natural features which contribute to the overall character and visual quality of Sutter County based upon soil types, vegetation and topography: 1) Uplands, 2) Dissected Uplands, 3) Valley Orchards, 4) Valley Floor, 5) Butte Sink, and 6) Riparian.

Uplands

The uplands consist of land ranging in elevation from approximately 100 feet mean sea-level up to the highest elevation in Sutter County (2,117 feet). The only land areas in the county reaching upland elevations are located in the Sutter Buttes. There are approximately 32,000 acres of uplands in the Sutter Buttes. The majority of uplands in Sutter County are covered by oak woodlands and valley grasslands consisting of tall trees with scattered brush and grassland between the trees. The periphery of the upland area contains open grasslands generally used for agricultural purposes. Several vernal pools have been inventoried on the State of California's Department of Fish and Game's Natural Diversity Data Base. These pools are generally located in the southwestern and eastern portions of the Sutter Buttes.

The Sutter Buttes are volcanic in origin with many interesting and significant rock out-croppings. These upland areas contain shale, sandstone and soft sandstone. Upland soils are generally shallow with underlying fractured bedrock near the surface. Some small pockets of deeper soil are located in the canyon floor areas between ridges. The primary land use activity in the uplands is grazing with some more intensive agricultural uses located in the pocket areas. Two open-pit mines are located in the Buttes. Mined mineral is primarily used as material for construction base. The majority of the uplands area is not suitable for cultivation. The land capability map was prepared from the U.S.D.A. Soil Conservation Service's capability classification of soil types.

Dissected Uplands

The classification "dissected uplands" is from the Agricultural Land Capability Map prepared for the 1972 Sutter County Conservation Element. It applies to the southeastern part of Sutter County adjacent to Placer County. Dissected uplands are characterized by open grass lands with some row or field crops and with a slight rolling terrain where the land has been eroded by various streams and creeks running through it. The soils have a slow permeability and have difficulty complying with regulations for septic system design. Although generally medium to deep soils, the area contains a hard pan layer at or near the surface to give it the slow permeability. The area identified as dissected uplands in Sutter County has several dairies, stables and cattle ranches.

Valley Orchards

The valley orchards are characterized as having some of the best soils in Sutter County. Soils are alluvial in origin having been laid down by countless flooding of the Sacramento, Feather and Bear rivers. Valley orchards are located relatively close to Sutter County's rivers and are typically flat with slopes of generally less than two percent. The primary orchard crops in Sutter

County based on acreages harvested are prunes, walnuts, peaches and pears. Soil types contained in valley orchards are considered to be the best of the soil classification types according to the U.S.D.A. Soils Conservation Service. As shown in the Figure 4.2-3 (see Section 4.2, Agriculture, Soils, and Mineral Resources) most of the county's important farmland is located on the valley floor.

The valley orchards have encountered the most significant urban intrusion due to the proximity of valley orchards to the urbanizing areas. Historically, urban development has occurred at the confluence of rivers in the county; e.g., Yuba City, Nicolaus, Rio Oso, and Meridian. These locations also happen to be the locations of the valley orchard areas. Any enlargement of Yuba City north, south, and to a lesser extent west, has been and continues to be into valley orchards. As the County's agricultural community grew, other agricultural service centers developed in locations having transportation crossroads; e.g., Live Oak, Robbins, Sutter, and East Nicolaus.

Valley Floor

The valley floor is a large area of Sutter County which is characterized by flat topography and open row or field crop type agricultural uses. This is the largest single physiographic area in Sutter County. Generally, the valley floor runs from the Butte County line on the north southward in a relative narrow band until reaching the southern side of the Sutter Buttes. South of the Buttes the valley floor widens to encompass the area between Township Road and the community of Meridian. From Highway 20, it runs south southeast encompassing the Sutter Basin to the confluence of the Feather and Sacramento Rivers. Another band of the valley floor area runs northward from the Sacramento County line, through the remainder of the North Natomas Basin, along Highway 70 almost to the Bear River.

The valley floor has an extremely low population density and is dominated by large scale farming operations. Primary crops based upon total acreage are rice, wheat, beans, tomatoes and various types of hay. Soil types are categorized as being moderately good by the USDA Soil Conservation Service.

Butte Sink

The Butte Sink is located in the northwestern portion of Sutter County, east of Butte Slough, west of the 50 foot mean sea level contour (which is west of West Butte Road), north of Pass Road and south of the Butte County Line. The Butte Sink is a wetland, subject to annual flooding from the Sacramento River and Butte Slough with summer drought.

Vegetation in the Butte Sink is generally oak woodland. Some of the area contains species typified in a fresh water marsh environment. Due to the winter flooding which occurs in the Butte Sink, the area is used extensively for waterfowl hunting. Hunting clubs and related facilities are scattered throughout the area. Some agricultural activity is located in the area while other properties are being allowed to revert to natural conditions for hunting operations. In recent years, the U.S. Fish and Wildlife Service have been actively acquiring conservation easements in the area to maintain and improve waterfowl habitat.

Riparian Areas

The riparian areas are those very narrow bands of wetland habitat adjacent to the rivers and streams in Sutter County. The streamside natural communities are characterized by the abundance of water, shade and dense cover. Trees and understory are either dense or widely spaced in clumps. Riparian areas are the most popular wildlife habitat in the area due to the availability of water, food, protection from the sun and large scale human disturbance. Threats to riparian areas are generally from flood protection measures conducted within the levees, pollution, recreational activities, and agricultural uses.

Manmade Features

Human intervention also plays an important role in shaping the County's physical form. Some of the more important manmade features that shape development patterns and influence community character include freeways and the County's flood control system, including the Sutter Bypass, Tisdale Bypass, Cross Canal, and levee system located along the Sacramento, Feather, and Bear Rivers.

Automobile Transportation Corridors

The county contains four transportation corridors that connect communities within the county to areas outside of the county. These major transportation corridors include Highway 99, State Route 20, Highway 70, and Highway 113. In the more rural portions of the county, these corridors are limited to two-lane roads, but do carry relatively large volumes of inter-county traffic through the county's smaller, more rural communities. These transportation corridors have provided linkages between County communities, as well as with larger communities outside of the County, including Sacramento, which have influenced the county's development. However, although these corridors provide connections between communities, they can also serve as barriers between communities, thus dividing the region and influencing the character of each community.

Flood Control System

Like rivers and freeways, the associated levees, canals, and bypasses located throughout the community can serve to divide communities within the county. Especially due to the lack of bridges crossing these features in many places, during times when bypasses are full, connectivity from some communities such as Meridian and Robbins to other communities in the county may be adversely affected. This can cause communities such as these to experience different types of development patterns from other communities in the county that may be more connected to each other due to a lack of these types of physical barriers. For example, the communities of Rio Oso, Trowbridge, and East Nicolaus are closer together and can share commercial areas and services due to the lack of physical barriers between the communities. Communities like Robbins, however, although relatively close to these communities, lack connectivity, and therefore must develop their own land uses and services that can serve citizens in that community, since travel between communities may be a challenge due to the physical barriers.

The County is essentially divided into two halves by the Sutter Bypass. The bulk of the County's population, infrastructure, and services are located east of the Sutter Bypass. The communities located east of the bypass also have better connectivity with one another, as well as other communities outside of the county, such as Marysville and Sacramento. The communities located west of the bypass tend to lack connectivity to these areas, which gives these communities unique characteristics.

REGULATORY CONTEXT

There is no regulatory context for Section 2.1, Land Use.

2.2 DEMOGRAPHIC AND ECONOMIC ANALYSIS

2.2.1 Demographic Trends and Conditions

INTRODUCTION

This section analyzes broad demographic trends in Sutter County, in particular countywide rates of population growth and changes in the location of employment for County residents, both historically and projected to 2030. The County's relationship to the region is examined in broad terms, the analysis of which will inform the County's land use policies over the time horizon of the General Plan Update. Information for this section was obtained from the U.S. Bureau of the Census, the California State Department of Finance (DOF), the California State Economic Development Department (EDD), and the Sacramento Area Council of Governments (SACOG).

SUMMARY OF KEY FINDINGS

- Sutter County's prospects for growth are closely tied to the growth potential of the SACOG region, differentiating it from other counties in the Northern Sacramento Valley. As one of the region's major growth areas for industrial, retail, and residential real estate, Sutter County benefits from economic expansion in Sacramento, Placer, and neighboring counties. Large amounts of industrial and residential development are currently planned for South Sutter County, and additional residential development is planned for the cities of Yuba City and Live Oak.
- An increasing share of the County's total population lives in a city. Local governments in the county have directed increasing amounts of its growth into the cities of Live Oak and Yuba City, so that the population living in cities grew from 40 percent in 1970 to 75 percent in 2007.
- Sutter County's ratio of jobs to housing is improving but lags that of the SACOG region as a whole. For each housing unit in 2005, the County had 0.85 jobs. Sutter County has added significant numbers of jobs since 1990, but development has added new housing units at a similar rate. The result is that, in the latest year for which data is available, fewer jobs are located in the county compared to workers who live in the county. In fact, 6,000 more workers leave Sutter County for work each day than enter from points outside the county.
- The net result of a lower jobs to housing ratio is that Sutter County is more likely than some of its neighboring counties to have resident workers with long commutes. Sutter County is also more likely to provide services to these residents without as much revenue support from employment-related land uses.
- Sutter County's strongest workforce linkages, as measured by the commute into or out of the county, are with Yuba, Sacramento, and Butte Counties. Workers flow into Sutter County from Butte County, and flow out to Sacramento County from Sutter County. Roughly equal numbers of residents in Sutter and Yuba Counties cross the Feather River to work in the other county each day.

EXISTING CONDITIONS

DOF estimates that 93,919 people live in Sutter County as of January 2007. The population has become more ethnically diverse since 1990, with the largest gains made by Hispanic and Asian groups (Table 2.2-1). The rate at which the County's total population changes over the next 23 years depends on employment conditions, growth pressures in adjacent regions, and the land use policies of the County and its cities.

Table 2.2-1. Change in Race of Sutter County Residents, 1990-2006

Group, Alone or in Combination	1990		2000		2006	
	Number	% of Total	Number	% of Total	Number	% of Total
White	49,521	77%	56,027	68%	68,821	70%
African American	1,041	2%	1,858	2%	2,661	3%
Asian[1]	6,079	9%	10,256	12%	12,499	13%
American Indian or Alaskan Native	941	1%	2,335	3%	3,546	4%
Some Other Race[2]	6,833	11%	12,318	15%	9,538	10%
Total, All Races	**64,415**	**100%**	**82,794**	**100%**	**97,065**	**100%**
Hispanic Spanish Speaking Population[3]	10,592	16%	17,529	21%	24,353	25%

Source: U.S. Census Bureau 2000 Census, 1990 Census, and 2006 American Community Survey.
[1]Includes peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, East Indian, Thailand, and Vietnam. It also includes Asian Indian, Chinese, Filipino, Korean, Japanese, Vietnamese, and Other Asian.
[2]Includes Non-White Hispanic.
[3]As a language group, these residents are also identified with one of the groups above.

Growth in Sutter County and the Region

Sutter County can be viewed as the northwestern member of the Sacramento Region (SACOG Region), made up of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties, or as the southernmost county in the North Sacramento Valley Region, made up of Butte, Colusa, Glenn, Nevada, Sutter, and Yuba Counties. Growth in the SACOG Region has led growth in the North Sacramento Valley between 1990 and 2007, as shown in Table 2.2-2.

Sutter County's growth rate during the same period was the highest in the North Sacramento Valley Region but ranked in the middle of SACOG Region counties. Although just four percent (one in twenty-five) of SACOG Region residents live in Sutter County, the data suggests that the County's pattern of growth is tied more closely to that region. Other sections of the TBR analyze patterns of land use and proposed development in the County and confirm its demographic and economic linkages with the SACOG Region, in particular Sacramento, Placer, and Yuba Counties.

For nearly 40 years and in particular since 1990, most of the growth in Sutter County has taken place in its two cities. As shown in Table 2.2-3, annexations and new development have increased the share of the County's incorporated population from 40 percent in 1970 to 75 percent in 2007. Fewer people resided in unincorporated areas of the County in 2007 than did in 1970 and this trend is assumed to continue during the time horizon of the General Plan Update.

Table 2.2-2. Regional Historical Population Shares and Growth, 1990-2007

Region / Jurisdiction	1990	Sutter County 1990 Share (%)	1995	2000	2005	2007	Sutter County 2007 Share (%)	Rate of Change, 1990-2007 (%)
SACOG Region								
Placer	172,796	11.2%	207,159	246,712	307,653	324,495	14.8%	3.8%
Sutter	64,415	4.2%	73,548	78,631	88,947	93,919	4.3%	2.2%
El Dorado	125,995	8.2%	143,863	155,702	173,668	178,674	8.1%	2.1%
Yolo	141,210	9.1%	152,924	167,551	187,610	193,983	8.8%	1.9%
Sacramento	1,041,219	67.4%	1,118,579	1,217,219	1,368,192	1,406,804	64.0%	1.8%
Yuba	58,228	3.8%	61,927	60,220	67,291	70,745	3.2%	1.2%
Subtotal, SACOG Region	**1,545,635**	**100.0%**	**1,696,073**	**1,865,815**	**2,126,070**	**2,197,875**	**100.0%**	**2.1%**
North Sacramento Valley Region								
Sutter	64,415	15.2%	73,548	78,631	88,947	93,919	17.6%	2.2%
Colusa	16,275	3.8%	17,694	18,734	20,995	21,951	4.1%	1.8%
Nevada	78,510	18.5%	86,426	91,642	98,698	99,766	18.7%	1.4%
Yuba	58,228	13.7%	61,927	60,220	67,291	70,745	13.3%	1.2%
Butte	182,120	42.9%	196,394	202,658	213,812	218,069	40.9%	1.1%
Glenn	24,798	5.8%	26,161	26,405	28,094	28,915	5.4%	0.9%
Subtotal, North Sacramento Valley Region	**424,346**	**100.0%**	**462,150**	**478,290**	**517,837**	**533,365**	**100.0%**	**1.4%**
Total, Ten County Region	**1,905,566**		**2,084,675**	**2,265,474**	**2,554,960**	**2,637,321**		**1.9%**

Source: State Department of Finance, E-5 and E-5a tables. Current as of September 10, 2007.

Table 2.2-3. Incorporated Area Share of County Population, 1970-2007

Jurisdiction	Year[1] 1970	1980	1990	2000	2007	Rate of Change 1970-2007
Cities						
Live Oak	2,645	3,103	4,320	6,229	8,126	3.1%
Yuba City	13,986	18,736	27,385	36,758	62,083	4.1%
Subtotal, Cities	**16,631**	**21,839**	**31,705**	**42,987**	**70,209**	**4.0%**
Unincorporated County	25,304	30,407	32,710	35,943	23,710	-0.2%
Total	**41,935**	**52,246**	**64,415**	**78,930**	**93,919**	**2.2%**
Share in Cities	**40%**	**42%**	**49%**	**54%**	**75%**	

Source: State Department of Finance E-1 and E-4 tables. Current as of September 10, 2007.

[1]Includes Yuba City area annexations in 2001 and 2006.

Future Growth in Sutter County

Projections of population and employment in the County vary widely between data sources. The Sacramento Area Council of Governments (SACOG) projects significantly lower growth rates compared to growth over the last 17 years in the County (Table 2.2-4). Strong demand for housing during a ten-year period beginning in 1995 and a tightening of regulatory restrictions on land development in much of the rest of the Region sustained the County's growth during recent years, and these conditions will likely persist in the future.

Major projects proposed for the County include the Sutter Pointe Specific Plan and other master plan communities in Yuba City and Live Oak. SACOG's detailed projections of population, housing, and jobs for the year 2035 are shown in Table 2.2-5.

Jobs and Housing Balance

Both the SACOG Region as a whole and Sutter County have increased the ratio of jobs to housing units since the early 1990s. The ratio, however, is lower in Sutter County than in the Region as a whole. For every housing unit in the County there are 20 percent fewer jobs in the County compared to the jobs per housing unit ratio in the Region (Table 2.2-6).

The implication of this land use pattern is that, according to Census data, 13,000 of the County's 30,000 workers left the County to reach their place of work (Table 2.2-7), and of the 24,000 jobs located in the County, 7,000 were filled by workers from outside the County (Table 2.2-8). The net commute of 6,000 workers from Sutter County suggests that other counties in 2000 were receiving some of the economic benefits of the jobs held by these workers. Most experts in economic development believe the net commute has worsened in the years since 2000 as large amounts of new housing was built in the County.

The net result of a comparatively lower jobs to housing ratio is that Sutter County is more likely than some of its neighboring counties to have resident workers with long commutes. The County is also more likely to provide services to these residents without as much revenue support from employment-related land uses. Because these outcomes affect the quality of life for County residents, the issue of jobs and housing balance needs to be addressed.

Table 2.2-4. Sutter County Growth Projections, 2007-2035

	Year										Countywide[6]	
	2007		2012		2020		2030		2035		Rate of Change	Absolute Change
Projection / Source	Unincorp.	Total	Unincorp.	Total	Unincorp.	Total	Unincorp.	Total	Unincorp.	Total	2007-2035	2007-2035
Population											**1.0%**	**31,678**
DOF[1]	23,710	**93,919**				**141,159**		**182,401**				
SACOG[2]									31,134	**125,597**		
Housing[3]											**1.4%**	**15,972**
DOF[4]	8,607	**33,069**										
SACOG[2]									12,009	**49,041**		
Employment												
SACOG[2]									8,487	**50,288**		
EDD[5]		**39,800**		**44,700**								

Sources: State Department of Finance Tables P3 and E-5, Economic Development Department Industry Employment Projections 2002-2012, and SACOG 2035 Projections for Population and Employment by Sector.

[1]California State Department of Finance 50 Year Projections for Sutter County. Current as of November 16, 2007.

[2]Sacramento Area Council of Governments 2035 Population, Households, and Employment Projection. Includes Farm jobs. Current as of September 10, 2007. Unincorporated area estimate is based on whole county projection minus the projections for the Yuba City and Live Oak regional analysis districts. These districts are larger than city boundaries.

[3]Based on SACOG 2035 Projections, with an increase of enough units to allow for 5.0 percent vacancy.

[4]California State Department of Finance E-5 Table. Current as of November 16, 2007.

[5]California Economic Development Department Non Farm Industry Employment for Yuba-Sutter MSA, July 2007 and Projections 2002-2012. Sutter County is a portion of the total, so the SACOG and EDD estimates are not directly comparable.

[6]Growth rates shown are based on the SACOG 2035 projection and a 2007 estimate of actual population, housing, or jobs, if available.

Table 2.2-5. SACOG 2035 Projections in Detail

	2035									
	Population	Households			Jobs					
Regional Analysis Districts (RADs)	Total	SF	MF	Total	Retail	Office	Medical	Indust	K-12	Total
Sutter County, All RADs[1]	**125,597**	35,927	10,662	**46,589**	15,011	16,694	2,816	13,056	2,711	**50,288**
Individual RADs										
South Sutter	**13,100**	3,877	953	**4,830**	1,211	1,721	149	2,725	386	**6,192**
Meridian - Robbins	**1,219**	390	47	**437**	173	196	18	591	32	**1,010**
Sutter	**3,974**	1,363	32	**1,395**	110	92	8	221	123	**554**
Live Oak	**12,841**	3,694	1,053	**4,747**	1,136	872	73	850	231	**3,162**
Tudor	**2,469**	750	150	**900**	243	185	16	262	25	**731**
Yuba City	**91,994**	25,853	8,427	**34,280**	12,138	13,628	2,552	8,407	1,914	**38,639**
All RADs less Yuba City and Live Oak RADs[2]	**31,134**	9,324	2,085	**11,409**	1,737	2,194	191	3,799	566	**8,487**

Source: SACOG 2035 Projections for Population and Employment by Sector.

[1]Total reflects sum of RAD data and may be slightly different from SACOG data for whole County.

[2]Sacramento Area Council of Governments 2035 Population, Households, and Employment Projection. Includes Farm jobs. Current as of November 16, 2007. Unincorporated area estimate is based on whole county projection minus the projections for the Yuba City and Live Oak regional analysis districts. These districts are wider than city boundaries.

Table 2.2-6. Jobs-Housing Ratio for Sutter County, 1990-2005

Item	1993	1995	2000	2005
Sutter County				
Jobs[1]	20,800	21,800	25,000	26,400
Housing Units[2]	26,230	27,400	28,306	31,175
Ratio	**0.79**	**0.80**	**0.88**	**0.85**
SACOG Region				
Jobs[1]	671,700	709,600	849,200	932,200
Housing Units[2]	696,763	715,833	762,773	863,156
Ratio	**0.96**	**0.99**	**1.11**	**1.08**

Sources: State Department of Finance, E-5 and E-8 Reports; State Economic Development Department Industry Employment Tool Query. Both Current as of September 12, 2007.
[1]Farm and nonfarm jobs.
[2]Includes mobile homes and unoccupied single family, multi family, and mobile home units.

Table 2.2-7. Work Location for Sutter County Workers, 2000

Place of Work	Number of Workers in 2000	Share
County		
Sutter	17,060	56%
Yuba	5,703	19%
Sacramento	2,476	8%
Placer	1,487	5%
Yolo	1,251	4%
Butte	870	3%
Colusa	479	2%
Solano	187	1%
Nevada	173	1%
Other Counties, States	673	2%
TOTAL	**30,359**	**100%**
Workers Leaving Sutter County	**13,299**	**44%**

Source: Census 2000 Transportation Planning Package. Current as of September 10, 2007.

Table 2.2-8. Place of Residence for Those Working in Sutter County, 2000

Place of Residence	Number of Workers in 2000	Share
County		
Sutter	17,060	70%
Yuba	4,408	18%
Butte	1,202	5%
Sacramento	391	2%
Placer	273	1%
Colusa	228	1%
Nevada	214	1%
Yolo	182	1%
Other Counties, States	258	1%
TOTAL	**24,216**	**100%**
Workers From Outside Sutter County	**7,156**	**30%**

Source: Census 2000 Transportation Planning Package. Current as of September 10, 2007.

REGULATORY CONTEXT

There is no regulatory context for Section 2.2.1, Demographic Trends and Conditions.

2.2.2 Economic Development Trends and Conditions

INTRODUCTION

This section presents the employment and real estate market data necessary to identify shifts in the County's job base and describe prospects for future job growth. Starting with an analysis of changes in employment by industry and a comparison of wages and business activity in the region, the discussion moves to an assessment of the performance of key real estate sectors within the County. An understanding of these two topics provides a sound basis for positioning the County's land use policy to capitalize on market opportunities and trends. Information for this section was obtained from the Bureau of Labor Statistics, the State Economic Development Department, Yuba Sutter Economic Development Corporation, and real estate industry experts.

SUMMARY OF KEY FINDINGS

- As the County grows, its employment base continues to diversify**.** The County's job base has expanded most in the area of education and health services since 1990. Other large gains occurred in professional and business services, leisure and hospitality, and retail trade. Population growth has injected enough market support required to open new service commercial establishments, hotels, and stores. Job counts fell between 1990 and 2005 in the County's wholesale trade, manufacturing, and forestry and mining sectors.
- Wage growth in the County leads the region, but business creation lags the region. From 2001 to 2006, annual wages grew at a strong pace in Sutter

County, averaging 3.9 percent per year. Only Yuba County's growth in wages was higher. The rate at which new businesses were formed in Sutter County, net of business closures, was matched by Butte County and outpaced net business creation in Yuba and Colusa Counties. In contrast, the pace of net business creation in Placer, Sacramento, and Yolo Counties surpassed Sutter County's rate by more than half.

- Despite recent downturns in residential real estate, over the long term the County has strong potential for additional residential development given its more affordable market position. Sutter County experienced dramatic increases in the sales prices of homes between the late 1990s and a peak in prices during 2005. Between 2002 and 2006, unit sales fell by 50 percent and prices per square foot leveled off and then declined by 10 percent compared to peak amounts. Through all parts of the real estate cycle, the average Sutter County new or existing home costs less than similar homes in Sacramento, Yolo, Placer, or El Dorado Counties by a 20 to 30 percent margin.

- The County's industrial market faces several key hurdles to large-scale expansion, most notably infrastructure funding and competitive incentive packages to prospective companies. Vacancy rates remain much lower in the Marysville-Yuba City submarket than in the region as a whole. Construction of industrial space has slowed in the submarket, however, and more space has become available than was leased in recent quarters. In the future, investment in key public infrastructure, such as additional capacity in the County's road network to move goods to major interstate routes and in local wastewater treatment, is needed to attract interest in the County from industrial users.

EXISTING CONDITIONS

Sutter County has experienced rapid changes in the employment levels of many industries since the early 1990s. On the whole, changes in the composition of businesses in the County have increased average worker wages and retained a higher share of retail spending within the County.

Measures of Economic Performance

From 2001 through 2006, the number of Sutter County businesses participating in the state's unemployment insurance program grew at a 2.8 percent annual rate (Table 2.2-9). As a general measure of business activity, this statistic suggests that business activity is expanding at a comparable rate to the population's growth rate. Business growth rates in Sutter County lag those in Placer, Sacramento, and Yolo Counties, but leads growth rates in Butte, Yuba, and Colusa Counties.

Growth in the number of workers covered by the State unemployment insurance program in Sutter County, however, was almost one percentage point lower than growth in the number of employers. The trend indicates an increased share of smaller businesses in the County, which ranks in the middle of a group of 7 adjacent counties in both covered worker and business activity measures.

Wage growth during the same time period in both Sutter and Yuba Counties, as measured by the annualized rate of change, has led the region. Average wages in Sutter County (in nominal dollars) increased to nearly $32,000 per year in 2006, starting from $26,000 in 2001.

Table 2.2-9. Business Establishments, Wages, and Covered Employment in Region, 2001-2006

	Year						Change	Annualized Change
Variable / County	2001	2002	2003	2004	2005	2006	2001-2006	2001-2006
Business Establishments[1]								
Sutter	2,413	2,468	2,540	2,629	2,655	2,775	**362**	**2.8%**
Sacramento	39,683	42,750	44,979	46,385	47,284	50,149	**10,466**	**4.8%**
Placer	8,083	8,496	9,039	9,338	9,578	10,397	**2,314**	**5.2%**
Yolo	4,298	4,557	4,909	5,039	5,123	5,386	**1,088**	**4.6%**
Yuba	1,512	1,567	1,524	1,519	1,527	1,568	**56**	**0.7%**
Colusa	863	864	840	867	858	882	**19**	**0.4%**
Butte	6,749	7,111	7,185	7,334	7,383	7,675	**926**	**2.6%**
Annual Wages								
Sutter	$26,206	$27,191	$27,867	$29,111	$29,938	$31,717	**$5,511**	**3.9%**
Sacramento	$39,173	$40,642	$42,110	$43,196	$44,732	$46,533	**$7,360**	**3.5%**
Placer	$34,773	$35,845	$36,917	$38,695	$39,960	$41,779	**$7,006**	**3.7%**
Yolo	$35,352	$35,591	$34,991	$37,086	$38,145	$39,208	**$3,856**	**2.1%**
Yuba	$30,091	$31,626	$34,268	$33,628	$35,511	$36,755	**$6,664**	**4.1%**
Colusa	$25,435	$26,587	$26,793	$27,470	$28,232	$28,879	**$3,444**	**2.6%**
Butte	$26,499	$27,190	$27,856	$29,082	$30,007	$31,562	**$5,063**	**3.6%**
Total Covered Employment[2]								
Sutter	25,566	25,884	26,526	26,354	26,697	28,090	**2,524**	**1.9%**
Sacramento	588,426	593,016	596,559	606,297	624,259	637,225	**48,799**	**1.6%**
Placer	116,185	118,429	124,399	130,723	133,102	137,000	**20,815**	**3.4%**
Yolo	88,020	87,251	95,689	96,295	98,819	99,410	**11,390**	**2.5%**
Yuba	17,438	17,289	16,664	17,492	17,345	17,294	**-144**	**-0.2%**
Colusa	7,348	7,467	7,524	7,659	8,055	8,131	**783**	**2.0%**
Butte	72,018	73,303	72,773	73,211	74,827	76,142	**4,124**	**1.1%**

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages, from September 7, 2007.
[1]Measures general business activity. The Bureau of Labor Statistics defines an establishment as an economic unit, such as a farm, mine, factory, or store that produces goods or provides services. It is typically at a single physical location or predominantly one, type of economic activity for which a single industrial classification may be applied.
[2]Jobs covered by unemployment insurance or unemployment coverage for federal employees. The jobs included provide a virtual census (97.1 percent nationwide) of jobs on nonfarm payrolls.

Higher levels of educational attainment have accompanied and supported this wage growth, as shown in Table 2.2-10. The County has increased the share of its population 25 years and older with college degrees (associate, bachelor, and graduate level) from 24 percent in 1990 to 31 percent in 2006. Commensurate declines occurred in the share of this population without a high school diploma or its equivalent.

Table 2.2-10. Change in Educational Attainment in Sutter County, 1990-2006

	1990			2006	
Population 25 years and over	Number	% of Total		Number	% of Total
Graduate or professional degree	1,901	5%		3,339	6%
Bachelor's degree	4,229	11%		7,131	13%
Associate degree	3,570	9%		6,905	12%
Subtotal, College Degree or More	**9,700**	**24%**		**17,376**	**31%**
Some college, no degree	9,175	23%		11,603	21%
High school graduate (or GED)	9,935	25%		14,603	26%
9th to 12th grade, no diploma	5,893	15%		6,169	11%
Less than 9th grade	5,151	13%		6,848	12%
Subtotal, No Diploma	**11,044**	**28%**		**13,018**	**23%**
Total	**39,854**	**100%**		**56,599**	**100%**

Source: U.S. Census Bureau Table P057, 1990 Census and Table S1501, 2006 American Community Survey.

Shifts in the County's Employment Base

Growth in the County's population and average worker wages has gradually diversified the job base that in prior years relied more on agriculture and its supporting industries. Sectors making large gains between 1990 and 2005 include educational and health services, information, professional and business services, retail trade, and construction (Table 2.2-11). The increasing size of the Yuba City market for basic needs such as education, healthcare, financial services, and household retail goods, both in dollars and the number of households, explains most of the growth in these jobs.

Typical large employers in the County are listed in Table 2.2-12. As examples of the employment found in the County, Holt of California sells and services farm and construction machinery, and EPA Provco provides tree trimming and other vegetation control services for large utilities such as Pacific Gas & Electric.

Employment data suggests that farm, mining, and manufacturing jobs have declined during the same period. Shifts in the economy, including increasing global competition in agricultural products and equipment, consolidation of food processing plants in the Central Valley, and mechanization in farm and mining operations, have precipitated these and other changes in County employment and land use.

Job growth is projected to be the highest (in absolute jobs) for the natural resources, mining, and construction; retail trade; and professional and business services sectors. Strong growth rates are projected to occur in the financial activities and information sectors (Table 2.2-13).

Real Estate Markets

Demand for residential property in the County has fallen sharply since its peak in 2005. As shown in Table 2.2-14, current average single family home prices (new and existing units) are approximately $270,000 or $170 per square foot.

New home construction and sales activity, most of which is located in the cities of Yuba City and Live Oak, slowed by almost 50 percent from 2002 to 2006. New and existing home prices, however, remain 60 percent above 2002 levels. Rising land prices and a widening affordability gap during the expansionary phase of the real estate cycle reduced the average home size from

Table 2.2-11. Sutter County Employment Trends, 1990-2005

NAICS	Industry	1990	Share in 19901 (%)	1995	2000	2005	Share in 2005[1] (%)	Rate of Change 1990-2005[2] (%)
11	Farm			4,200	4,000	3,800		
21	Natural Resources and Mining	200	**1.3%**	200	100	100	**0.5%**	**-4.5%**
23	Construction	1,000	**6.5%**	1,000	1,200	1,600	**7.1%**	**3.2%**
30	Manufacturing	1,700	**11.0%**	1,500	2,100	1,500	**7.1%**	**-0.8%**
40	**Trade, Transportation and Utilities**							
41	Wholesale Trade	800	5.2%	700	800	600	3.5%	-1.9%
42	Retail Trade	2,500	16.2%	3,300	3,800	4,400	19.9%	3.8%
43	Transportation, Warehousing and Utilities	400	2.6%	400	600	500	2.7%	1.5%
	Subtotal, Trade, Transportation and Utilities	**3,700**	**24.0%**	**4,400**	**5,200**	**5,500**	**25.9%**	**2.7%**
50	Information	100	**0.6%**	200	200	200	**0.9%**	**4.7%**
55	Financial Activities	800	**5.2%**	1,000	1,000	1,000	**4.4%**	**1.5%**
60	Professional and Business Services	1,100	**7.1%**	1,100	1,500	2,100	**9.7%**	**4.4%**
65	Educational and Health Services	1,600	**10.4%**	2,200	2,600	3,400	**16.5%**	**5.2%**
70	Leisure and Hospitality	1,400	**9.1%**	1,800	2,000	2,200	**11.4%**	**3.1%**
80	Other Services	600	**3.9%**	800	1,000	600	**2.9%**	**0.0%**
90	**Government**							
91	Federal Government	200	1.3%	200	200	200	1.1%	0.0%
92	State Government	100	0.6%	100	200	200	0.9%	4.7%
93	Local Government	2,900	18.8%	3,100	3,800	4,100	18.2%	2.3%
	Subtotal, Government	**3,200**	**20.8%**	**3,400**	**4,200**	**4,500**	**20.4%**	**2.3%**
	Total Non Farm	**15,400**	**100.0%**	**17,600**	**21,100**	**22,700**	**100.0%**	**2.6%**
	Total Farm and Non Farm[3]			**21,800**	**25,100**	**26,500**		

Source: State Economic Development Department, Industry Employment & Labor Force - by Annual Average, March 2006 Benchmark.

[1]Percent of total nonfarm jobs.

[2]Change in the number of jobs using 1990 as a base.

[3]Farm employment not reported by EDD for 1990.

Table 2.2-12. Top 20 Sutter County Employers, 2007

Name	Jobs	Sector
Fremont Medical Center	1,600	Educational and Health Services
Holt of California	600	Transportation, Warehousing and Utilities
Sunsweet Growers, Inc.	500+	Manufacturing
Sysco Food Service of Sacramento	450	Wholesale Trade
EPA Provco	400	Transportation, Warehousing and Utilities
Harter Packing Co.	400	Manufacturing
Melaleuca & Associates	400	Unknown
Wal-Mart	400	Retail Trade
Home Depot	300	Retail Trade
Sunset Moulding Co.	300	Manufacturing
Landstar Ranger, Inc.	275	Trucking
Sutter North Surgery Center	250+	Educational and Health Services
Live Oak Unified School District	201	Educational and Health Services
Larry Geweke Ford	200	Retail Trade
Yuba City Unified School District	200	Educational and Health Services
Yuba-Sutter Gleaners Food Bank	177	Non-Profit
WinCo Foods	175	Retail Trade
Sierra Central Credit Union	166	Financial Activities
Sam's Club	160	Retail Trade
Sierra Gold Nurseries	150	Farm
Siller Bros., Inc.	150	Transportation, Warehousing, and Utilities

Source: Yuba Sutter Economic Development Corporation, Yuba-Sutter Census, January, 2007.

Table 2.2-13. Sutter County Employment Projections, 2002-2012

NAICS	Industry	2002	Share in 2002	2012	Share in 2012	Rate of Change 2002-2012
		(jobs)	(%)	(jobs)	(%)	(%)
21	Natural Resources, Mining, and Construction	2,300	**6.0%**	3,500	**7.8%**	**4.3%**
30	Manufacturing	3,000	**7.9%**	3,000	**6.7%**	**0.0%**
40	**Trade, Transportation and Utilities**					
41	Wholesale Trade	1,300	3.4%	1,400	3.1%	0.7%
42	Retail Trade	5,500	14.4%	6,800	15.2%	2.1%
43	Transportation, Warehousing and Utilities	1,100	2.9%	1,100	2.5%	0.0%
	Subtotal, Trade, Transportation and Utilities	**7,900**	**20.7%**	**9,300**	**20.8%**	**1.6%**
50	Information	300	**0.8%**	500	**1.1%**	**5.2%**
55	Financial Activities	1,300	**3.4%**	1,900	**4.3%**	**3.9%**
60	Professional and Business Services	2,700	**7.1%**	3,800	**8.5%**	**3.5%**
65	Educational and Health Services	5,000	**13.1%**	5,900	**13.2%**	**1.7%**
70	Leisure and Hospitality	3,600	**9.4%**	3,900	**8.7%**	**0.8%**
80	Other Services	1,400	**3.7%**	1,500	**3.4%**	**0.7%**

Table 2.2-13. Sutter County Employment Projections, 2002-2012

NAICS	Industry	2002 (jobs)	Share in 2002 (%)	2012 (jobs)	Share in 2012 (%)	Rate of Change 2002-2012 (%)
90	**Government**					
91	Federal Government	1,500	3.9%	1,600	3.6%	0.6%
92	State Government	1,100	2.9%	1,600	3.6%	3.8%
93	Local Government	8,000	21.0%	8,200	18.3%	0.2%
	Subtotal, Government	**10,600**	**27.8%**	**11,400**	**25.5%**	**0.7%**
	Total Non Farm	**38,100**	**100.0%**	**44,700**	**100.0%**	**1.6%**

Source: State Economic Development Department, Industry Employment Projections for Yuba City MSA, March 2003 Benchmark.

Table 2.2-14. Residential Market Performance, 2002-2007, Sutter County

		Year						
Residential	Label	2002	2003	2004	2005	2006	2007 Jan-Jun	Change 2002-2006
New and Existing Single Family								
Number of Sales	units	1,315	1,312	1,220	1,089	683	374	**-48%**
Price per sq ft	$/sq ft	$118	$129	$138	$199	$192	$174	**63%**
Average Unit Size	sq ft	1,792	1,767	1,659	1,594	1,568	1,597	**-13%**
Average Sales Price	$/unit	$181,022	$213,657	$255,931	$303,836	$290,298	$266,750	**60%**
Existing Condominiums								
Number of Sales	units	32	44	67	71	48	31	**50%**
New SF Units								
Permits Issued	permits	658	991	1,300	1,328	357	170	**-46%**

Sources: Sutter County, Yuba City, and City of Live Oak Building Departments (September 2007); Yuba-Sutter Economic Development Corporation, *Yuba-Sutter Census*, January, 2007; and Dataquick data purchase from July, 2007.

1,800 square feet in 2002 to 1,600 square feet in 2007. SACOG projected the supportable mix of single family and multifamily households for the County in Table 2.2-5, given broad trends in development costs, affordability constraints, and planning requirements.

Marysville-Yuba City, the industrial real estate submarket most closely approximating Sutter County, has reported recent negative net absorption (vacancies were greater than new leases) of warehouse space (Table 2.2-15). The submarket's inventory includes approximately 4.8 million square feet of warehouse space and 600,000 square feet of flex space.

Table 2.2-15. Industrial Market Performance, 2Q 2007, Sutter County

Use / Market Area	Inventory (sq ft)	Share of Market	Vacancy Rate		Net Absorption		Construction	
			1Q	2Q	2Q (sq ft)	YTD (sq ft)	Completed (sq ft)	In Progress (sq ft)
Warehouse								
Marysville-Yuba City[1]	4,770,214	3%	4.30%	5.10%	(37,343)	(55,965)	-	-
Region Total	155,744,059	100%	11.30%	11.20%	569,783	317,002	296,039	829,271
Flex								

Table 2.2-15. Industrial Market Performance, 2Q 2007, Sutter County

Use / Market Area	Inventory (sq ft)	Share of Market	Vacancy Rate		Net Absorption		Construction	
			1Q	2Q	2Q (sq ft)	YTD (sq ft)	Completed (sq ft)	In Progress (sq ft)
Marysville-Yuba City[1]	575,928	3%	0.30%	0.30%	-	5,000	-	-
Region Total	18,220,971	100%	15.70%	15.30%	105,098	(83,915)	49,674	180,129

Source: Colliers International, The Knowledge Report, 2Q2007 Sacramento.
[1]Market area tracked by Colliers International that most closely corresponds to Sutter County.

No new construction of either warehouse or industrial flex product is planned for the Marysville-Yuba City submarket, even as vacancy rates are lower than the region's by almost 50 percent. As a major factor affecting industrial development feasibility in Sutter County, many sites will require costly road, drainage, and/or wastewater treatment infrastructure before new industrial parks can be built.

Because a significant development pipeline exists for both warehouse and flex products elsewhere in the region, the small size of Sutter County's more warehouse-dominated industrial market appears to make it more sensitive to periodic slowdowns that have weakened the broader market. Real estate experts believe that lower demand for smaller lease sizes (those under 100,000 square feet in size) has signaled a change in this submarket, reflecting lower output in the building trades connected to residential homebuilding.

REGULATORY CONTEXT

There is no regulatory context for Section 2.2.2, Economic Development Trends and Conditions.

2.2.3 Agricultural Economics

INTRODUCTION

The purpose of this section is to provide an overview of the food and agriculture industry's contribution to the Sutter County economy. The section covers the topics of soils and farmlands, characteristics of farms, agricultural production, employment in the food and agriculture industries and the regulatory setting specific to farming.

Sutter County has several intrinsic advantages that position it well for sustained agricultural activity well into the future. These include an abundant supply of water, a moderate, Mediterranean climate favorable to many types of crops, availability of transportation infrastructure connecting producers to the ocean and other ports, proximity to centers of research and development at the nearby cities of Davis and Biggs, and relatively flat lands. It is especially suited to the growing of several varieties of rice as well as tree fruits and nuts. Sutter County's long history of agriculture has resulted in a concentration of agriculture and food processing expertise.

Success in agriculture depends upon knowledge of the markets in terms of demand for commodities and products combined with knowledge of the suitability of a particular area of land for those products. While an area's suitability for particular crops is linked to its unique mix of soils, topography, water supply, temperature and latitude, proper management of these resources is key to success. Historical crop yields, usually available through agricultural

commissioners, county agents or universities, are the best source of information about crop suitability. However, use of appropriate agricultural technologies, whether used to change the soil chemistry, to increase the availability of water or to develop seeds better suited to available soils, has greatly expanded the array of crops suitable to any given area. For example, throughout the western United States, many once arid regions have been transformed into highly productive agricultural lands. In many ways, only market demand limits what can or should be grown within a given region.

SUMMARY OF KEY FINDINGS

- The California Department of Conservation (CDC) Farmland Mapping and Monitoring Program (FMMP) classified 88 percent (343,772 acres) of land in Sutter County as agricultural land (including Important Farmland and grazing land) in 2006. Of this area, 48 percent is classified as Prime Farmland and another 31 percent is classified as Farmland of Statewide Importance. As of 2007, there were about 64,302 acres in Williamson Act contracts in Sutter County.
- On average, Sutter County loses approximately 1,000 acres of agricultural land each year through conversion to other uses (Table 2.2-16). However, while the amount of agricultural land has decreased, the productivity has increased by over 25 percent.[1]
- Agricultural production varies widely from year to year depending upon weather, market and other conditions. Total annual production was as low as $264 million in 1999 and as high as $358 million in 2006.
- Sutter County is ideally suited to the cultivation of rice given its flat topography and its abundant supply of water. Rice makes up 30 percent of Sutter County's total agricultural production value. In 2006, the value of rice production exceeded $108 million.[2] Sutter County rice, as with most of the Sacramento Valley medium grain rice, is exported to Asia. Exports of rice are expected to rise slowly with the growth in global population.
- The second-highest value crop is dried plums, generating nearly $68 million in 2006. Production of dried plums has declined in the last couple of years due to unfavorable weather in the spring, resulting in reduction of blooms.
- Over the last 14 years, the greatest improvement in production values has been in English walnuts, almonds, sunflower seeds, rice seed and apiary products. The greatest declines in production value have been in vegetable crops and wheat. The price of almonds has increased about 31 percent since 1992 and as a result the number of acres devoted to almonds has also increased. The value of almond production increased by 140 percent since 1992.
- Farm employment has remained fairly stable, taking into account both on-farm and agricultural services employment, farm employment. According to the California Employment Development Department, total farm-related employment was about 3,608 in 2006.

1 Farmland Mapping and Monitoring Program, California Department of Conservation, 2007.

2 2006 production value includes both rice and wild rice.

- It is estimated that there are approximately 12 food processing establishments in Sutter County. Of these, three are commercial bakeries and the others process fruits, meats, nuts and grain. Due to greater efficiencies in food processing, employment has dropped from 700 in 1992 to 570 in 2006.

EXISTING CONDITIONS

Sutter County's existing soils and farmland types, farm characteristics, types of crops produced, as well as farm and food processing plant employment trends are measures of the industry's contribution to the county's economy, as discussed in detail below.

Soils and Farmlands

The California Department of Conservation (CDC) has created maps for each county in the state that depict four categories of important farmlands: prime farmland, farmland of statewide importance, unique farmland and farmland of local importance. Prime farmland is defined by the CDC as having soils that, "meet the physical and chemical criteria for Prime farmland or Farmland of Statewide Importance as determined by the USDA Natural Resources Conservation Service (NRCS)".[3] In addition, the land "has been used for irrigated agricultural production for some time during the four years prior to the Important Farmland Map date."

The CDC classified 88 percent of all land in Sutter County in 2006 as agricultural land (including Important Farmland and grazing land). As indicated in Table 2.2-16 below, the County encompasses 389,439 acres (607 square miles), of which approximately 165,817 acres is classified by the CDC as Prime Farmland and another 107,194 acres is classified as Farmland of Statewide Importance. In general, Prime Farmland is found in the valleys made by Sutter County's many rivers and sloughs, primarily between the Sacramento River and the Sutter Bypass. The Farmland of Statewide Importance is generally located east of the Bypass. Unique Farmland, located primarily within the boundaries of the Sutter Bypass, the Butte Sink and along the banks of the Feather River, makes up another 19,245 acres. There are no farmlands of local importance. These classifications depicting Sutter County Farmland are shown on Figure 4.2-3 Important Farmlands and Williamson Act Lands in Section 4.2 Agricultural, Soils, and Mineral Resources. In addition to cropland, there are 51,516 acres of grazing land located in the northwestern corner of the county, on the Sutter Buttes. The grazing land has limited agricultural value due to the steepness of the terrain.

Ranchettes

Ranchettes are residences built on large lots generally in rural or agricultural areas. The potential impact of ranchettes and large rural lots on agriculture has become an issue, as in most cases, they involve the subdivision of farmland or grazing land. Depending upon their location, ranchettes may replace previously productive farmland and/or create a restrictive impact on adjacent commercial agricultural operations. Issues of compatibility often arise between the ranchette residents and agricultural operators leading to complaints about dust and noise from farm equipment, odors from livestock and fertilizer use, and issues with other common agricultural practices. In addition, the market demand for ranchettes and large rural lots may lead to the inflation of adjacent agricultural land prices. These issues all pose economic and legal risks for commercial agriculture.

3 Factors considered by NRCS in qualifying soils include available water capacity or developed irrigation water supply; soil temperature range; acid-alkali balance; water table; soil sodium content; flooding; erodibility; permeability rate, rock fragment content and soil rooting depth.

Between 1998 and 2007, 49 ranchette projects have been approved resulting in 151 lots on 665 acres. The lots range in size from 3 to 10 acres. Most of these ranchettes are located south and west of Yuba City, outside its Sphere of Influence.

Trends

Approximately 1,075 (Table 2.2-16) acres of Important Farmland is lost each year in Sutter County amounting to approximately 5.3 percent of 1992's total acreage lost to other uses. In 1992, there were 308,598 acres of Important Farmland. By 2006, the acreage had dropped to 292,256. Still CDC's FMMP classified 88 percent of all land in Sutter County in 2006 as agricultural land (including Important Farmland and grazing land). Modern cultivation and harvesting processes have lead to a doubling of productivity on a per acre basis. So, while the number of acres of Prime Farmland has decreased this has not resulted in a decrease in productivity. Since 1992, agricultural production value has increased by over 25 percent. This is partly due to an increase in prices for almonds and an increase in the acreage devoted to that crop.

In comparison, the state of California has increased its total Agricultural Land by about 21 percent since 1992, as shown in Table 2.2-17. Urban development pushes crop production into areas once used only for grazing, especially when prices for commodities increase.

Farm Characteristics

Every five years, the United States Department of Agriculture conducts a Census of Agriculture. The latest census was conducted in 2002. In that year, there were 1,391 farms on 371,964 acres in Sutter County. The average farm size was about 267 acres. In that year, there were 81 farms over 1,000 acres in size. Slightly less than half of all farms (625) were no larger than 49 acres.

Of the total number of farm operators, 68 percent (943) consider farming their primary occupation. The total value of farm products sold, based on a sample of farms, was $250,620,000. 505 farms each sold more than $100,000 in products in 2002. 264 farms received government payments amounting to $9,982,000. According to the Census, there were 257 rice farms in 2002. Rice is one of several U.S. crops that benefits from price supports and import limits.

Farming requires significant assets, including land, buildings and machinery. In 2002, the estimated market value of land and buildings per farm, based on a sample of farms, averaged $1,032,558. The average per farm value of equipment and machinery was $118,498.

Agricultural Production

Sutter County farmers cultivate a wide range of crops, though tree fruits, tree nuts, other fruits, vegetables and grains, especially rice, make up the majority of total production. For most fruits, the harvesting season is early to mid-summer, while harvesting of tree nuts and rice occurs from late summer to early fall. Some vegetable crops can be harvested three or more times each year.

Table 2.2-16. Farmland Conversion, Sutter County,1988-2006

Category	Acreage by Category										Average Annual Acreage Change	1988-2006 Net Acreage Changed	1998-2006 % Change
	1988	1990	1992	1994	1996	1998	2000	2002	2004	2006			
Prime Farmland	170,907	170,754	170,714	170,554	170,171	170,229	168,493	166,019	166,202	165,817	-283	-5,090	-2.98%
Farmland of Statewide Importance	116,559	115,773	114,777	114,027	113,441	113,680	111,505	109,760	107,742	107,194	-520	-9,365	-8.03%
Unique Farmland	24,147	24,171	23,107	23,354	23,252	22,235	21,178	19,917	19,480	19,245	-272	-4,902	-20.30%
Farmland of Local Importance	0	0	0	0	0	0	0	0	0	0	0	0	N/A
Important Farmland Subtotal	311,613	310,698	308,598	307,935	306,864	306,144	301,176	295,696	293,424	292,256	-1,075	-19,357	-6.21%
Grazing Land	51,188	51,590	50,224	49,734	49,478	49,821	50,958	50,317	50,636	51,516	18	328	0.64%
Agricultural Land Subtotal	362,801	362,288	358,822	357,669	356,342	355,965	352,134	346,013	344,060	343,772	-1,057	-19,029	-5.25%
Urban and Built-Up Land	8,533	9,010	9,948	10,354	10,618	10,669	11,362	11,850	12,582	12,928	244	4,395	51.51%
Other Land	16,327	16,333	18,861	19,610	20,718	21,044	24,060	29,693	30,914	30,856	807	14,529	88.99%
Water Area	1,779	1,808	1,808	1,807	1,762	1,762	1,883	1,883	1,883	1,883	6	104	5.85%
Total Area Inventoried	389,440	389,439	389,439	389,440	389,440	389,440	389,439	389,439	389,439	389,439	0	-1	0.00%

Source: California Department of Conservation: Farmland Mapping & Monitoring Program, 2007.
Other Land -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.

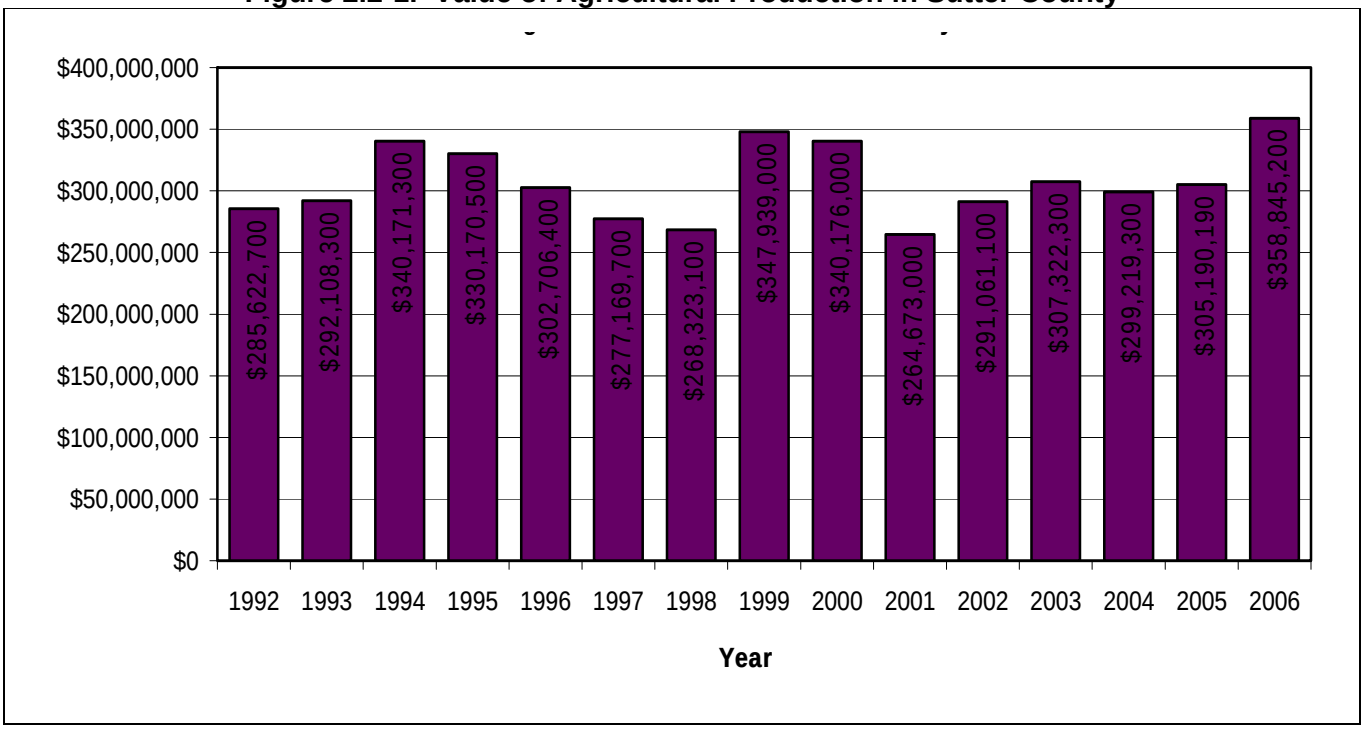
Table 2.2-17. Farmland Conversion, State of California, 1992-2006

Category	Acreage By Category							California 1992-2004 % Change	Sutter County 1992-2004 % Change
	1992	1994	1996	1998	2000	2002	2004		
Prime Farmland	4,317,754	4,264,489	4,349,298	4,315,886	4,784,390	5,181,712	5,076,207	17.57%	-2.64%
Farmland of Statewide Importance	2,099,193	2,096,144	2,083,548	2,062,777	2,383,024	2,718,533	2,691,258	28.20%	-6.13%
Unique Farmland	1,026,444	1,015,914	1,052,303	1,074,796	1,224,328	1,266,779	1,275,092	24.22%	-15.70%
Farmland of Local Importance	2,121,237	2,138,219	2,757,845	2,766,149	3,036,514	2,991,655	2,854,727	34.58%	N/A
Important Farmland Subtotal	9,564,628	9,514,766	10,242,994	10,219,608	11,428,256	12,158,679	11,897,284	24.39%	-4.92%
Grazing Land	13,721,148	13,719,523	13,674,271	13,603,365	13,553,757	15,407,663	16,353,432	19.18%	0.82%
Agricultural Land Subtotal	23,285,776	23,234,289	23,917,265	23,822,973	24,982,013	27,566,342	28,250,716	21.32%	-4.11%
Urban and Built-Up Land	2,795,519	2,845,074	2,910,121	2,977,657	3,109,133	3,278,002	3,379,658	20.90%	26.48%
Other Land	11,093,594	11,093,988	11,563,955	11,589,368	11,812,562	13,749,040	12,969,764	16.91%	63.90%
Water Area	598,676	600,214	666,503	667,846	674,909	704,433	705,949	17.92%	4.15%
Total Area Inventoried	37,773,565	37,773,565	39,057,844	39,057,844	40,578,617	45,297,817	45,306,087	19.94%	0.00%

Source: California Department of Conservation: Farmland Mapping & Monitoring Program, 2007.
Other Land -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.

Annual agricultural production varies widely from year to year. Factors such as weather have catastrophic impacts on production. Anticipated market prices affect decision-making as to how much of each crop to plant and/or harvest. Over the last 14 years, annual production values ranged from a low of $264,673,000 in 1999 to a high of $358,845,200 for 2006.[4] This total production value is 25.6 percent greater than that in 1992 as illustrated on Figure 2.2-1. This is partially due to decreased production of lower-valued commodities (such as cling peaches) and increased production of higher-valued commodities (such as almonds and sunflower seeds). For instance, the price of almonds increased by 83 percent and the production of almonds increased by 560 tons resulting in an increase in almond production value of 141 percent. Tables 2.2-18 though 2.2-21 below, tabulate agricultural production in 1992 and 2006 in terms of crop values, total production, price per unit and harvested acres.

Figure 2.2-1. Value of Agricultural Production in Sutter County



Tables 2.2-18 through 2.2-21 compare Sutter County crop values, production, prices, and acreage in 1992 and 2006. This data is based on Crop Reports published by the Sutter County Agricultural Commissioner's office. Since production and crop values varies significantly from year to year, the presentation of data for 1992 and 2006 is not to show a trend, but to emphasize how fluid the food and agriculture industry really is. The industry must remain dynamic and respond to changes in the global marketplace. Expected demand and prices for each potential crop plays a big role in a farm operator's decision as to what to plant and/or harvest.

Table 2.2-18 specifically shows the value of Sutter County crops in 1992 and 2006. During this time, the value of almond production increased by over 140 percent, while the production value of processing tomatoes decreased by nearly 60 percent. In 1992, vegetable crops comprised 17 percent of the total agricultural crop value, while in 2006, vegetables comprised only 6 percent of the total.

4 Sutter County Crop Report, 2006.

Table 2.2-18. Sutter County Crop Values, 1992 & 2006

	1992 Value	2006 Value	1992-2006 % Change
Fruits & Nuts	**$115,187,800**	**$158,918,900**	**37.97%**
Walnuts, English	$22,328,300	$44,782,800	100.57%
Almonds	$4,268,300	$10,286,000	140.99%
Prunes, Dried Plums	$44,364,700	$67,867,000	52.98%
Peaches, Cling	$34,821,200	$27,360,800	-21.42%
All other Fruits and Nuts[1]	$9,405,300	$8,622,300	-8.33%
Field Crops	**$94,164,000**	**$130,626,000**	**38.72%**
Rice[2]	$69,978,900	$108,905,000	55.63%
Wheat	$5,995,800	$458,500	-92.35%
All other Field Crops[3]	$18,189,300	$21,262,500	**16.90%**
Vegetable Crops	**$48,115,800**	**$21,564,300**	**-55.18%**
Honeydew Melons	$12,129,500	$7,065,400	-41.75%
Tomatoes, Processing	$30,474,900	$12,266,800	-59.75%
Watermelons	$1,327,200	$594,800	-55.18%
All other Vegetables[4]	$4,184,200	$1,637,300	-60.87%
Seed Crops	**$9,956,100**	**$14,951,900**	**50.18%**
Rice Seed	$2,103,900	$9,031,200	329.26%
Sunflower Seed	$336,100	$2,548,300	658.20%
All other Seed Crops[5]	$7,516,100	$3,372,400	-55.13%
Nursery Products[6]	**$6,150,600**	**$12,736,500**	**107.08%**
Fruit and Nut Trees and Vines	$5,481,000	$12,644,700	130.70%
Apiary Products	**$725,500**	**$3,973,400**	**447.68%**
Livestock Products	**$13,983,600**	**$16,074,200**	**14.95%**
Cattle & Calves	$11,174,500	$10,854,000	-2.87%
Sheep & Lambs	$1,352,400	$1,509,600	11.62%
All other Livestock Products[7]	$1,456,700	$3,615,700	148.21%
Total	**$288,283,400**	**$358,845,200**	**24.48%**

Source: Sutter County Agricultural Commissioner, 2006.

[1]Includes Pears, Kiwifruit, Persimmons, Apples, Apricots, Bushberries (Blackberries, Boysenberries & Raspberries), Cherries, Chestnut, Feijoa/Guava, Figs, Grapefruit, Grapes, Jujube, Lemon, Limes, Nectarines, Olives, Oranges, Peaches (Freestone), Pecan, Pistachios, Plum, Pomegranates, Strawberries, Tangerines, Walnuts (Black), and other miscellaneous fruit and nut crops of a limited number of growers.

[2]Includes rice and wild rice.

[3]Includes Dry Beans (Lima, Black Bean, Black Turtle Bean, Canerio, Cranberry, Garbanzo, Kidney, Pink), Corn, Hay, Oats, Pasture, Safflower, Sorghum, Straw, Cotton, Popcorn and other miscellaneous field crops of a limited number of growers.

[4]Asparagus, Basil, Beans (Green String), Beet, Bok Choy, Broccoli, Cabbage, Cantaloupe, Carrot, Chard (Swiss/Red), Cilantro, Corn (Sweet), Cucumber, Kiakon, Eggplant, Garlic, Gourds, Herbs, Jicama, Lettuce, Melons (Mixed), Okra, Onion, Peas (Blackeye), Peppers (Bell, Red Chili, Yellow Wax), Potatoes, Pumpkin, Squash, Tomatoes (Greenhouse, Fresh), Tomatillo and other miscellaneous vegetables of a limited number of growers.

[5]Also includes Dry Beans, Cantaloupe & Honeydew, Cucumber, Pumpkin and Squash, Safflower, Watermelon, Wheat, Cabbage, Carrot, Cauliflower, Celery, Gourd, Mustard, Onion, Pepper, Radish, Tomato, Triticale-Juan, Vetch and other seed crops of a limited number of growers.

[6]Also includes Ornamental Trees, Shrubs and other Nursery Stock.

[7]Includes Angora Fur, Aquaculture, Fish Bait, chickens, Chicken Eggs, Ducks, Geese, Goats, Milk (Market), Hogs, Partridge, Pheasants, Pigeons, Rabbits, Rabbit Hides, Turkeys and other miscellaneous livestock and poultry of a limited number of growers.

Table 2.2-19. Sutter County Crop Production (Tons), 1992 & 2006

	1992 Production (Tons)	2006 Production (Tons)	1992 -2006 % Change
Fruit & Nut Crops	**243,999**	**193,202**	**-20.82%**
Walnuts, English	17,444	26,374	51.19%
Almonds	1,781	2,341	31.44%
Prunes, Dried Plums	43,666	51,297	17.48%
Peaches, Cling	160,311	108,325	-32.43%
All other Fruits and Nuts[1]	20,797	4,865	-76.61%
Field Crops	**555,832**	**560,876**	**2.01%**
Rice[2]	312,002	385,884	23.68%
Wheat	55,388	3,695	-93.33%
All other Field Crops[3]	188,442	171,297	-9.10%
Vegetable Crops	**793,512**	**241,442**	**-69.57%**
Honeydew Melons	50,004	26,874	-46.26%
Tomatoes, Processing	661,778	209,760	-68.30%
Watermelons	11,721	2,632	-77.54%
All other Vegetables[4]	70,009	2,176	-96.89%
Seed Crops	**33,611**	**30,445**	**-9.42%**
Rice Seed	9,563	25,087	162.33%
Sunflower Seed	365	1,416	287.95%
All other Seed Crops[5]	23,683	3,942	-83.36%
Nursery Products[6]	n/a	n/a	
Fruit and Nut Trees and Vines			
Apiary Products	n/a	n/a	
Livestock Products	n/a	n/a	
Cattle & Calves			
Sheep & Lambs			
All other Livestock Products[7]			
Total	**1,626,954**	**1,025,965**	**-36.94%**

Source: Sutter County Agricultural Commissioner, 2006.

[1]Includes Pears, Kiwifruit, Persimmons, Apples, Apricots, Bushberries (Blackberries, Boysenberries & Raspberries), Cherries, Chestnut, Feijoa/Guava, Figs, Grapefruit, Grapes, Jujube, Lemon, Limes, Nectarines, Olives, Oranges, Peaches (Freestone), Pecan, Pistachios, Plum, Pomegranates, Strawberries, Tangerines, Walnuts (Black), and other miscellaneous fruit and nut crops of a limited number of growers.

[2]Includes rice and wild rice.

[3]Includes Dry Beans (Lima, Black Bean, Black Turtle Bean, Canerio, Cranberry, Garbanzo, Kidney, Pink), Corn, Hay, Oats, Pasture, Safflower, Sorghum, Straw, Cotton, Popcorn and other miscellaneous field crops of a limited number of growers.

[4]Asparagus, Basil, Beans (Green String), Beet, Bok Choy, Broccoli, Cabbage, Cantaloupe, Carrot, Chard (Swiss/Red), Cilantro, Corn (Sweet), Cucumber, Kiakon, Eggplant, Garlic, Gourds, Herbs, Jicama, Lettuce, Melons (Mixed), Okra, Onion, Peas (Blackeye), Peppers (Bell, Red Chili, Yellow Wax), Potatoes, Pumpkin, Squash, Tomatoes (Greenhouse, Fresh), Tomatillo and other miscellaneous vegetables of a limited number of growers.

[5]Also includes: Dry Beans, Cantaloupe & Honeydew, Cucumber, Pumpkin and Squash, Safflower, Watermelon, Wheat, Cabbage, Carrot, Cauliflower, Celery, Gourd, Mustard, Onion, Pepper, Radish, Tomato, Triticale-Juan, Vetch and other seed crops of a limited number of growers.

[6]Also includes Ornamental Trees, Shrubs and other Nursery Stock.

[7]Includes: Angora Fur, Aquaculture, Fish Bait, chickens, Chicken Eggs, Ducks, Geese, Goats, Milk (Market), Hogs, Partridge, Pheasants, Pigeons, Rabbits, Rabbit Hides, Turkeys and other miscellaneous livestock and poultry of a limited number of growers.

Table 2.2-20. Sutter County Crop Prices Per Unit ($/ton), 1992 & 2006

	1992 Price Per Unit	2006 Price Per Unit	1992-2006 % Change
Fruit & Nut Crops			
Walnuts, English	1,280.00	1,697.99	32.66%
Almonds	2,397.00	4,393.85	83.31%
Prunes, Dried Plums	1,016.00	1,323.02	30.22%
Peaches, Cling	217.00	252.58	16.40%
All other Fruits and Nuts[1]	-	-	
Field Crops			
Rice[2]	210.00	275.60	31.24%
Wheat	108.00	124.09	14.90%
All other Field Crops[3]	-	-	
Vegetable Crops			
Honeydew Melons	243.00	262.91	8.19%
Tomatoes, Processing	46.00	58.48	27.13%
Watermelons	113.00	226.00	100.00%
All other Vegetables[4]	-	-	
Seed Crops[5]			
Rice Seed	220.00	360.00	63.64%
Sunflower Seeds	921.00	1,800.00	95.44%
Nursery Products[6]	n/a	n/a	
Fruit and Nut Trees and Vines			
Apiary Products	n/a	n/a	
Livestock Products	n/a	n/a	
Cattle & Calves			
Sheep & Lambs			
All other Livestock Products[7]			

Source: Sutter County Agricultural Commissioner, 2006.

[1]Includes Pears, Kiwifruit, Persimmons, Apples, Apricots, Bushberries (Blackberries, Boysenberries & Raspberries), Cherries, Chestnut, Feijoa/Guava, Figs, Grapefruit, Grapes, Jujube, Lemon, Limes, Nectarines, Olives, Oranges, Peaches (Freestone), Pecan, Pistachios, Plum, Pomegranates, Strawberries, Tangerines, Walnuts (Black), and other miscellaneous fruit and nut crops of a limited number of growers.

[2]Includes rice only, does not include wild rice.

[3]Includes Dry Beans (Lima, Black Bean, Black Turtle Bean, Canerio, Cranberry, Garbanzo, Kidney, Pink), Corn, Hay, Oats, Pasture, Safflower, Sorghum, Straw, Cotton, Popcorn and other miscellaneous field crops of a limited number of growers.

[4]Asparagus, Basil, Beans (Green String), Beet, Bok Choy, Broccoli, Cabbage, Cantaloupe, Carrot, Chard (Swiss/Red), Cilantro, Corn (Sweet), Cucumber, Kiakon, Eggplant, Garlic, Gourds, Herbs, Jicama, Lettuce, Melons (Mixed), Okra, Onion, Peas (Blackeye), Peppers (Bell, Red Chili, Yellow Wax), Potatoes, Pumpkin, Squash, Tomatoes (Greenhouse, Fresh), Tomatillo and other miscellaneous vegetables of a limited number of growers.

[5]Also includes: Dry Beans, Cantaloupe & Honeydew, Cucumber, Pumpkin and Squash, Safflower, Watermelon, Wheat, Cabbage, Carrot, Cauliflower, Celery, Gourd, Mustard, Onion, Pepper, Radish, Tomato, Triticale-Juan, Vetch and other seed crops of a limited number of growers.

[6]Also includes Ornamental Trees, Shrubs and other Nursery Stock.

[7]Includes: Angora Fur, Aquaculture, Fish Bait, chickens, Chicken Eggs, Ducks, Geese, Goats, Milk (Market), Hogs, Partridge, Pheasants, Pigeons, Rabbits, Rabbit Hides, Turkeys and other miscellaneous livestock and poultry of a limited number of growers.

Table 2.2-21. Sutter County Harvested Acres, 1992 & 2006

	1992 Acres	2006 Acres	1992-2006 % Change
Fruit & Nut Crops	**46,519**	**50,603**	**8.78%**
Walnuts, English	13,316	17,351	30.30%
Almonds	3,561	4,682	31.48%
Prunes, Dried Plums	19,581	19,654	0.37%
Peaches, Cling	8,068	7,782	-3.54%
All other Fruits and Nuts[1]	1,993	1,134	-43.10%
Field Crops	**203,896**	**208,340**	**2.02%**
Rice[2]	76,614	92,984	21.37%
Wheat	20,514	2,415	-88.23%
All other Field Crops[3]	106,768	112,941	2.06%
Vegetable Crops	**30,543**	**10,074**	**-67.02%**
Honeydew Melons	5,171	2,557	-50.55%
Tomatoes, Processing	19,790	6,900	-65.13%
Watermelons	607	81	-86.66%
All other Vegetable Crops[4]	4,975	536	-89.23%
Seed Crops	**18,572**	**17,057**	**-8.16%**
Rice Seed	2,277	6,672	193.02%
Sunflower Seeds	666	4,383	558.11%
All other Seed Crops[5]	15,629	6,002	-61.60%
Nursery Products[6]	n/a	256	
Apiary Products	n/a	162,527	
Livestock Products	n/a	n/a	
Total	**299,530**	**286,330**	-4.41%

Source: Sutter County Agricultural Commissioner, 2006.

[1]Includes Pears, Kiwifruit, Persimmons, Apples, Apricots, Bushberries (Blackberries, Boysenberries & Raspberries), Cherries, Chestnut, Feijoa/Guava, Figs, Grapefruit, Grapes, Jujube, Lemon, Limes, Nectarines, Olives, Oranges, Peaches (Freestone), Pecan, Pistachios, Plum, Pomegranates, Strawberries, Tangerines, Walnuts (Black), and other miscellaneous fruit and nut crops of a limited number of growers.

[2]Includes rice and wild rice.

[3]Includes Dry Beans (Lima, Black Bean, Black Turtle Bean, Canerio, Cranberry, Garbanzo, Kidney, Pink), Corn, Hay, Oats, Pasture, Safflower, Sorghum, Straw, Cotton, Popcorn and other miscellaneous field crops of a limited number of growers.

[4]Asparagus, Basil, Beans (Green String), Beet, Bok Choy, Broccoli, Cabbage, Cantaloupe, Carrot, Chard (Swiss/Red), Cilantro, Corn (Sweet), Cucumber, Kiakon, Eggplant, Garlic, Gourds, Herbs, Jicama, Lettuce, Melons (Mixed), Okra, Onion, Peas (Blackeye), Peppers (Bell, Red Chili, Yellow Wax), Potatoes, Pumpkin, Squash, Tomatoes (Greenhouse, Fresh), Tomatillo and other miscellaneous vegetables of a limited number of growers.

[5]Also includes: Dry Beans, Cantaloupe & Honeydew, Cucumber, Pumpkin and Squash, Safflower, Watermelon, Wheat, Cabbage, Carrot, Cauliflower, Celery, Gourd, Mustard, Onion, Pepper, Radish, Tomato, Triticale-Juan, Vetch and other seed crops of a limited number of growers.

[6]Also includes Ornamental Trees, Shrubs and other Nursery Stock.

Table 2.2-19 shows the amount of crops produced in 1992 and 2006 in Sutter County. During this time frame, there was an approximate 32 percent decrease of cling peach production and a 93 percent decrease in wheat production. There was a 162 percent increase in rice seed production and 288 percent increase in sunflower seed production.

Table 2.2-20 shows the crop prices per unit in Sutter County. Almonds, watermelon, and sunflower seeds experienced the greatest increase in price between 1992 and 2006, while honeydew melons, wheat, and cling peaches had the least.

The amount of harvested acres in Sutter County is shown in Table 2.2-21. Farm operators planted fewer acres of vegetables and more acres of tree nuts (walnuts and almonds) and seeds in 1992 when compared to 2006. The acreage of sunflower seeds increased by 558 percent between 1992 and 2006.

Major Crops

As shown in Tables 2.2-18 and 2.2-19, rice, walnuts, almonds, and dried plums have the highest crop values and production volume in Sutter County. These crops are discussed in more detail below.

Rice

Sutter County produces about 386,000 tons of rice annually as shown in Table 2.2-22, about one-fifth of all California- grown rice. Sacramento Valley rice is primarily medium grain rice. The United States produces 10 million tons of rice, mostly in the Mississippi Valley states of Arkansas, Missouri, Mississippi, Louisiana and Texas. California's rice crop represents one-fifth of U.S. production. Americans consume about 5 million metric tons of rice annually, including aromatic rice such as basmati and jasmine, imported from India, Pakistan and Thailand. More than half the total rice grown and processed in the U.S. is exported. California rice exports go primarily to eastern Asian countries including Japan while long-grain rice grown in the southern Mississippi Valley states is exported to Central and South America.

Table 2.2-22. Rice Production (tons), 1992-2006

Year	Sutter County (tons)	California (tons)	United States (tons)	Sutter Share of CA Percent
1992	309,876	1,674,500	8,982,900	18.5%
1993	333,166	1,813,550	7,805,500	18.4%
1994	456,521	2,061,200	9,888,950	22.1%
1995	427,202	1,767,600	8,693,550	24.2%
1996	349,365	1,872,950	8,566,050	18.7%
1997	378,027	2,127,300	9,149,600	17.8%
1998	321,103	1,634,900	9,402,550	19.6%
1999	375,326	1,834,500	10,301,350	20.5%
2000	470,666	2,176,050	9,543,600	21.6%
2001	338,069	1,924,500	10,652,250	17.6%
2002	427,210	2,149,450	10,548,000	19.9%
2003	404,585	1,951,800	9,994,850	20.7%
2004	522,075	2,537,950	11,618,100	20.6%
2005	366,754	1,941,800	11,161,750	18.9%
2006	385,884	2,002,000	9,686,800	19.3%

Source: United States Department of Agriculture: National Agricultural Statistics Services; ADE.

It is expected that expansion of domestic consumption of rice will be slow, slightly faster than population growth. In general, exports will remain steady as well, though likely to grow slightly with global population growth.

Walnuts

California's production of English Walnuts increased by 115 percent between 1992 and 2006. Sutter County's share of California's total annual production of English Walnuts varies from about 10 percent to 6 percent, as shown in Table 2.2-23. A nearly 33 percent increase in the price paid for English Walnuts combined with a 50 percent increase in walnut production in

Table 2.2-23. Walnut Production (tons), 1992-2006

Year	Sutter County (tons)	California (tons)	Sutter Share of CA Percent
1992	17,444	190,037	9.2%
1993	31,177	304,951	10.2%
1994	24,095	260,437	9.3%
1995	21,366	246,789	8.7%
1996	18,152	215,586	8.4%
1997	22,624	313,033	7.2%
1998	17,887	256,904	7.0%
1999	28,412	309,888	9.2%
2000	21,350	260,206	8.2%
2001	26,433	331,888	8.0%
2002	26,387	313,117	8.4%
2003	22,637	387,449	5.8%
2004	29,308	370,160	7.9%
2005	33,240	416,714	8.0%
2006	26,374	409,176	6.4%

Source: United States Department of Agriculture: National Agricultural Statistics Services.

Sutter County since 1992, resulted in a 100 percent increase in production value, rising from $22.3 million in 1992 to $44.7 million in 2006.

It is anticipated that walnut exports will decrease in 2007, by nearly 25 percent.

Almonds

California produces most of the world's almonds. The State's almond production rose 109 percent since 1992, increasing by over 306,000 tons in 14 years. Sutter County's share of the State's total annual almond production has remained below 1 percent since 1992, as shown in Table 2.2-24. Though almond production increased only 31 percent, total crop value increased by over 140 percent due to an 83 percent increase in the price paid for almonds.

Table 2.2-24. Almond Production (Tons), 1992-2006

Year	Sutter County (tons)	California (tons)	Sutter Share of CA Percent
1992	1,781	279,870	0.6%
1993	2,461	282,628	0.9%
1994	2,618	388,736	0.7%
1995	1,045	194,931	0.5%
1996	1,629	280,448	0.6%
1997	2,450	416,852	0.6%
1998	2,738	292,933	0.9%
1999	3,894	458,697	0.8%
2000	3,385	366,234	0.9%
2001	3,006	453,809	0.7%
2002	2,837	563,957	0.5%
2003	3,913	532,789	0.7%
2004	3,864	593,821	0.7%
2005	1,985	504,280	0.4%
2006	2,341	585,896	0.4%

Source: United States Department of Agriculture: National Agricultural Statistics Services.

The outlook for almonds is good. It is expected that the 2007/2008 crop of almonds will be 19 percent larger than in 2006. The number of bearing acres has increased and the yield per acre has also increased. Almond exports are expected to increase by 3 percent.

Plums for Drying

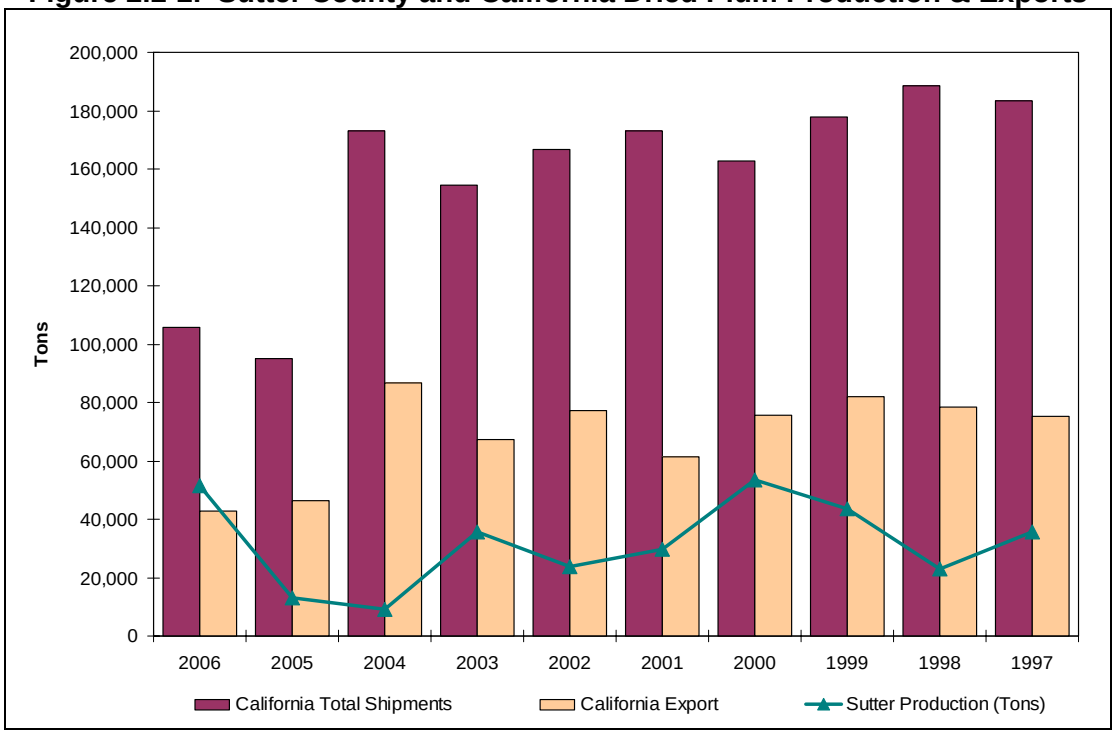
California's production of dried plums decreased by over 77,000 tons since 1992, as shown in Table 2.2-25. Between 40 and 50 percent of the state's dried plum production is exported to other countries. Sutter County's production of dried plums has varied widely in the last 10 years, ranging from a low of 9,206 tons in 2004 to a high of 53,286 tons in 2000 (Figure 2.2-2). The total crop value for plums increased by nearly 53 percent since 1992, partially due to a 30 percent increase in price.

Table 2.2-25. Total Shipments, 2005-2006 Crop Year California Dried Plums

Year	California Total Shipments	California Export	Sutter Production (tons)
1997	183,252	75,167	35,820
1998	188,596	78,405	22,865
1999	177,947	82,066	43,542
2000	162,911	75,734	53,286
2001	172,936	61,258	29,805
2002	166,930	77,260	23,861
2003	154,508	67,145	35,688
2004	173,042	86,662	9,206
2005	95,060	46,388	12,900
2006	105,583	42,899	51,297

Source: United States Department of Agriculture: National Agricultural Statistics Services.

Figure 2.2-2. Sutter County and California Dried Plum Production & Exports



Source: ADE, 2007; USDA, NASS; Sutter County Crop Reports.

The forecast for 2007 prune (dried plums) production is down by 47 percent from 2006 due to warm temperatures in the spring that shortened the bloom period, resulting in a light fruit set. Reduced production has a significant impact on processors as California's entire prune crop is sold to processors.

Trade competition will remain strong for all agricultural products as expanding production in other countries limits expansion opportunities for U.S. growers.

Employment

Farm Employment

Farm employment decreased from about 2,600 in 1992 to about 2,200 in 2006, a decrease of about 18 percent.[5] At the same time, employment in agricultural services, including farm labor contractors, increased from about 900 to about 1,400. As a result, total farm-related employment actually remained constant over the last 14 years, as shown in Table 2.2-26. According to EDD, in 2006 there were 442 farming operations, including animal production.[6]

5 Employment data from the Employment Development Department through the ES202 employment insurance program does not usually include farm proprietors. Therefore, this data may underestimate total on-farm employment.

6 This may underestimate total number of farms, as sole proprietors and their farms may not be included.

Table 2.2-26. Food and Agriculture Cluster Employment Growth and Concentration, Sutter County

Description	1992 Employment	2005 Employment	Change in Study Area Employment, 1992 to 2005	% Change in Study Area Employment, 1992 to 2005	Location Quotient 1992	Location Quotient 2005	Shift-Share
TOTAL, ALL INDUSTRIES	17,058	22,481	5423	31.79%	1.00	1.00	7.86%
Crop Production	2,667	2,167	-500	-18.75%	25.6	19.4	-19.32%
Animal Production	0	43	43		0.0	1.0	
Agricultural Services	928	1,398	470	50.65%	17.8	21.3	32.49%
PROCESSING							
Meat Product Processing	21	0	-21	-100.00%	0.2	0.0	-114.77%
Fruit & Vegetable Processing	723	570	-153	-21.16%	17.4	15.9	-2.64%
Processed Grains & Bakeries	10	20	10	100.00%	0.1	0.3	107.81%
Processed Nuts	31	11	-20	-64.52%	1.2	0.3	-79.11%
SUPPLIERS							
Processing Machinery & Supplies	66	60	-6	-9.09%	0.2	0.2	-0.23%
Warehousing & Distribution	82	65	-17	-20.73%	0.8	0.4	-74.70%
TOTAL: Food & Agriculture	**4,446**	**4,269**	**-177**	**-3.98%**	**5.2**	**4.6**	**-5.08%**

Source: 1992 & 2005 Minnesota Implan Group; ADE, Inc.

Food Processing Employment

Throughout all regions of the globe and across all product types, the food processing industry has re-invented itself. Older, labor-intensive, plant and equipment has been replaced with newer automated equipment that requires fewer, but more highly skilled workers. The result is a near doubling of productivity with fewer than half the workers. The marked drop in employment has often, mistakenly, been associated with the demise of the food processing industry as a whole. Looking only at employment levels tells only part of the story. Tracking sales and productivity, in addition to employment within the entire food cluster, which includes suppliers as well as processors, paints the more accurate picture. While employment in food manufacturing has decreased, employment among suppliers, such as packaging, engineering, logistics, ingredient manufacturers, machinery and equipment and labor contractors has increased. As in other industries, food processors are purchasing specialized services and supplies from other companies as a means of focusing on their specialization, food manufacturing. This allows them the flexibility to respond quickly to changing consumer tastes and market demands.

While it is true that some communities have been economically devastated by plant closures, others continue to thrive. The reasons are many. In most cases, it is a result of new technologies that allow a doubling of production with half the workforce. In others, it is the need to reduce transportation costs by locating closer to growing markets. For instance, many California food manufacturers have opened processing plants on the East Coast to be closer to their largest market. For still others, it is the need to locate closer to their suppliers. For instance, as farming in Santa Clara and Los Angeles Counties was pushed out by rapid

urbanization, processing plants followed the farmers to the Central Valley, where farming and processing were more advantageous due to irrigation and low wages. The low wages allowed processors to merely transfer old equipment from coastal cities to Central Valley towns.

On the other hand, recent technological innovations allowing for increased productivity has been forced by the growth of emerging markets. As developing countries, including China, India, Chile, Argentina, Eastern European countries and Southeast Asian countries, increase their purchasing power and begin to build their own ability to export, they pose greater competition to U.S. manufacturers. For instance, the United State's largest trade partners, Canada, Mexico, Japan, Taiwan, South Korea, United Kingdom, Germany and others, now have other suppliers for their food imports. More and more, Japan is purchasing its fruits and vegetables from China; Germany and the United Kingdom are purchasing both fresh and processed fruits and vegetables from emerging Eastern European nations. As a result, the market for American fresh and processed foods is shrinking. To compete with processed foods from these emerging markets, U.S. manufacturers have had to apply innovative processing technologies as well as innovative marketing approaches. These innovations have led to reduced costs of inputs on the one hand, and increased prices for finished goods on the other, leading to higher profitability.

Due to the increased reliance on innovation, both in technology and in marketing, food processing companies tend to be headquartered close to centers of research, which in the food industry are in New York, Pennsylvania, Illinois, Michigan and Minnesota. San Francisco and Los Angeles are centers of innovation for wine, fruit and vegetable marketing.

Table 2.2-26 depicts the change in employment, as well as in employment concentration, for the Sutter County food industry between 1992 and 2005. As with other regions within California and across the United States, Sutter County has seen a decline in food processing employment. Employment in the processing of fruits has declined from about 700 in 1992 to 570 in 2005. There are about 12 food processing establishments in Sutter County. Of these, three are bakeries and the remainder process fruits, animal products or grains. The largest food manufacturer, Sunsweet, processes and packages dried plums, which are exported to countries throughout the world. Other fruit processors include Valley View Packing Company and Wilbur Packing.

Employment in the food cluster[7] has declined by 4 percent between 1992 and 2005 from 4,446 to 4,269. Likewise, employment concentration, measured by the location quotient[8], has dropped from 5.2 to 4.6 in that same time period.

REGULATORY CONTEXT

This section describes two major regulatory policies used by Sutter County to identify and manage the use of Agricultural Lands within its jurisdiction. They include Williamson Act contracts and zoning.

7 An industry cluster is a geographic concentration of complementary, competing and interdependent firms. The food and agriculture cluster includes growers, processors, shippers and suppliers, including coolers, transportation, labor contractors, packaging, marketing and engineering. Table 11 includes employment for all firms in the food and agriculture cluster.

8 Location quotient is a means of measuring a region's specialization in a particular industry or cluster relative to the nation as a whole. A location quotient of 4.6 means that food and agriculture employment in Sutter County is 4.6 times more concentrated than at the national level. It is the ratio of an industry cluster's employment as a share of the region's total employment over the nation's employment in that cluster as a share of total national employment.

Williamson Act

The California Legislature passed the Williamson Act (The California Land Conservation Act) in 1965 as an incentive to encourage land owners to keep agricultural land in production. So far, a little over 16 million of the state's 29 million acres of farm and ranch land are currently protected under the Williamson Act.[9] With the Act, private landowners contract with counties and cities to voluntarily restrict land to agricultural and open-space uses. The incentive is a property tax assessment rate consistent with their actual use (agriculture) rather than the land's potential market value. This is especially worthwhile to owners of land that is close to existing urban development. Agricultural landowners could save 20 to 75 percent in property tax liability each year depending upon the location of their parcels.

To be eligible for this incentive, a property owner's parcel(s) must be located within the boundaries of a locally-designated agricultural preserve. An agricultural preserve must be at least 100 acres. Property owners with less than 100 acres may combine with neighbors to form a preserve as long as the properties are contiguous. The minimum term of a Williamson Act contract is 10 years, but local jurisdictions may require a longer term up to 20 years. Contracts renew automatically each year unless the land owner files a notice of non-renewal. A contract may be cancelled at any time, but there are penalties for doing so. The local jurisdiction could assess a cancellation fee of 12.5 percent of the current fair market value of the land for which the contract is to be cancelled.

As of 2007, there were 64,302 acres in Williamson Act contracts in Sutter County, which are shown on Figure 4.2-3 Important Farmlands and Williamson Act Lands in Section 4.2, Agricultural, Soils, and Mineral Resources.[10]

Sutter County Zoning Ordinance

The Sutter County Zoning Ordinance has five distinct zoning districts for Agriculture as well as an Agriculture Combining District used to provide additional requirements in other districts, such as residential districts.

Upland Agricultural District

This district was intended to apply to the unique mountainous and foothill areas of the County in which light agriculture and grazing are desirable predominant uses. This area is located in the Sutter Buttes, a place of unique cultural, historical and geologic significance. Permitted uses include limited farming and ranching and non-commercial processing. The minimum lot size is 80 acres.

Agricultural Preserve Residential and Agricultural Preserve Districts

This district is intended to enable clustering of residences within agricultural zones so as to keep as much of the remaining parcel in agricultural uses. The zoning designation is to be applied to subdivision requests of agriculturally zoned land that propose parcels for residential use that are less than the minimum designated parcel size while still meeting overall General Plan density requirements for the subject parcel. The residential parcels are designated as Agriculture

9 California Department of Conservation, Division of Land Resource Protection, Questions & Answers Fact Sheet, 2007. www.conservation.ca.gov/dlrp/lca.

10 This is the latest data available from the California Department of Conservation, Division of Land Resource Protection. www.conservation.ca.gov/dlrp/ca.

Preserve Residential (APR) while the remaining agricultural land is designated as Agricultural Preserve.

The residential parcels should not be more than 2 acres unless the Environmental Health Division deems that a larger lot is required for healthy sewage disposal. The remaining agricultural land must be at least 20 or 80 acres depending on the underlying General Plan Designation.

Exclusive Agricultural District

The Exclusive Agriculture District is intended to be applied in the fertile valley and foothill areas of the County in which intensive agriculture is and should continue to be the predominant land use, and in which the protection of this use is highly valued by the community. This district is consistent with the AG-20 or AG-80 General Plan land use designation.

Permitted agricultural uses in this district include farming, ranching and wholesale nurseries. Commercial processing and feed yards are permitted with a use permit only. The minimum lot size is either 20 acres or 80 acres, depending upon the underlying General Plan designation.

General Agricultural District

The General Agricultural District is intended to provide areas for general farming as well as low intensity uses, such as agricultural processing plants, apiaries, farming, ranching and nurseries. Use permits are required for many additional uses that would not be allowed in any of the other agricultural districts. These include farm labor family housing, feed yards, commercial agricultural equipment repair services, farm supply and equipment sales, agricultural transportation and warehousing services facilities, veterinarians, kennels, retail nurseries and other agricultural-related commercial activities. The minimum lot size is either 20 or 80 acres, depending upon the underlying General Plan designation.

Food Processing, Agricultural and Recreation Combining District (FPARC)

The FPARC district provides an area where food processing and associated industries, together with appurtenant functions thereof, may locate outside the urban centers and in close proximity to recreation and open space areas in a manner which minimizes adverse environmental impacts and protects and enhances agricultural productivity.

Ranchettes

The Ranchette District may be applied to areas located outside of the Yuba City and Live Oak sphere's of influence, which are suitable for rural residential and small scale farming operations. Allowed densities within the Ranchette zoning district range between 0.1 to 1/3 dwelling unit per acre (3-10 acre parcel size). Ranchette zoning allows a smaller than 20-acre parcel to be divided into four or fewer parcels.

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Chapter 3 INFRASTRUCTURE AND COMMUNITY SERVICES

Sutter County recognizes the importance of and commits to the provision of adequate infrastructure and services including water, wastewater, stormwater drainage, solid waste, energy, and telecommunications systems in supporting the needs of residents and businesses to ensure a high quality of life. Equally important are community services that sustain the health and safety of Sutter County's residents through the provision of law enforcement, fire protection and emergency services, schools, parks and recreation, and government, civic, and cultural facilities, which are vital to the well-being of those who live, work, and visit Sutter County.

The County also recognizes the importance of developing an efficient transportation network that minimizes impacts to the environment and to neighborhoods. This chapter describes the existing utility and transportation infrastructure in the county and discusses the public services available for the protection and well-being of residents in the county. Additionally, these facilities and services are essential for the continued economic development in the county.

The Infrastructure and Community Services chapter is divided into the following sections:

3.1 Infrastructure with subsections addressing Potable Water Systems and Supply (3.1.1), Agricultural Water Systems and Supply (3.1.2), Wastewater Systems (3.1.3), Stormwater Drainage (3.1.4), Levees and Flood Control (3.1.5), Solid Waste Management (3.1.6), Energy Resources (3.1.7), and Telecommunications (3.1.8).

3.2 Mobility with subsections addressing Streets and Highways (3.2.1), Transit and Rail (3.2.2), Bikeways (3.2.3), and Air Travel and Airports (3.2.4).

3.3 Community Services and Facilities with subsections addressing Law Enforcement (3.3.1); Fire Protection and Emergency Services (3.3.2); Schools (3.3.3); Parks and Recreation (3.3.4); and General Government, Civic, and Cultural Facilities (3.3.5).

3.1 INFRASTRUCTURE

Development in Sutter County is supported by a network of public facilities and services, each with a unique set of considerations and issues. This chapter describes the various infrastructure and services provided in the county, including identification of key service providers and boundaries, major facilities, and regulatory requirements.

3.1.1 Potable Water Systems and Supply

INTRODUCTION

This section describes the various potable water systems and water supplies throughout the county, including the incorporated cities within Sutter County. The issues associated with potable water and water supplies are also identified in this section. Information for this section was obtained from applicable reports and studies from Sutter County, Sutter County LAFCO, the California Department of Water Resources, and Yuba City, as well through communication with Public Works and Utilities staff from Sutter County and Yuba City.

Agricultural water systems and supply are addressed in Section 3.2.

SUMMARY OF KEY FINDINGS

- The source of potable water for most of Sutter County is groundwater. Throughout most of the county, potable water is provided by privately owned wells that serve individual properties. Adequate quality of potable water supply of existing and future growth is an issue.
- Groundwater in many areas of Sutter County has naturally occurring arsenic in concentrations above the MCL (Maximum Contaminant Level) of 10 µg/L.
- Groundwater in many areas of Sutter County has nitrates in concentrations above the MCL of 45 mg/L (as nitrate). The nitrates in the groundwater are from septic systems and agricultural practices.
- Yuba City currently utilizes surface water and groundwater supplies. The City intends to ultimately convert all their systems to surface water supplies, but the time frame for this conversion in not known. To accomplish this conversion and to provide surface water for future growth of the City, additional surface water supplies will be needed.
- Live Oak's water is supplied by five groundwater wells, all of which exceed the federal limits of arsenic concentrations for potable water. Greensand arsenic removal systems are being constructed at four of the wells. A decision about the fifth well will be made soon. The groundwater supply is expected to be sufficient to meet the demands of the City of Live Oak through buildout of their General Plan.

OVERVIEW

Potable water in Sutter County is provided by two sources: groundwater and surface water. Yuba City is the only user of surface water for potable water supplies, although Yuba City also utilizes groundwater for potable water supplies. The City of Live Oak uses only groundwater for potable water supplies. There are several other community water systems that also use groundwater, including the Community of Robbins, Community of Sutter, and the Rio Ramaza Subdivision. There are many other small systems in the unincorporated areas of the county that serve only a few homes. Many homes in the county obtain their water from their own individual wells.

Yuba City's surface water supplies are currently adequate, but the City will need to acquire additional surface water supplies to meet their buildout water demands. Yuba City has a water system master plan that provides an understanding of the City's current and future water needs and provides a plan for achieving those needs.

Groundwater supplies appear to provide adequate supply; however, the quality of the groundwater supplies is at risk. The contaminants of concern are naturally occurring arsenic, nitrate and other pollutants from septic systems, iron, manganese, and agricultural chemicals. Sutter County is currently preparing a groundwater management plan that will help protect the County's groundwater resources.

EXISTING CONDITIONS

Most of Sutter County uses groundwater for potable water supplies. In the rural areas, most of the groundwater is pumped by privately owned wells. There are also several municipal and community potable water systems within Sutter County. See Figure 3.1-1 for water service areas throughout the county. These systems rely on water supplies from either the Feather River or from groundwater. Yuba City utilizes both surface water and groundwater supplies.

Groundwater

Groundwater is water contained in the pore space of soils and rocks below the ground surface. Groundwater is generally classified as either confined or unconfined. Confined groundwater consists of deeper aquifers which are separated from the ground surface by an impermeable soil layer. Unconfined groundwater consists of the upper most layer of groundwater that is not separated (not confined) by an impermeable soil layer. The top of the unconfined groundwater layer is often called the water table. Groundwater is replenished through percolation of stream flow, rain, and agricultural irrigation (especially rice).

The groundwater resources in Sutter County consist of three subbasins of the Sacramento Valley Groundwater Basin, including the East Butte, North American, and Sutter Subbasins. Groundwater in the East Butte Subbasin varies greatly with each season. Depths fluctuate greatly depending on the type of aquifer (confined, composite or semi-confined) as well as if it is a wet year, a drought year or year with normal precipitation. Groundwater levels in the North American Subbasin in Sutter County have been relatively steady, with the exception in southern Sutter County which have shown a moderate decrease. In the southwestern portion of Placer County, the groundwater levels in the North American Subbasin have steadily decreased over the last forty years at an average rate of a foot to a foot and half a year. The Sutter Subbasin groundwater levels have remained on average approximately ten feet below the ground.[1]

See Figures 3.1-2 through 3.1-4 for historical water well data based upon the California Department of Water Resources historical well data. As shown, across the county, the water table levels exhibit significant variability over a yearly period, but over the long term (1950s to 2007) water table levels are mostly stable. However, water table levels in the northeast corner of the county were lower during the 1960s and 1970s, but have recovered in recent years.

The County's groundwater is at risk of contamination from nitrates and arsenic. Nitrates are entering the groundwater from agricultural practices and septic systems. The Environmental Protection Agency limits nitrates in potable water to 10 mg/L as nitrogen (44.3 mg/L as nitrate) and nitrites to 1 mg/L (as nitrogen). Additionally, there is naturally occurring arsenic in much of the groundwater that exceeds the recently adopted limit of 10 µg/L. Other contaminants known to occur in groundwater within the county include Bentazon (pesticides), DBCP, Chloride, Iron, and Manganese (Figures 3.1-5 through 3.1-9).[2]

Septic systems are an effective method of treating wastewater from individual or small groups of houses and businesses. However, if septic systems are overloaded or not maintained, they may contribute to the contamination of groundwater by introducing nitrates, salts, bacteria, viruses, household chemicals, and other contaminants into the groundwater. These contaminants can then enter potable water supplies through pumping of the contaminated water

1 California Department of Water Resources, *California's Groundwater Bulletin 118, Update 2003*.

2 Sutter County, *Sutter County General Plan 2015: Background Report*, November 1, 1996.

by water supply wells. Septic systems and groundwater wells are used throughout much of Sutter County (see Section 3.1.3, Wastewater Systems).

Sutter County is currently preparing a Groundwater Management Plan that will provide updated groundwater information; however, this plan will not be completed until 2009.[3] Typically groundwater management plans identify management goals and objectives to protect the groundwater resources. These plans also identify management actions that should be implemented to achieve the goals and objectives.

Some of the ways that groundwater and its use can be protected include:

- Restricting the use of septic systems. This could be accomplished by limiting future development in the county or by connecting ranchettes and houses near Yuba City and the City of Live Oak to the Cities' sewer systems. Similarly, these ranchettes and houses could be connected to the Cities' water systems to reduce the impact of contaminated groundwater.
- Ensuring proper siting, design, operation, and maintenance of septic systems.
- Constructing community wastewater treatment systems and eliminating septic systems.
- Providing proper operations and maintenance of sewer systems.
- Implementing best management practices for agricultural chemical usage.
- Ensuring proper design, construction, and maintenance of wells, including locating wells away from septic systems.

Sutter County

Throughout most of Sutter County, potable water is provided by privately owned groundwater wells that serve individual properties. There are also many small systems that serve more than one property.

Community of Robbins

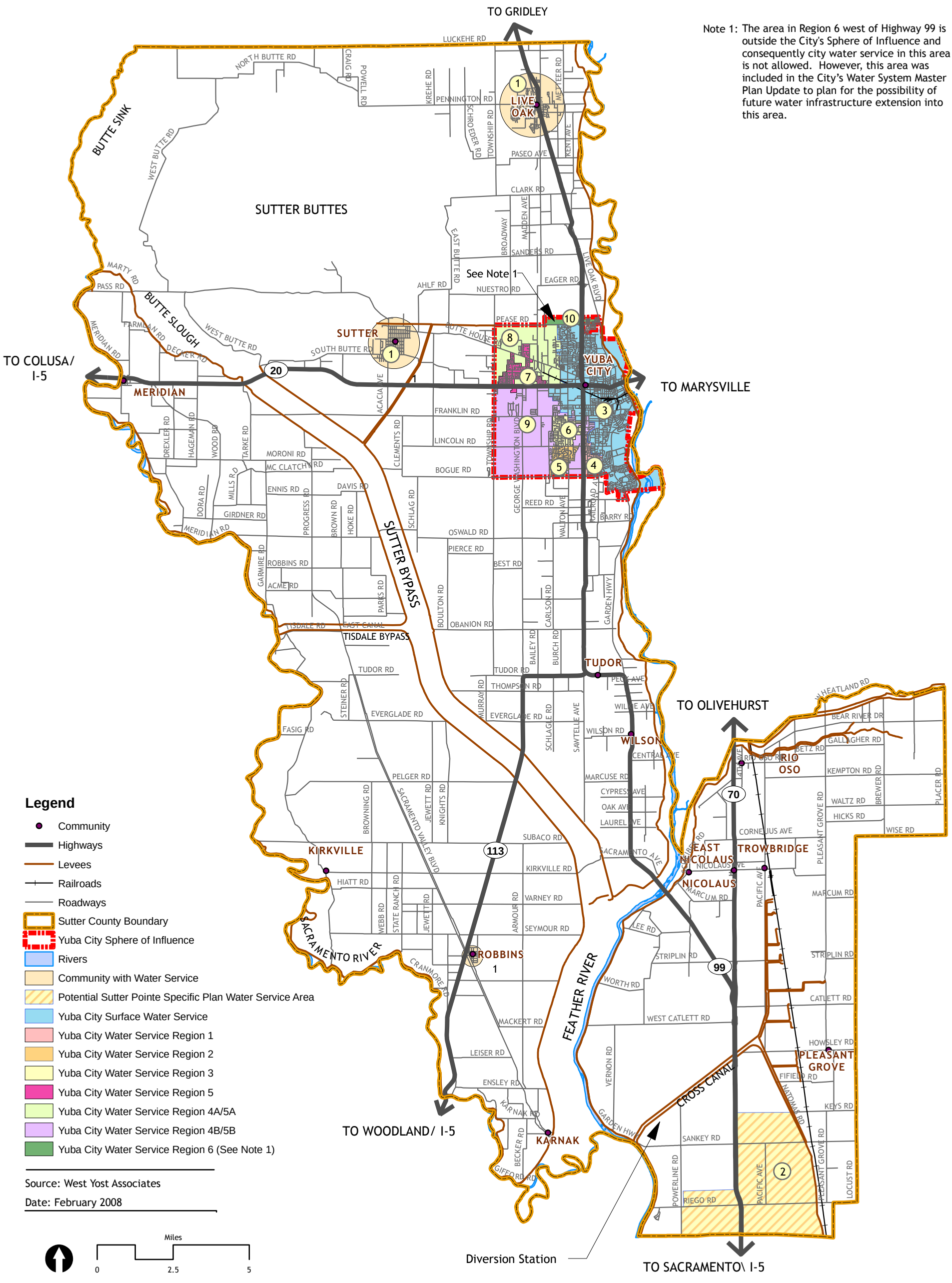
Sutter County runs the water district that serves the Community of Robbins. This water service district includes two groundwater wells. Pumping from Well 1 is restricted to 15 calendar days of use per year because the water from this well has higher than acceptable levels of arsenic, and other contaminants, as summarized below:[4]

- Arsenic is a primary contaminant of concern and has a maximum contaminant limit (MCL) of 10 µg/L. Well 1 has been measured at 61 µg/L.
- Manganese is a secondary contaminant concern with a MCL of 50 µg/L. Well 1 has been measured at 84 µg/L.
- Iron is a secondary contaminant concern with a MCL of 300 µg/L. Well 1 has been measured at 118 µg/L.

3 Sawyer, Al, Assistant Public Works Director, Sutter County, Personal Communication, October 3, 2007.

4 Sutter County, 2005.

SUTTER COUNTY
General Plan Update



Note 1: The area in Region 6 west of Highway 99 is outside the City's Sphere of Influence and consequently city water service in this area is not allowed. However, this area was included in the City's Water System Master Plan Update to plan for the possibility of future water infrastructure extension into this area.

WATER SERVICE AREAS
Figure 3.1-1

SUTTER COUNTY General Plan Update

SUTTER COUNTY
GENERAL PLAN UPDATE

EAST CANAL

SUTTER BYPASS

FEATHER RIVER

TO OLIVEHURST

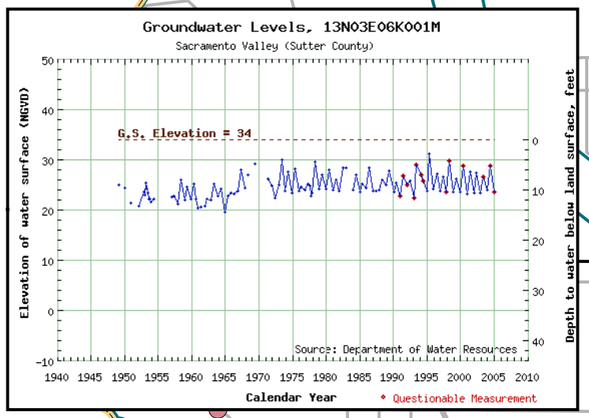
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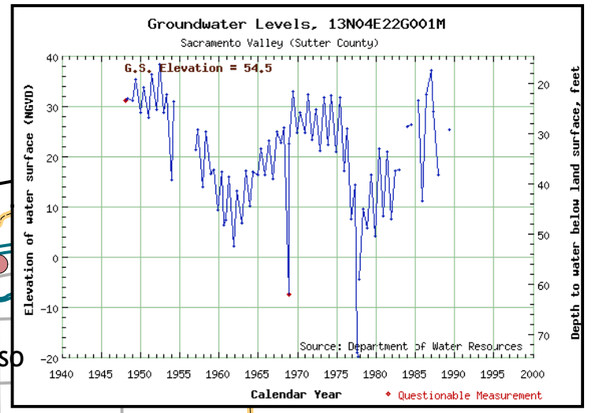
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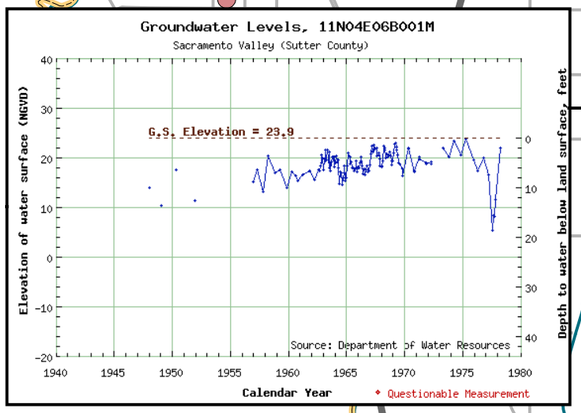
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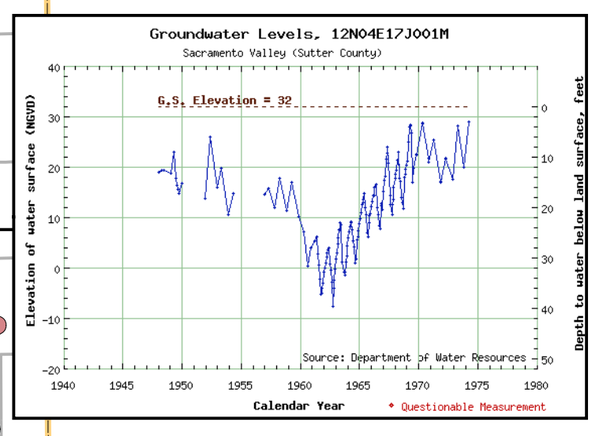
TO WOODLAND/I-5

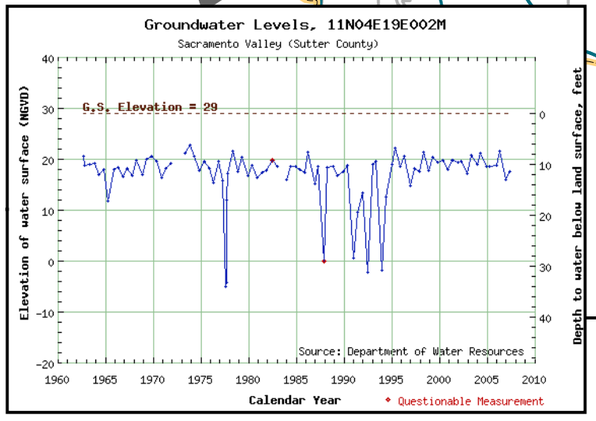
99 70 113

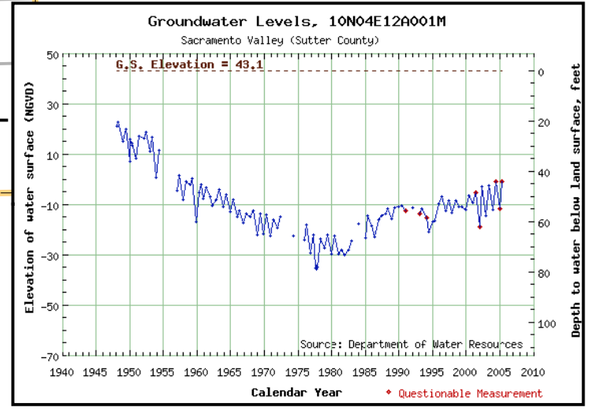




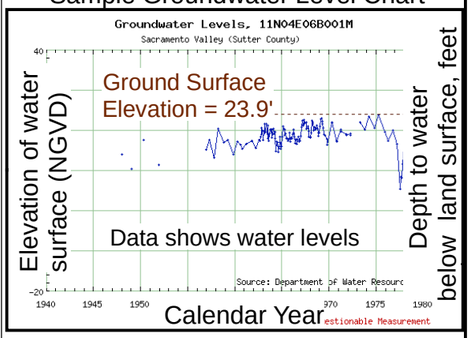








Sample Groundwater Level Chart



LEGEND

- Water Wells
- Highways
- Levees
- Roads
- Sutter County

Source: State Department of Water Resources

Date: February 2008

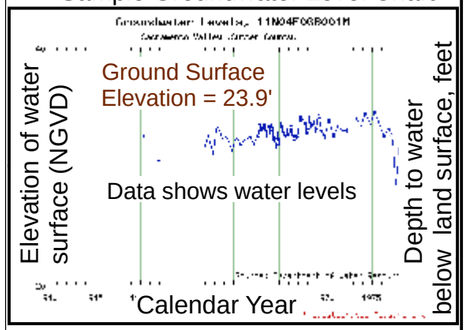
Miles
0 2.5 5

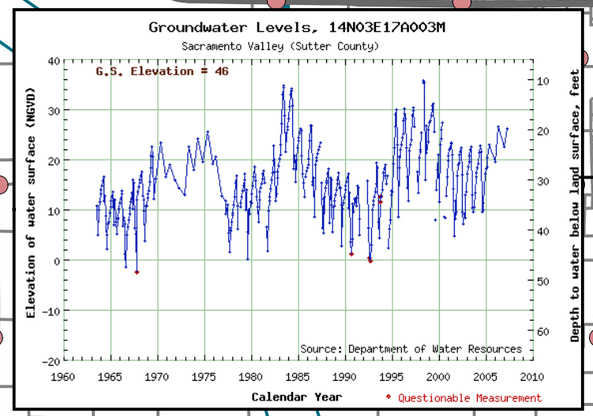
GROUNDWATER LEVELS IN SOUTHERN SUTTER COUNTY
Figure 3.1-2

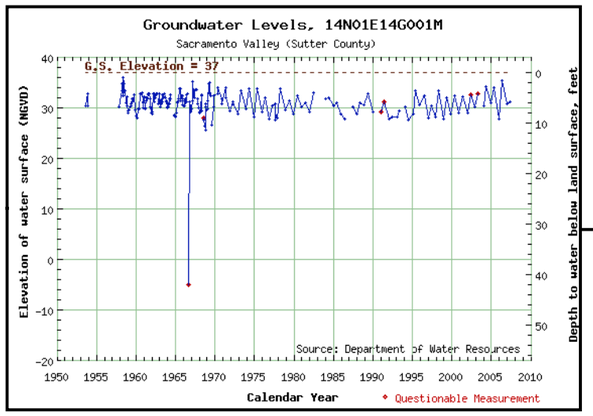
SUTTER COUNTY
General Plan Update

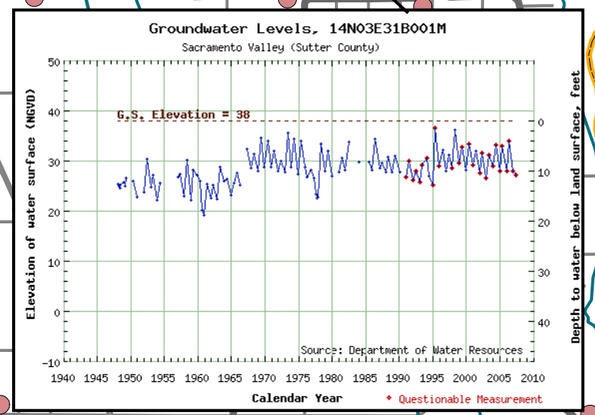
SUTTER COUNTY
GENERAL PLAN UPDATE

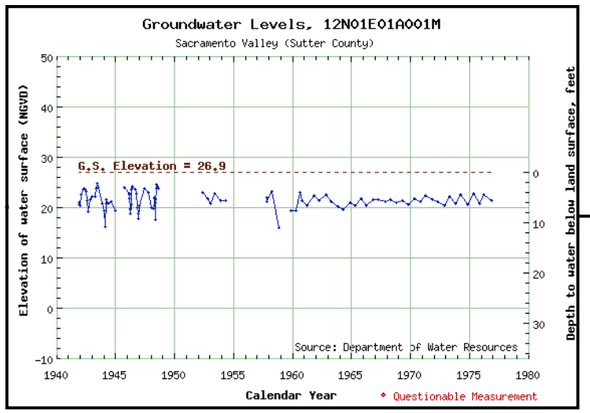
Sample Groundwater Level Chart

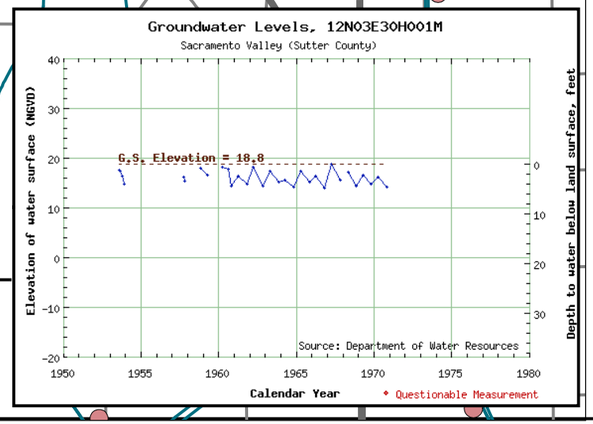












LEGEND:

- Water Wells
- Highways
- Levees
- Roads
- Sutter County

Source: State Department of Water Resources
Date: February 2008

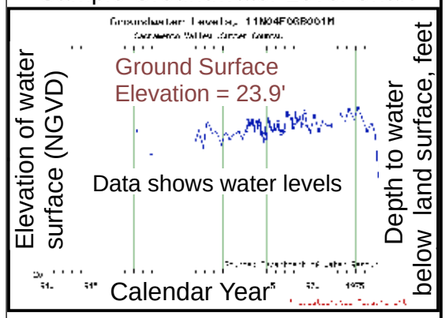
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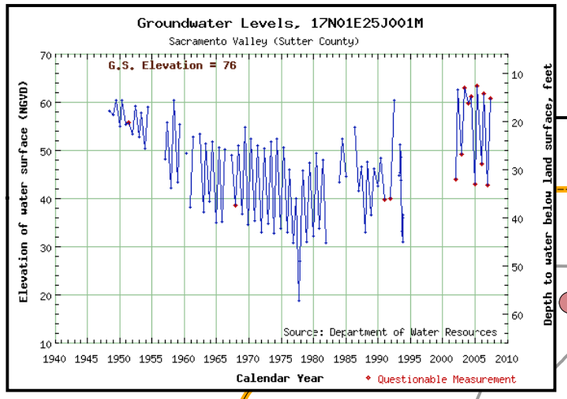
GROUNDWATER LEVELS IN CENTRAL SUTTER COUNTY
Figure 3.1-3

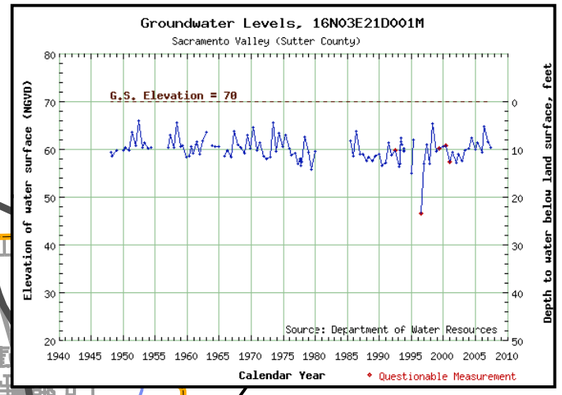
SUTTER COUNTY
General Plan Update

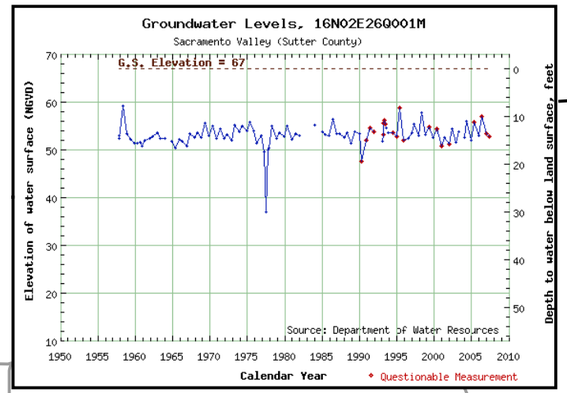
SUTTER COUNTY
GENERAL PLAN UPDATE

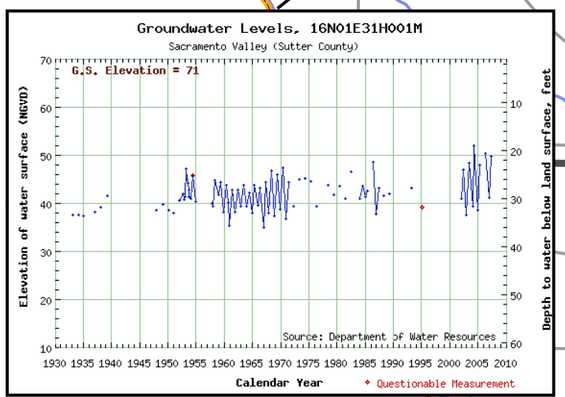
Sample Groundwater Level Chart

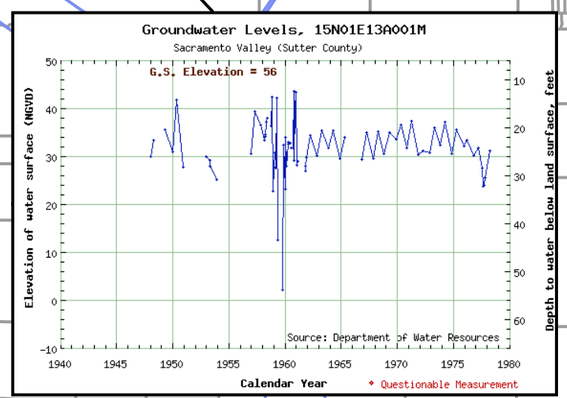












TO GRIDLEY

SUTTER BUTTES

SUTTER

20

99

LEGEND

- Water Wells
- Highways
- Levees
- Centerlines
- Sutter County

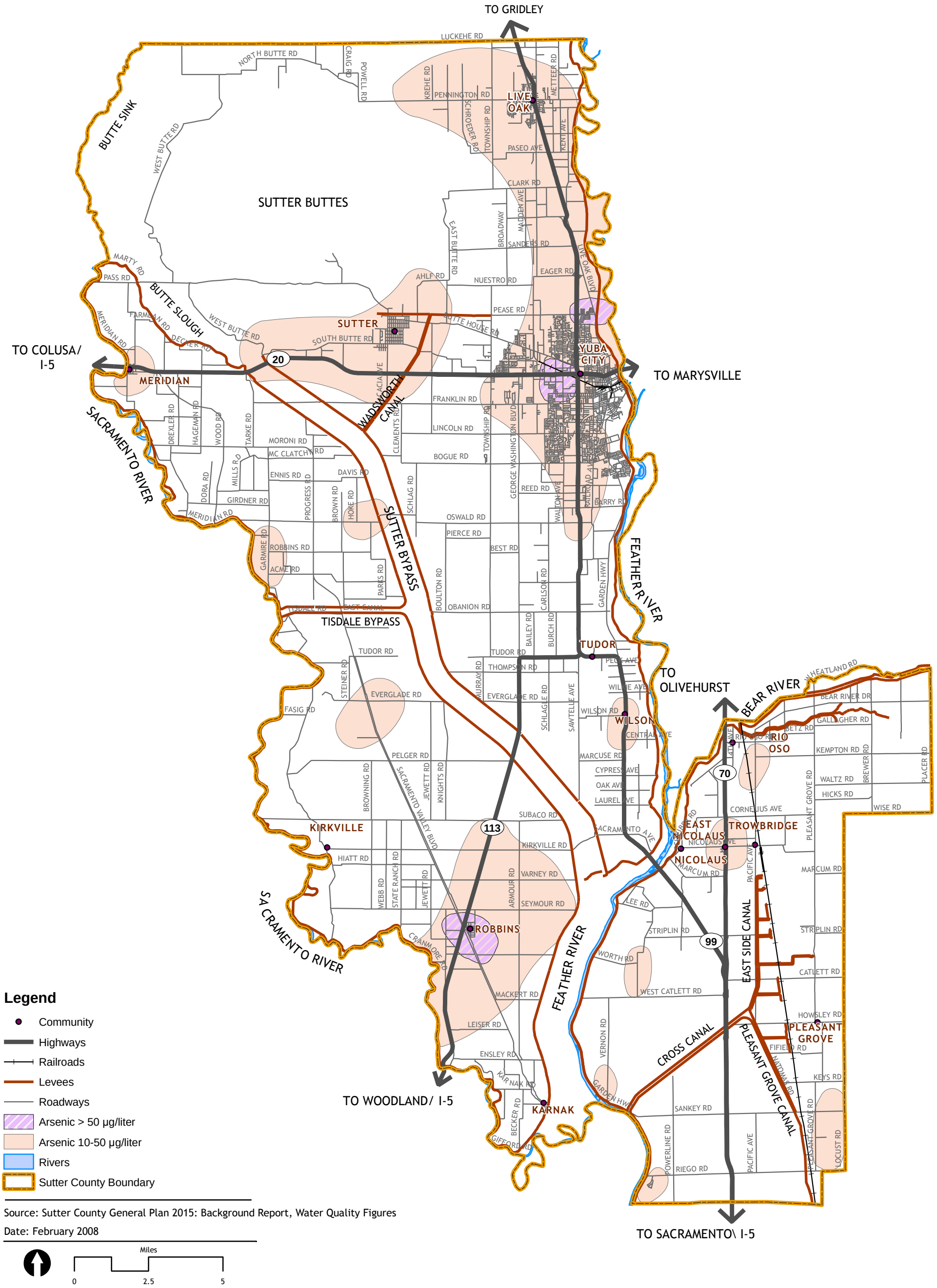
Source: State Department of Water Resources

Date: February 2008

Miles
0 2.5 5

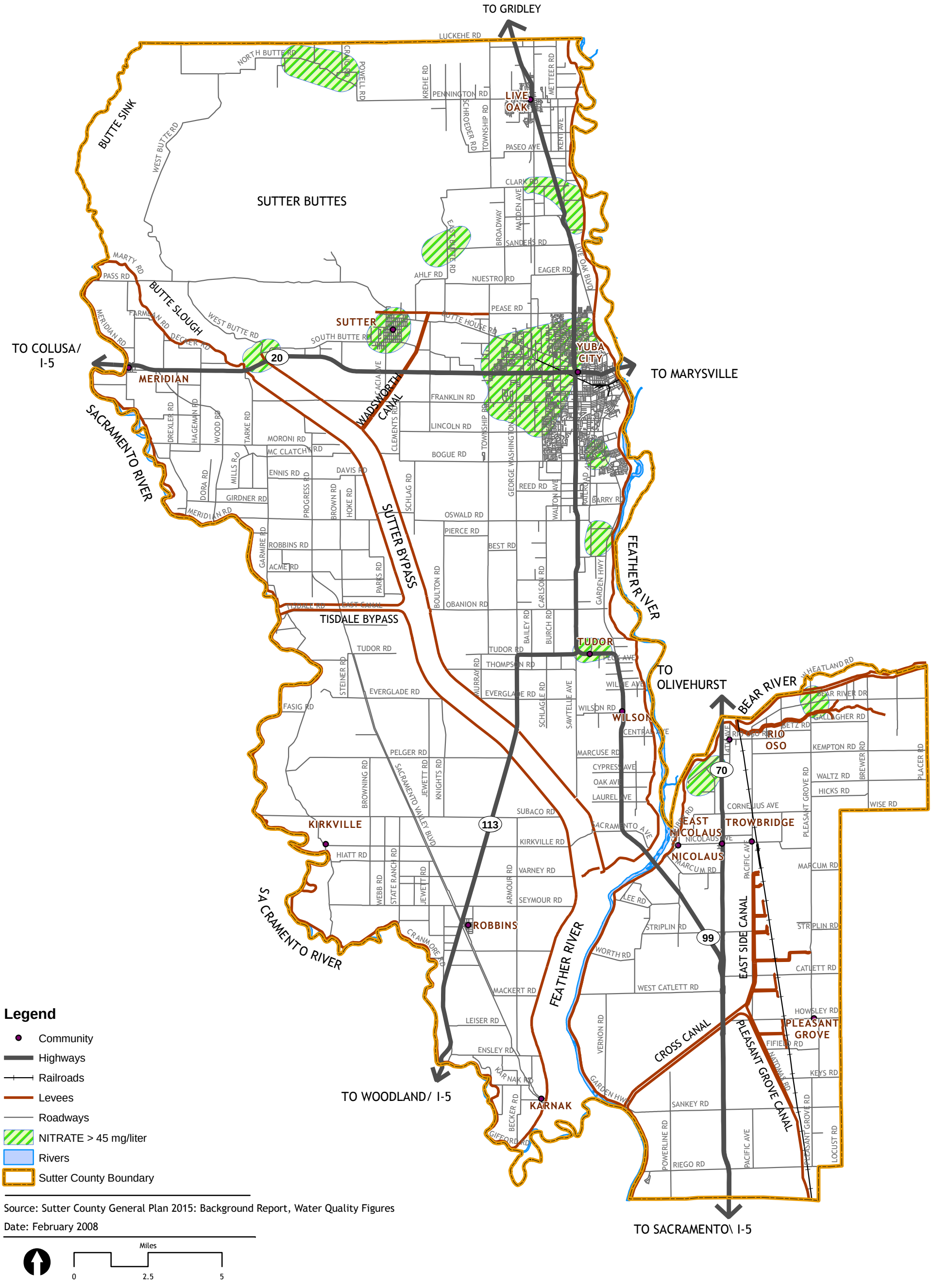
GROUNDWATER LEVELS IN NORTHERN SUTTER COUNTY
Figure 3.1-4

SUTTER COUNTY
General Plan Update



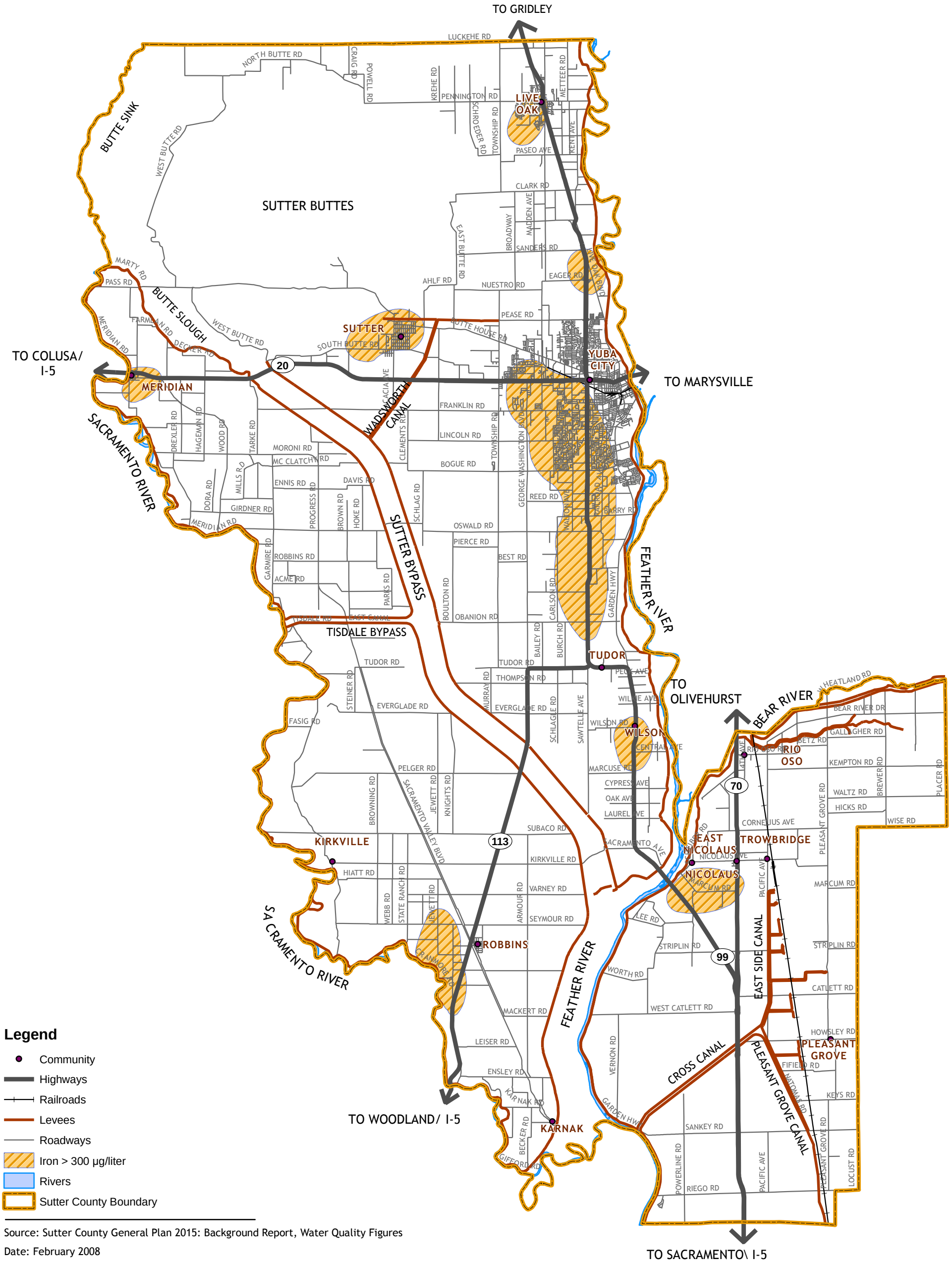
GROUNDWATER QUALITY-ARSENIC
Figure 3.1-5

SUTTER COUNTY
General Plan Update



GROUNDWATER QUALITY-NITRATE
Figure 3.1-6

SUTTER COUNTY
General Plan Update



Legend

- Community
- Highways
- Railroads
- Levees
- Roadways
- Iron > 300 µg/liter
- Rivers
- Sutter County Boundary

Source: Sutter County General Plan 2015: Background Report, Water Quality Figures

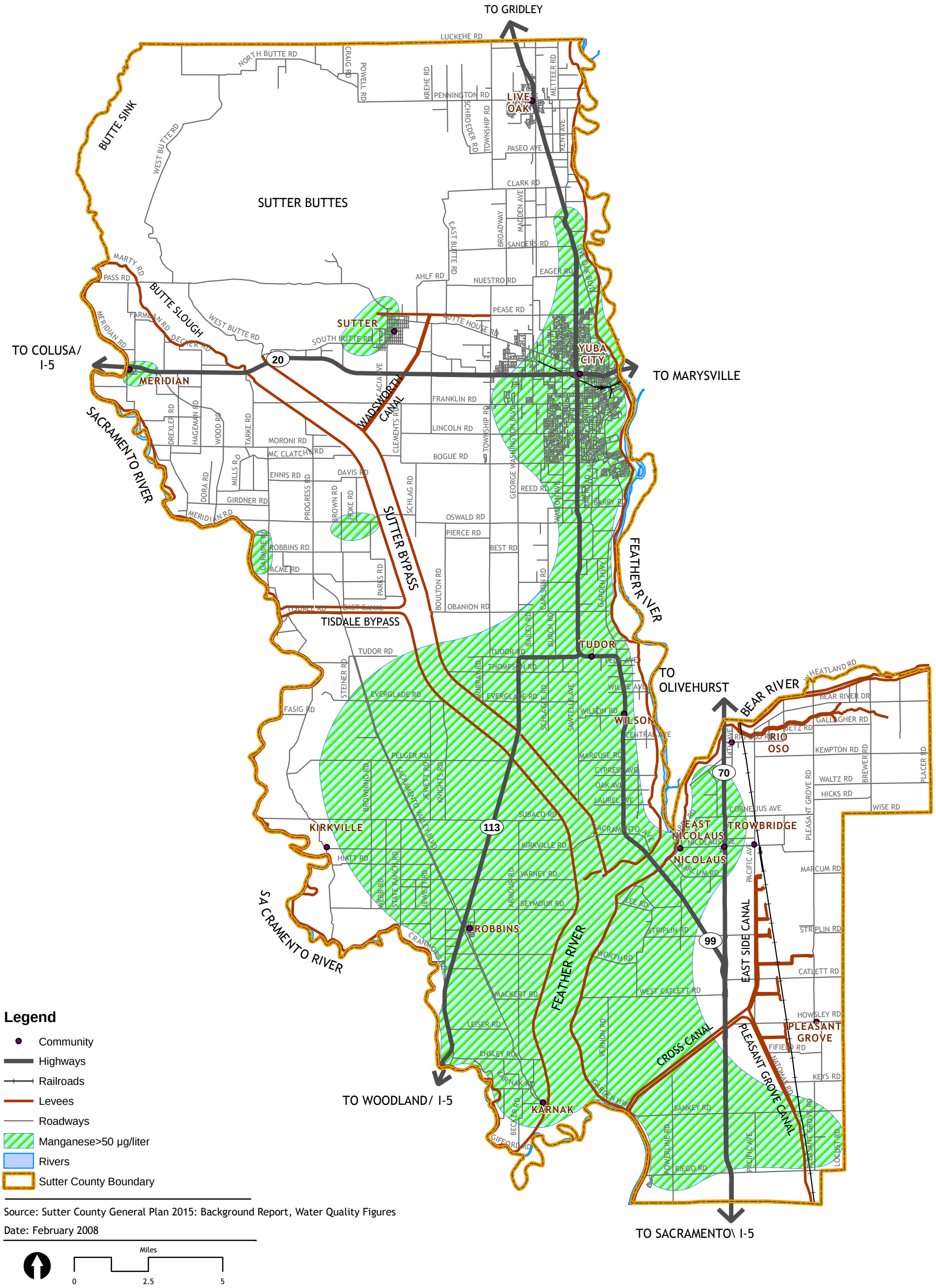
Date: February 2008

Miles

0 2.5 5

GROUNDWATER QUALITY-IRON
Figure 3.1-7

SUTTER COUNTY
General Plan Update



Legend

- Community
- Highways
- Railroads
- Levees
- Roadways
- Manganese>50 µg/liter
- Rivers
- Sutter County Boundary

Source: Sutter County General Plan 2015: Background Report, Water Quality Figures

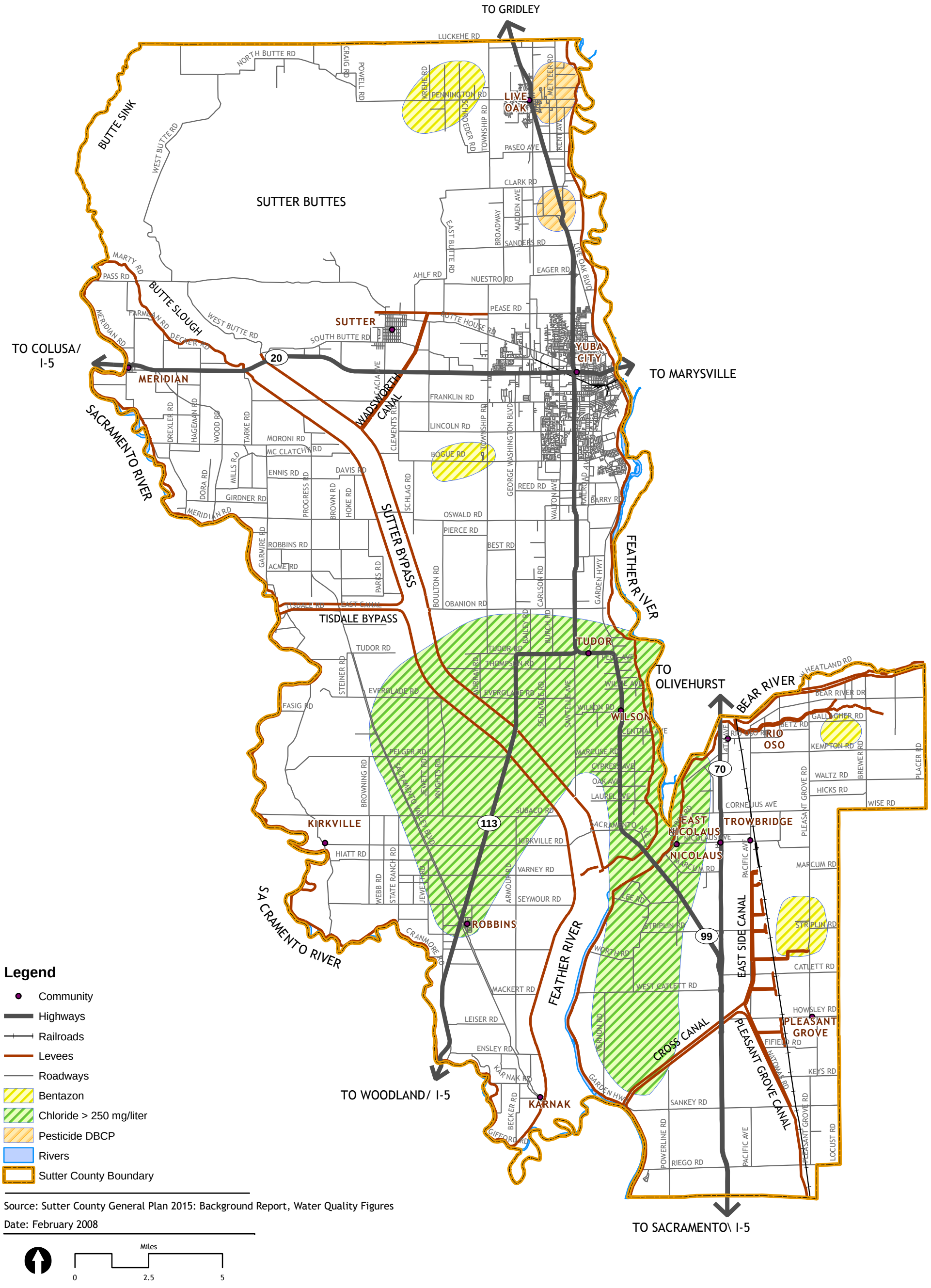
Date: February 2008

Miles

0 2.5 5

GROUNDWATER QUALITY-MANGANESE
Figure 3.1-8

SUTTER COUNTY
General Plan Update



Source: Sutter County General Plan 2015: Background Report, Water Quality Figures

Date: February 2008

GROUNDWATER QUALITY-BENTAZON, CHLORIDE, DBCP
Figure 3.1-9

Because the County limits use of Well 1 to only 15 days per year, no additional treatment of the water from Well 1 is required.

Water from Well 2 meets all State defining water standards and is within maximum contaminant levels for all contaminants detected (however, there was not information available for nitrates). The total storage available at the wells is approximately 64,000 gallons.

Community of Sutter

Water service for the Community of Sutter is provided by the Sutter Community Service District (CSD). Water is supplied within the community's sphere of influence via a looped distribution system. The three existing groundwater wells meet the daily and peak water demands, including fire flow. Water demand varies greatly throughout the year with January typically having the lowest demand for water and July having the highest. The average daily demand in January was approximately 0.337 million gallons per day (mgd) while in July the demand increased to 1.156 mgd. The peak daily demand in January was 0.487 mgd, while the peak daily demand in July was 1.391 mgd. The monthly demand varies from 9 million gallons (MG) to 36 MG throughout the year. There is one 750,000 gallon storage tank located in the Sutter Buttes that serves the community. During the summer months, the water in the tank is continually turning over due to the high water demands.

The water is disinfected at the wells with chlorine prior to entering the distribution system. Currently, the water does not require any additional treatment. The State Department of Health Services tests the water from each well quarterly. If the combined yearly concentrations for any State regulated contaminates are higher than allowable, Sutter CSD would be required to include appropriate treatment measures at the wells. One of the three wells has periodically tested high for arsenic; however, at this time it does not warrant filtration. Sutter CSD tests weekly for bacteria levels.

Rio Ramaza Subdivision

The Rio Ramaza subdivision (located in southern Sutter County within the Natomas Basin) currently has one county maintained well. The well is used solely to provide water for fire suppression and will be removed within the next year due to the new setback levee being constructed by the Sacramento Area Flood Control Agency (SAFCA). The subdivision is made up of 40 lots. There are eight existing residences in the subdivision. Each home has a privately owned and operated well on its property.[5] The remaining lots are held in fee title by the County of Sacramento for airport land use compatibility.

Sutter Pointe Specific Plan (SPSP) Area

Sutter Pointe is a proposed development in southern Sutter County within the Natomas Basin, and includes a total area of approximately 7,500 acres. Proposed land uses include residential (17,500 dwelling units) and approximately 50 million square feet of employment uses (commercial and industrial). The proposed development also includes parks, stormwater detention basins, and schools. Initial planning of the water supply, treatment, distribution and storage for this development has not yet been finalized. The proposed Sutter Pointe Specific

5 Pacific Municipal Consultants, Sutter County Local Agency Formation Commission Municipal Services Reviews and Sphere of Influence Update. Prepared for Sutter County, August 2007.

Plan is subject to the review, refinement and approval of the County. As a result, the following information should be considered preliminary and subject to change.[6]

The ultimate annual water demand for buildout of Sutter Pointe has been estimated at 24,444 acre-feet per year. Water for the first phase of development of the SPSP would be provided from groundwater wells. In Phase 2, the groundwater would be supplemented with surface water from the Sacramento River. The Sacramento River water would be supplied by the existing water right permits held by the Natomas Central Mutual Water Company (NCMWC).

Yuba City

Surface Water Supply

Potable water supply for much of Yuba City consists of surface water. The City diverts water from the Feather River throughout the year using four water right permits, as summarized below.[7] Presently these water rights meet the City's current surface water demands.

- State Water Resource Control Board Permit 14045 - This permit allows the City to divert water from the Feather River at a flow of up to 15.6 cubic feet per second (cfs) from January 1 to about July 1 and from September 1 to December 31 of each year, for a total of 6,500 acre-feet per year.
- State Water Resource Control Board Permit 18558 – This permit allows the City to divert water from the Feather River at a flow of up to 21.0 cfs except during July, August, and September, for a total of 9,000 acre-feet per year.
- Yuba County Water District Contract –This contract allows the City to divert up to 4,500 ac-ft of water from the Feather River in the months of April through October.
- Department of Water Resources, State Water Project Contract – This contract allows the City to divert up to 9,600 ac-ft of water from the Feather River any time of the year. The City has historically used approximately 975 ac-ft in July and August.

The City maintains one well, located at the water treatment plant, as a supplement to these water right permits. The City anticipates that by the year 2015, an additional surface water supply of 15,000 ac-ft per year will be needed for the City to fully develop within its current sphere of influence. This future water demand includes converting the groundwater districts described below to surface water.

The City's surface water treatment plant was originally constructed in 1969 to eliminate use of groundwater that had high levels of sulfides, iron, and manganese. The surface water treatment plant was recently expanded to a capacity of 30 mgd. The current peak day surface water demand for Yuba City is 23 mgd, and average day demand is 11 mgd.[8]

6 MacKay & Somps Civil Engineers Inc., Administrative Draft, *Sutter Pointe Specific Plan, Water Supply Master Plan*, September 19, 2007.

7 HDR, *City of Yuba City Water System Master Plan Update*. Prepared for City of Yuba City Utilities Department, May 2004.

8 Lewis, William P., Utilities Director, Yuba City, Personal Communication, September 17 and 19, 2007.

The City has three existing storage tanks located at the water treatment facility for a total of 8 MG of storage. Located throughout the water distribution system are 4 additional tanks with a total volume of 9 MG.

Groundwater Use within the Yuba City Sphere of Influence

Within Yuba City there are three municipal water districts (Figure 3.1-1). Within the City's sphere of influence there are several smaller water districts supplied by local groundwater wells. These districts include:[9]

- Regions 1, 2, 3 and 5, formerly Hillcrest Water District, are within the sphere of influence of Yuba City.
- Region 4A/5A is within the sphere of influence Yuba City.
- Region 4B/5B is within the sphere of influence of Yuba City.
- Regions 6 and 7 are unincorporated areas beyond the sphere of influence of Yuba City, nevertheless these areas were included in the City's Water System Master Plan Update.

The total average annual demand from these groundwater districts is approximately 9,600 ac-ft per year.

Arsenic levels in much of the groundwater around Yuba City exceed the Arsenic MCL of 10 µg/L, as shown on Figure 3.1-5.[10] Similarly, nitrate levels exceed the MCL of 45 mg/L (as nitrate) in some areas around the City (Figure 3.1-6). Consequently, the City is considering converting these existing groundwater districts to surface water supplies.[11]

Yuba City Water System Master Plan

Yuba City prepared the *City of Yuba City Water System Master Plan Update* in 2004. This document covers the City's surface water treatment plant, wells, water distribution system, and water storage requirements. This document provides an understanding of the City's current and future water needs and provides a plan for achieving those needs.

City of Live Oak

Potable Water

Live Oak's water is supplied by five groundwater wells located at various locations around the City. Currently, all five groundwater wells exceed the federal limits of arsenic concentrations for potable water. Greensand arsenic removal systems are being constructed at four of the wells. Greensand is an iron rich mineral that incorporates oxidation, ion exchange, and adsorption to remove arsenic from water. The fifth well has nitrate contamination in addition to high arsenic levels. At this time, a final decision about how to best treat the well water has not been made. Each well produces approximately 1,000 -1,200 gpm. Two of the wells together supply water for the City's one million gallon storage tank.

9 HDR, *City of Yuba City Water System Master Plan Update*. Prepared for City of Yuba City Utilities Department, May 2004.

10 Sutter County, *Sutter County General Plan 2015: Background Report*, November 1, 1996.

11 Lewis, William P., Utilities Director, Yuba City, Personal Communication, September 17 and 19, 2007.

A majority of Live Oak is served by a municipal water system; however, several private wells do remain throughout the City. The groundwater supply is expected to be sufficient to meet the demands of the City through build out of their General Plan.

REGULATORY CONTEXT

This section summarizes regulations that are relevant to potable water supply and systems.

Federal

In 2002, the Federal Environmental Protection Agency reduced the amount of arsenic allowable in potable drinking water from 50 µg/L to 10 µg/L. This new regulation became effective on January 23, 2006. Many of the private and public groundwater wells in the county are not currently able to meet this standard. For example, groundwater near Yuba City has an arsenic concentration of 14.4 µg/L, and groundwater from Well 1 in Robbins has arsenic concentrations of 60.6 µg/L. In the Robbins Well 2 the arsenic concentrations are in the range of 7-22 µg/L. Arsenic concentrations throughout the county are shown on Figure 3.1-5.

See Section 3.1.3, Wastewater Systems, for a summary of the Clean Water Act.

State

The State of California has passed several state bills pertinent to water supply and water management as summarized on their website,[12] including:

- AB 3030 Groundwater Management Act allows existing local agencies to develop a groundwater management plan. Sutter County is currently developing a groundwater management plan.
- SB 1938 Amendments to Local Groundwater Management Water Codes requires any agency requesting funds from the Department of Water Resources to develop a comprehensive plan outlining the agencies objectives for basin management, basin planning, and basin monitoring. The goal of the legislation is that agencies would be more involved in their basin management to ensure proper planning and prevent over utilization of the basin.
- AB 303 Local Groundwater Management Assistance Act of 2000 provides public agency grants to study and manage groundwater with the expectation the agency will become better suited to manage the water supply quality, delivery, and storage.
- SB 610 Water Supply Assessments and SB 221 Verification of Sufficient Water Supply were passed to prevent development from proceeding without adequate consideration for water supply to the developed area. Senate Bill 610 was passed in 2001, and it specifically requires that for a public water system to be eligible for flood relief funds from the Department of Water Resources, that entity must provide an urban water management plan. That plan should outline all water supplies available for that entity's use over the next five years. The plan should also include water supply for any anticipated growth. Reliability of the water supply should also be evaluated. SB 221 requires any development having

12 California Department of Water Resources, www.groundwater.water.ca.gov/water_laws/index.cfm#sb221, October 2007.

more than 500 parcels or units to have a complete water supply plan prior to approval for development. Review and approval of these documents would fall to the local governing board (rather than the State of California).

- AB 901 Water Supply Planning requires Urban Water Management Plans to include information relating to the quantity of existing sources of water available to an urban water supplier over given time periods and the manner in which water quantity affects water management strategies and supply. This information includes, but is not limited to, the historic, current, and future reliability of the supply source and quality of the water source. A plan for what actions would be taken if the quantity or quality of water deteriorates is also required. Additional and supplemental sources of water must also be included in the Urban Water Management Plan.
- Bulletin 74-90 and Bulletin 74-81 Water Well Standards for the State of California establish requirements for water well construction, use, maintenance, and other services associated with water wells. Published in June 1991, Bulletin 74-90 is an update of Bulletin 74-81. .
- California Laws for Wells was published March 2003 and relates directly to the construction, operation and maintenance of wells.

Local

Sutter County is in the process of preparing a Groundwater Management Plan. The goal of the plan is to determine the quantity and quality of available groundwater and how to best manage the existing groundwater basins.

The Sutter County Public Works Design Standards[13] govern the engineering design of all domestic water systems intended for operation and maintenance by Sutter County or other agencies, such as Community Service Districts, where the Board of Supervisors is the agency board. The County's design standards recommend compliance with Bulletin 74-81, "Water Well Standards: State of California" in the well design section.

Sutter County also has an ordinance for septic systems to help manage wastewater disposal and protect groundwater quality. This ordinance is available on their website (see Section 3.1.3, Wastewater Systems, for a summary).

3.1.2 Agricultural Water Systems and Supply

INTRODUCTION

This section describes the various agricultural water systems and water supplies throughout the county. The issues associated with agricultural water systems and supplies are also identified in this section. Information for this section was obtained through communications with staff from the water districts and companies described below.

13 Sutter County 2005.

SUMMARY OF KEY FINDINGS

- Several irrigation water companies and districts provide irrigation water within Sutter County, the main source of this water being diversion from the Feather and Sacramento Rivers.

EXISTING CONDITIONS

Irrigation water for use within Sutter County is maintained and operated by several irrigation water companies and districts. These entities range in size from as small as 600 acres to over 50,000 acres as shown on Figure 3.1-10. The main source of irrigation water is diversion from the Feather and Sacramento Rivers. Groundwater is also used during the summer when surface water supplies are reduced or not available. When agricultural water supply is located within a reclamation district or stormwater management district, it is common practice for pumps to be placed in the drainage channels to reuse the tailwater from these channels.

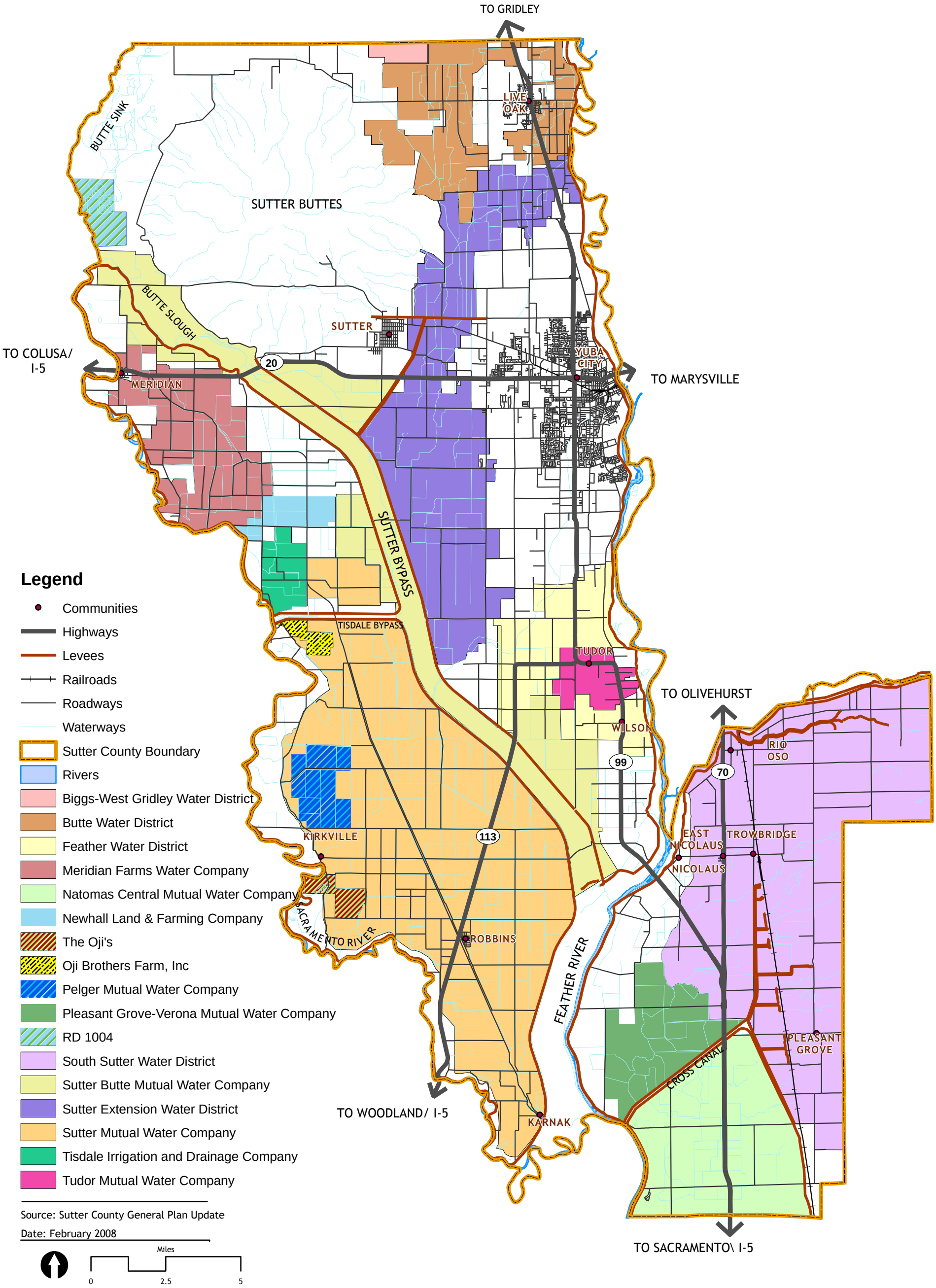
The existing agricultural irrigation entities in Sutter County include: The Garden Highway Mutual Water Company; Meridian Farms Water Company; Natomas Central Mutual Water Company; Pleasant Grove/Verona Mutual Water Company; Sutter Bypass Butte Slough Water User Association; Sutter Extension Water District; Sutter Mutual Water Company; Tisdale Irrigation and Drainage Company; and Tudor Mutual Water Company, Butte Water District, Biggs-West Gridley Water District, Feather Water District, Oswald Water District, Pelger Water District, Tisdale Water District, and Swinford Tract Irrigation District . The water supply, water rights, and operations of several of these entities are summarized below. No information was available for the other districts/companies.

Meridian Farms Water Company

The Meridian Farms Water Company is a 10,000 acre agricultural water service company. Water is obtained from the following two sources, each supplying approximately fifty percent of the irrigation demand:

- Meridian Farms maintains a permit for direct diversion from the Sacramento River. Two years ago, they renegotiated their water rights with the Bureau of Reclamation. The new permit has a 25 year life span and allows 9,000 acre-feet of water to be diverted each year. Historically, they have diverted approximately 9,000 acre-feet of water each year.
- The second source of water is surface water from Reclamation District 70 (RD 70). RD 70 is a stormwater drainage district located on the western boarder of the county. Meridian Farms is located within the boundary of RD 70. Water is pumped from the RD 70 drainage channels using several pumps located throughout the drainage system.

When the Sacramento River is low, Meridian Farms pumps are not able to lift sufficient water from the river to fully utilize their water rights and meet the agricultural water demands.



IRRIGATION WATER
Figure 3.1-10

Meridian Farms intends to equip all pumps with screens and realign portions of the system to provide greater efficiency. Construction on installing fish screens is expected to begin sometime in 2008. To supplement surface water supply during construction of the fish screens, and in the case of curtailed river supplies, Meridian Farms has submitted an application to the County for permits to drill two groundwater wells. Assuming the well permits are approved, Meridian Farms should have sufficient water for the future.[14]

Sutter Extension Water District

Sutter Extension Water District is a member of the Joint Water District. The predecessor of the Sutter Extension Water District was the Sutter Butte Canal Company. Prior to the construction of the Oroville Dam, Sutter Butte Canal Company maintained a majority of the water rights along this portion of the Feather River. In the 1950's the Joint Water District bought Sutter Butte Canal Company along with all existing water rights the Canal Company held. The Joint Water District is currently comprised of Sutter Extension Water District, Butte Water District, Biggs-West Gridley Water District and Richville Water District.

The Sutter Extension Water District provides water for agricultural use in Sutter County. The water is supplied by two pre-1914 water rights permits that allows for a combined total of 11,000 acre-feet of water per year and a third permit allowing 6,500 acre-feet of water per year. Sutter Extension has sufficient water supply to meet current demands and has never been short of water in the past. Sutter Extension procures their water through the Joint Water District. Since the early 1900's the amount of water allotted to the district has only been reduced three times, reducing the overall water intake by 50 percent.[15]

Butte Water District

Butte Water District is a member of the Joint Water District. Under a pre-1914 water right, Butte Water District is allowed to divert 133,200 acre-feet of water per year from the Feather River/Oroville Dam; although the water right is actually held by the Joint Water District. Butte Water District accounts for 24 percent of the total allotment held by the Joint Water District.

Butte Water District includes an area of 27,000 acres within Butte County and Sutter County. Irrigation water is used mainly for permanent crops such as orchard trees. Historically, Butte Water District's surface water supplies have been sufficient to supply the entire district from April through October. When Biggs-West Gridley and Richville Water Districts have been low on water, Butte Water District has diverted some of their excess water to these other members of the Joint Water District. Up to this point, the district has not had any groundwater wells; however, two groundwater wells are currently being constructed.[16]

Biggs-West Gridley Water District

The Biggs-West Gridley Water District provides agricultural water from Oroville Dam. A majority of the irrigation water is obtained from water permits held by the Joint Water District. In the past Biggs-West Gridley has supplemented their water supply with unused supplies from other members of the Joint Water District. Also, there are a few customers who supplement their

14 Ruiz, Daniel, Meridian Farms Water Company, personal communication October 4, 2007.

15 Phillips, Lynn, Sutter Extension Water District, personal communication, October 1, 2007 and January 21, 2008.

16 Orme, Mark, General Manager Butte Water District, personal communication, January 23, 2008.

supplies with groundwater, however the groundwater is not metered so there is no record of the quantity used.[17]

Biggs-West Gridley has recently hired a private engineering consultant firm to help address long term water supply issues through more efficient water use.

Sutter Mutual Water Company

The Sutter Mutual Water Company is a private mutual irrigation district serving approximately 50,000 acres within the 70,000 acre Reclamation District 1500 (RD 1500). The water company has access to 226,500 acre-feet of water per year from water rights and a permit from the Bureau of Reclamation. The permit with the Bureau of Reclamation allows for 56,500 acre-feet of water from Shasta Dam per year. The remainder of the water is supplied by at least twelve water rights permits that allow for different quantities of water to be taken at various locations and during various time periods throughout the year. These water supplies can also be supplemented with water from RD 1500 drainage channels. Sutter Mutual Water Company has no groundwater wells.

The adequacy of Sutter Mutual's water supply is dependant on the type of crops being grown during that year and the availability of water from the Sacramento River. When rice has been widely planted, the water demand exceeds the available water supply. In these situations Sutter Mutual has purchased water from other sources. When crops such as tomatoes, carrots and beans are widely planted, the available water supply is adequate. During drought years, Sutter Mutual is always very short of water because its supplies are reduced.[18,19]

Pelger Mutual Water Company

Pelger Mutual Water Company supplies irrigation water to a 2,850 acre area. Water is supplied from the Sacramento River, private wells and through recycling. A permit with the Bureau of Reclamation allows 8,860 acre-feet of water per year to be diverted from the Sacramento River. Pelger Mutual Water Company renewed the permit with the Bureau of Reclamation in 2004 for an additional 40 years of service. Water is recycled by using drains to channel excess flow back into irrigation ditches.

During drought years supplemental ground water is supplied by private landowners' water wells.[20]

Oswald Water District

The Oswald Water District serves an agricultural area over 600 acres of tree crops. Water rights date back to the 1930s and allow for 1,200-1,500 acre-feet per year of water to be diverted from the Feather River. In the past, Oswald has not exceeded their limits of water usage. The Feather River is the soul source of water to the district because ground water in the area is too salty to be used for irrigation of the trees.[21]

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17 Peters, Karen, Office Administrator Biggs-West Gridley Water District, personal communication, January 21, 2008.

18 Sakato, Max, Manager Sutter Mutual Water Company, personal communication, October 5, 2007.

19 Peterson, Dennis, Sutter Mutual Water Company, personal communication, October 5, 2007.

20 Tucker, Scott, Manager/President Pelger Mutual Water Company, personal communication, January 22, 2008.

21 Banes, Surjit Director Oswald Water District, personal communication, January 21, 2008.

Tisdale Irrigation District

Tisdale Irrigation District serves an area encompassing approximately 2,100 acres of land. Tisdale has one permit to divert 9,900 acre-feet per year of water from the Sacramento River. Tisdale has one district owned well that is used periodically each year to supplement the Sacramento River supply. There are also 3 to 4 private wells that may be put into service in dry years; however, this is not a common a practice.[22]

Within the District, land is relatively steep and confined making water reuse difficult. Due to the topography and water usage restrictions, rice accounts for just 25 percent of the total crops grown within the District.

Natomas Central Mutual Water Company

The Natomas Central Mutual Water Company (NCMWC) is a private, nonprofit irrigation district consisting of 33,223 acres. Water is supplied primarily by surface water diverted from the Sacramento River; however, they also have one ground well that serves one property adjacent to Garden Highway.

NCMWC has six permits from the Bureau of Reclamation that allow 120,200 acre-ft per year of water to be diverted from the Sacramento River. There is an additional permit for municipal and industrial water that is used for the Sacramento International Airport area, outside of Sutter County. This permit was converted from irrigation use to municipal and industrial in March 2004. During critical, dry years the available water can be reduced by 25 percent, but even during critical dry years, NCMWC staff has stated that they have an adequate water supply.

NCMWC has been able to maintain a low rate of water usage because it uses a closed system design. Water is diverted from the Sacramento River and then transported via pipelines and irrigation ditches to fields. Tailwater from the field irrigation then flows into the drainage ditches managed by Reclamation District 1000. Urban runoff from the area also drains into these ditches. Water in the drainage ditches is reused for irrigation. Together, the tailwater and runoff water increase the supply of available water.

NCMWC is in the process of installing fish screens at all of its Sacramento River diversion pumps. NCMWC also has under taken measures to create habitat and protect species like the giant garter snake and the Swainson's hawk.

Pleasant Grove/Verona Mutual Water Company

The Pleasant Grove/Verona Mutual Water Company provides irrigation water for 7,330 acres of farmland.[23] The company has two contracts with the Bureau of Reclamation for surface water diverted from the Sacramento River. The primary contract allows for 23,790 acre-feet per year

22 Chesini, Larry, President of the Board of Tisdale Irrigation and Drainage Company, personal communication, January 23, 2008.

23 Nicolas, Nicoli, Pleasant Grove/Verona Mutual Water Company, Personal communication, November 29, 2007.

of base supply water. A second contract allows for 2,500 acre-feet per year of project water. These contracts are limited to April-October, and are unique in that the actual water rights used to create these contracts are not owned by Pleasant Grove\Verona Mutual Water Company, but rather by the share holders themselves. The contracts with the Bureau of Reclamation are established by compiling water rights of the individual shareholders into service agreements.

The remainder of the water is supplied by individually owned wells located throughout the service area. The number of wells utilized and the quantity of well water used is unknown. This is due to the fact that the wells are privately owned and operated. Water supplied by the wells is fed into the distribution system used to serve the shareholders.

Pleasant Grove/Verona Mutual Water Company has been very successful at recycling and reusing water within their service area. This has allowed them to maintain a manageable demand throughout the year. However, there is concern regarding adequate water supply during critical years when surface water supply is reduced by the Bureau of Reclamation. An additional concern is that future environmental regulations will restrict surface water supply contracts.

South Sutter Water District

South Sutter Water District is a public agency that provides irrigation water to the surrounding 52,000 acres of land.[24] It is located on the eastern side of Sutter County and extends into portions of Placer County.

South Sutter Water District has no contracts with the Bureau of Reclamation. The surface water they provide is taken only from the Camp Far West Reservoir. The reservoir is located within their service area and maintained by the South Sutter Water District. The District maintains the water rights for this Bear River water supply. In the past South Sutter has also purchased surplus water from the Nevada Irrigation District.

During the summer months South Sutter provides water to some of the smaller creeks to maintain the flow and serve farms downstream of the reservoir. Coon Creek, Marcum Ravine, Pleasant Grove Creek and Bunkham Ravine are the major recipients of this water.

REGULATORY CONTEXT

This section summarizes regulations that are relevant to agricultural water supply and systems.

Federal

The United States Bureau of Reclamation manages the Central Valley Project, which controls flows in the Sacramento River through discharge from Shasta Dam/Reservoir. A number of entities in Sutter County have settlement agreements/contracts with the Bureau of Reclamation for water supplies from the Sacramento River.

State

The State manages surface water diversion rights. As described in Section 3.1.1, the State has also enacted several laws covering use of groundwater.

24 Arnold, Brad, General Manager of South Sutter Water District, Personal communication, November 29, 2007.

Local

Many of the irrigation districts have their own Governing boards, and design, operations, and maintenance criteria.

3.1.3 Wastewater Systems

INTRODUCTION

This section describes the various wastewater systems throughout the county, including the incorporated cities within Sutter County. Figure 3.1-11 presents the areas served by sewer systems and wastewater treatment plants. Also shown on Figure 3.1-11 are the Ranchette parcels within the county that are served by individual septic systems. The issues associated with wastewater are also identified in this section. Information for this section was obtained from applicable reports and studies from Sutter County and Yuba City, as well as communications with Public Works and Utilities staff from their jurisdictions.

SUMMARY OF KEY FINDINGS

- Privately owned septic systems provide for the treatment and disposal of wastewater throughout much of Sutter County. Yuba City, Live Oak, and the Community of Robbins are the only areas in the county with sanitary sewer collection systems and wastewater treatment facilities.
- Use of septic tanks and disposal systems may be contributing to contamination of groundwater within Sutter County. The County is preparing a countywide Groundwater Management Plan. This plan will help the County determine how to protect the County's groundwater resources.
- The Community of Robbins wastewater system is a septic tank effluent pumping system operated by Sutter County Water Works District #1. The Robbins wastewater treatment plant needs repairs and renovations, and the Water Works District #1 is preparing a study to identify the needed improvements. The Robbins sewer fees do not cover the cost to operate and maintain the Robbins Wastewater Facilities.
- Yuba City operates a sanitary sewer collection system and wastewater treatment plant. Yuba City has a wastewater master plan that identifies the facilities required for the City to collect and treat its wastewater through the year 2030. Future growth within the City's Sphere of Influence will be limited until the sanitary sewer system can be expanded to accommodate new growth.
- A majority of Live Oak residents are connected to the City's sewer system and treatment plant. This plant has had past issues due to high contamination levels in the effluent. The design of a new plant has been completed; however, the City of Live Oak does not have adequate funding to construct the required WWTP improvements.

OVERVIEW

Wastewater in Sutter County is either treated at individual parcels with septic systems (on-site treatment facilities) or at community or City wastewater treatment plants, as summarized below:

- Yuba City has a sewer collection system and wastewater treatment plant. The City's Wastewater System Master Plan Update[25] covers the sewer collection system and the wastewater treatment plant. This report estimates future flows to the plant through buildout in the year 2030 and identifies the sewer collection system and treatment facilities that will be required to treat the buildout flow rate.
- The City of Live Oak has a sewer collection system and wastewater treatment plant. The current treatment plant includes an oxidation pond system. The City has prepared a design for a new activated sludge tertiary treatment plant; however, the City does not have funding for the construction.
- The Community of Robbins wastewater system is a Septic Tank Effluent Pumping (STEP) system. Wastewater flows to septic tanks owned by Water Works District #1 but located at each home, where solids settle out and the liquid waste (grey water) is pumped from the septic tank into a six or eight inch sewer force main. The sewers convey the grey water to the 15 acre treatment plant north of the Community. The effluent is pumped into sand filters providing secondary treatment. After being treated, the effluent is released into four unlined evaporation ponds. This system is currently at capacity and is in need of repairs and renovation. The County is preparing a plan to provide these repairs.
- The Rio Ramaza subdivision has 8 homes that are connected to a small wastewater treatment system.
- In the rest of the county, wastewater from individual homes or businesses (or small groups of homes/businesses) is treated and disposed of through on-site treatment systems (septic systems). These septic systems can lead to contamination of groundwater resources if they are not properly sited, designed, constructed, operated and maintained.

EXISTING CONDITIONS

Privately owned septic systems provide for the treatment and disposal of wastewater throughout much of Sutter County. Yuba City, Live Oak, the Community of Robbins, and Rio Ramaza are the only areas with sanitary sewer collection systems and wastewater treatment facilities within the county. These sewer collection systems convey the wastewater from the homes and business to a wastewater treatment plant (WWTP).

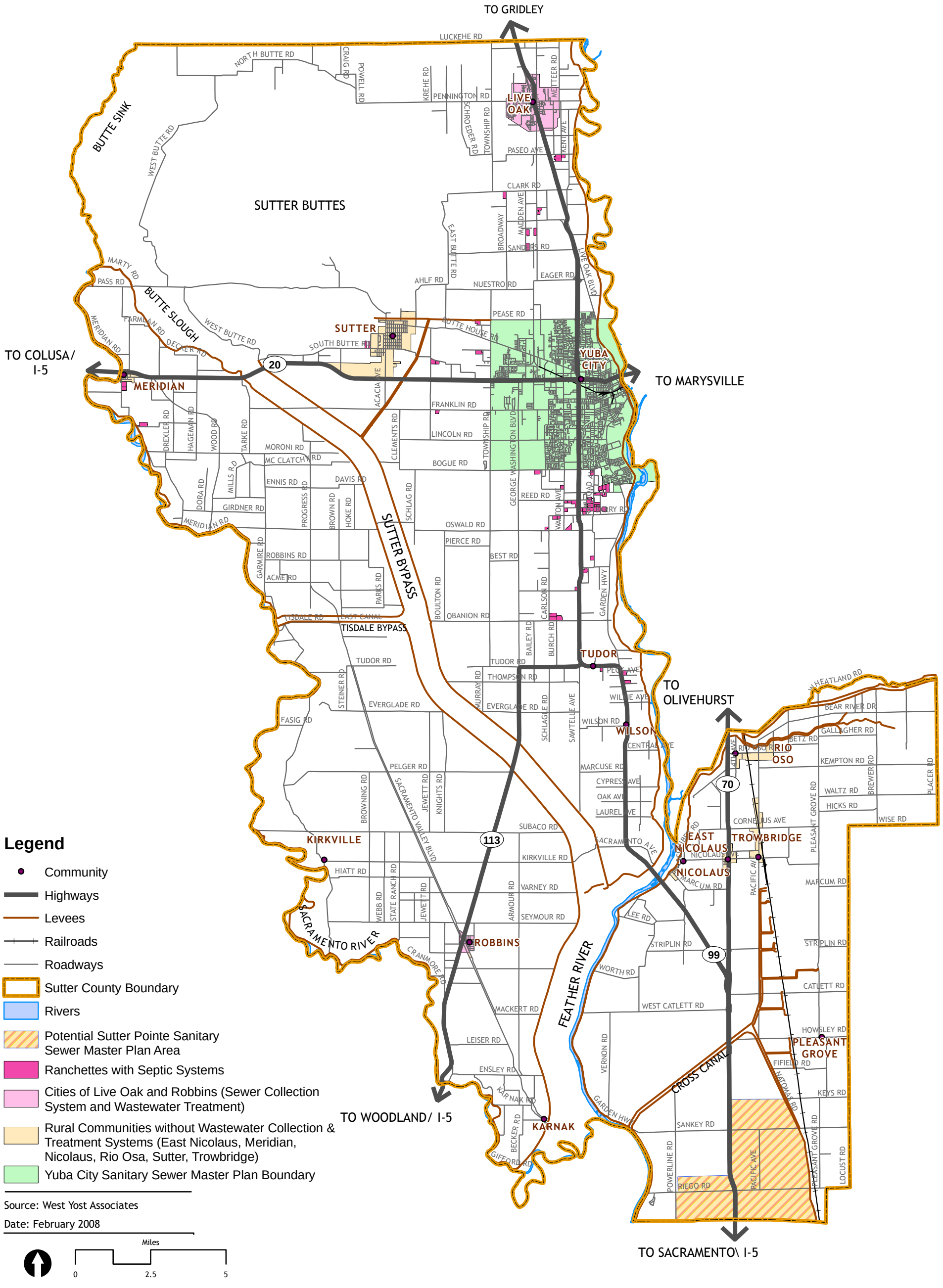
Yuba City discharges its treated effluent to the Feather River. The City of Live Oak discharges its effluent to a Reclamation District 777 drainage canal, which flows to the Sutter Bypass and the Sacramento River. The Community of Robbins effluent is disposed of through evaporation ponds.

Sutter County

Throughout most of rural Sutter County (except Yuba City, Live Oak, and Robbins) wastewater is treated and disposed of through septic systems. Septic systems include a septic tank and a drain field as described below.[26]

25 Kennedy/Jenks Consultants Engineers & Scientists, *Wastewater System Master Plan Update*, prepared for Yuba City, revised March 2006.

26 Ag/Extension Communications for Montana State University web site, August 2005, (http://www.montana.edu/wwwpb/pubs/mt9401.htm).



Legend

- Community
- Highways
- Levees
- Railroads
- Roadways
- Sutter County Boundary
- Rivers
- Potential Sutter Pointe Sanitary Sewer Master Plan Area
- Ranchettes with Septic Systems
- Cities of Live Oak and Robbins (Sewer Collection System and Wastewater Treatment)
- Rural Communities without Wastewater Collection & Treatment Systems (East Nicolaus, Meridian, Nicolaus, Rio Osa, Sutter, Trowbridge)
- Yuba City Sanitary Sewer Master Plan Boundary

Source: West Yost Associates

Date: February 2008

Miles

0 2.5 5

SEWER SERVICES
Figure 3.1-11

The septic tank is a large, underground, watertight container that is connected to the residence's or business' sewer line. While typically designed with a 1,000-gallon liquid capacity, the size of the tank is determined by the number of bedrooms in the home. Septic tanks may be rectangular or cylindrical and may be made of concrete, fiberglass or polyethylene. Raw waste water from the home flows into the tank where the solids separate from the liquid. Light solids, such as soap suds and fat, float to the top and form a scum layer. This layer remains on top and gradually thickens until the tank is cleaned. The heavier solids settle to the bottom of the tank where they are gradually decomposed by bacteria. But some non-decomposed solids remain, forming a sludge layer that eventually must be pumped out. The liquid waste flows into the drain field. Septic tanks may have one or two compartments. Two-compartment tanks do a better job of settling solids and are required in some areas for new installations. Tees or baffles at the tank's inlet pipe slow the incoming wastes and reduce disturbance of the settled sludge. A tee or baffle at the outlet keeps the solids or scum in the tank. All tanks should have accessible covers for checking the condition of the baffles and for pumping the scum and sludge out of both compartments.

Further treatment of wastewater occurs in the soil beneath the drain field. The drain field consists of long underground perforated pipes or tiles connected to the septic tank. The network of pipes is laid in gravel-filled trenches (2-3 feet wide), or beds (over 3 feet wide) in the soil. Liquid waste or effluent flows out of the tank and is evenly distributed into the soil through the piping system. The soil below the drain-field provides the final treatment and disposal of the septic tank effluent. After the effluent has passed into the soil, most of it percolates downward and outward, eventually entering the groundwater. A small percentage is taken up by plants through their roots, or evaporates from the soil. The soil filters the effluent as it passes through the pore spaces. Chemical and biological processes treat the effluent before it reaches groundwater, or a restrictive layer, such as hardpan, bedrock, or clay soils. These processes work best where the soil is somewhat dry and permeable, and contains plenty of oxygen for several feet below the drain field. The size and type of drain field depends on the estimated daily wastewater flow and soil conditions.

Septic systems are an effective method of treating wastewater from individual or small groups of houses and businesses. However, if septic systems are installed at inappropriate locations, overloaded, or not maintained, they can contribute to the contamination of groundwater by introducing nitrates, salts, bacteria, viruses, household chemicals, and other contaminants into the groundwater. These contaminants can then enter potable water supplies through pumping of the contaminated water by water supply wells. Septic systems and groundwater wells are used throughout much of Sutter County for treatment and disposal of wastewater and for potable water supply, respectively.

To function successfully, septic systems must only be installed at locations with appropriate soil conditions. These appropriate conditions include permeable soils with adequate depth to groundwater. Much of the flat Sacramento Valley floor in Sutter County has soils with high clay content and very shallow groundwater. Some of these areas also have hardpan soil layers, which completely prevent percolation of septic tank effluent. In areas with clay or hardpan soils failure of septic systems often leads to untreated or partially treated tank effluent rising to the ground surface. In areas with high groundwater, failure of septic systems often results in contamination of the groundwater with untreated or partially treated tank effluent. Both of these failure types do occur periodically in Sutter County. Septic systems are also used on farm home site parcels and Ranchettes with parcels that range from less than 2 acres to 10 acres in size. Installation of septic systems on many of these small parcels, particularly when they are close together, can lead to contamination of groundwater.

For septic systems to operate successfully, they must be designed correctly, be installed in appropriate locations, and be operated and maintained appropriately. Sutter County ensures that septic systems are designed and installed appropriately by requiring that the system be permitted by the Community Services Department (Environmental Health Division). The permitting process includes testing of the soils to determine their suitability for use with septic systems. If the soils are found to be good, then a standard system can be installed by the home owner. If the soils are less suitable (most often the case in Sutter County), then an engineered septic system is required. A registered engineer must prepare the plans for the system, and the plans must be reviewed and approved by Environmental Health Division. Environmental Health also inspects the construction to ensure that the system is installed correctly.

The septic system tanks must also be serviced periodically. This includes pumping out the solids and scum (septage). Almost all of the septage from Sutter County is disposed of and treated at Yuba City's wastewater treatment plant[27].

Community of Robbins

The existing wastewater collection and treatment system for the Community of Robbins is operated by the County and has an average dry weather flow (ADWF) capacity of 30,000 gallons per day (gpd). The current ADWF to the plant is approximately 25,400 gpd. Consequently, the County is unable to approve requests for additional connections to the Robbins wastewater system.

The Robbins wastewater system is a Septic Tank Effluent Pumping (STEP) system. Wastewater flows to Water Works District #1 owned septic tanks located at each home, where solids settle out and the liquid waste (grey water) is pumped from the septic tank into a six or eight inch sewer force main. The sewers convey the grey water to the 15 acre treatment plant located north of the Community. The effluent is pumped into sand filters providing secondary treatment. After being treated, the effluent is released into four unlined evaporation ponds. The County maintains four monitoring wells at the corners of the evaporation ponds. The monitoring wells have not shown any signs of contamination of the underlying groundwater.

The system is paid for by the citizens of Robbins though sewer fees. The current sanitary service fees have not been increased in 10 years and are approximately fifty percent lower than the actual cost to operate and maintain the wastewater system. The existing system is in need of minor repairs and renovation, and the County is preparing a study to better define the required improvements and determine the best approach to provide the needed repairs and renovation.[28]

Sutter Pointe Specific Plan Area

Sutter Pointe is a proposed development in the southern most area of Sutter County that includes a total area of approximately 7,500 acres. Proposed land uses include residential (17,500 dwelling units) and approximately 50 million square feet of employment (commercial and industrial). The proposed development also includes parks, stormwater detention basins, and schools. The proposed Sutter Pointe Specific Plan is subject to the review, refinement, and approval of the County. Wastewater planning for this development is ongoing and has not yet been finalized. The proposed wastewater system is described below should be considered preliminary and subject to change.[29]

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27 Hill, Jan, Environmental Health Division Specialist III, Sutter County, Personal Communication, January 25, 2008.

28 Sawyer, Al, Assistant Public Works Director, Sutter County, Personal Communication, October 3, 2007.

29 MacKay and Somps Civil Engineers Inc., 2007, *Draft Sutter Pointe Specific Plan, Sewer Master Plan*,

It is anticipated that the sewer collection system will use a combination of gravity flow sewers and pump stations to convey flow to a central pump station. It is proposed that the central pump station will pump the wastewater to the Sacramento Regional County Sanitation District's (SRCSD) Upper Northwest Interceptor (UNI) sewer. The SRCSD interceptor system will convey flows to the Sacramento Regional WWTP, where it will be treated and discharged to the Sacramento River.

Rio Ramaza Subdivision

Currently, the 8 homes in the Rio Ramaza Subdivision are served by 1.5 miles of sewer line, a sewer lift station and two wastewater ponds. Treatment capacity is 10,000 gpd, but the existing ADWF is only 1,400 gpd.[30] The wastewater system is owned and operated by Sutter County.

Yuba City

Yuba City operates a sanitary sewer collection system and a wastewater treatment plant. Future growth within the City's sphere of influence will be limited until the sanitary sewer system can be expanded to accommodate new growth. The required sewer lines have been evaluated in the City's Wastewater System Master Plan Update.[31] Currently, there are no existing sanitary sewer facilities extending beyond the City's sphere of influence, nor are any sewers planned to extend beyond the City's sphere of influence.

The City's wastewater treatment plant was expanded in 2005 to provide an ADWF capacity of 10.5 mgd. For the summer of 2007, the ADWF was approximately 5.5 mgd, and the current peak day wet weather flow rate is approximately 8.5 mgd. The plant is currently discharging secondary, disinfected effluent to the Feather River.[32]

The City's Wastewater System Master Plan Update[33] also covers Yuba City's wastewater treatment plant. This report estimates future flows to the plant through the year 2030 and identifies the treatment facilities that will be required to treat the buildout flow rate.

The Regional Water Quality Control Board (RWQCB) issues permits for wastewater treatment plants. The Yuba City WWTP is currently permitted for an ADWF capacity of 7.0 mgd. However, on October 25, 2007 the RWQCB issued a new permit for an ADWF capacity of 10.5 mgd.[34] This new permit went into effect on December 14, 2007.

The newer developments in the Tierra Buena area of the City's sphere of influence are connected to the City's sewer collection system. However, many older houses in the area utilize septic systems. Often when the septic systems fail or need significant repairs, the home owners connect to the city's sewer system and pay the applicable connection fees. It is likely that most of the Tierra Buena area will ultimately be connected to the City's sewer collection system.

October 5, 2007.

30 [PMC, 2006].

31 Kennedy/Jenks Consultants Engineers & Scientists, *Wastewater System Master Plan Update*, prepared for Yuba City, revised March 2006.

32 Lewis, William P., Utilities Director, Yuba City, Personal Communication, September 17 and 19, 2007.

33 Kennedy/Jenks Consultants Engineers & Scientists, *Wastewater System Master Plan Update*, prepared for Yuba City, revised March 2006.

34 Lewis, William P., Utilities Director, Yuba City, Personal Communication, September 17 and 19, 2007.

City of Live Oak

A majority of the City is currently connected to the municipal sewer system; however there remain individual septic systems throughout town. Typically, when a private system is in need of replacement or major maintenance, it is found to be cheaper to connect to the City's sewer system than to make the necessary upgrades or repairs.

The City of Live Oak maintains its own wastewater treatment plant. The current system is an oxidation pond plant, and the plant consists of several ponds that aerate the wastewater to provide a satisfactory level of treatment. The effluent is disinfected with chlorine. The plant has been issued a cease and assist order by the Regional Water Quality Control Board due to high contaminate levels in the effluent. The design for a new activated sludge tertiary treatment plant is complete; however, the City does not have funding for the construction. Both the existing plant and the proposed plant are designed for an ADWF flow of 1.4 mgd. The peak daily flow at the existing plant is 0.8 mgd. The treated effluent flows through a Reclamation District 777 drainage ditch, the East Intercepting Canal, and the Wadsworth Canal to the Sutter Bypass and then to the Sacramento River.

REGULATORY CONTEXT

This section summarizes regulations that are relevant to wastewater systems.

Federal

Clean Water Act

The Federal Clean Water Act (CWA), established by Congress in 1972, is the cornerstone of surface-water-quality protection in the United States. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct discharges of pollutants into waterways, finance municipal wastewater-treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water" (U.S. EPA, 2003). Section 303 of the CWA requires states to adopt water-quality standards for all surface waters of the United States. Section 304(a) requires EPA to publish water-quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. The CWA prohibits the discharge of pollutants to navigable waters from a point source unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit, as described below.

National Polluant Discharge Elimination System (NPDES) Permits

The NPDES permit system was established in the federal CWA to regulate municipal and industrial discharges to surface waters of the United States. Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that EPA must consider in setting effluent limits for priority pollutants. The quality of the effluent that can be discharged to waterways within the Sacramento area is established by the Central Valley Regional Water Quality Central Board (RWQCB) through Waste Discharge Requirements (WDRs) that implement the NPDES permit. WDRs are updated at least every five years. A new permit must be issued in the event of a major change or expansion of a wastewater treatment facility.

State

Assembly Bill 885. California Onsite Wastewater Treatment System (OWTS) Regulations (AB 885)

This bill has not yet been enacted by the State of California. Nevertheless, it is summarized below.[35]

State Assembly Bill 885 intends to regulate all new and existing onsite wastewater treatment systems including its design, operation, and maintenance. The objective of this bill is to prevent contamination of the surrounding groundwater resources from these onsite wastewater treatment systems. Local governing bodies may pass more stringent rules in addition to the ones listed by AB 885. AB 885 aims to prevent further pollution from onsite wastewater treatment systems by minimizing the concentrations of contaminants like nitrates, total coliforms, iron, manganese, total suspended solids (TSS), and biochemical oxygen demands (BOD) in the effluent. Some of the requirements of this bill include:

- All treatment systems must be inspected at least every five years.
- If an onsite wastewater treatment system (OWTS) exists on a property also containing a domestic well, groundwater monitoring is needed. Two samples are required; one from a monitoring well 100 feet down gradient of the system and the other from the existing domestic well. The first sample must be taken within 30 days of the OWTS installation. Both wells must be monitored at least once every five years thereafter.
- All new OWTS must be designed to maximize the zone of unsaturated treatment and increase the aerobic decomposition of the effluent.
- All new OWTS must be designed by a licensed professional.
- New tanks must reduce solids to one-eight (1/8) an inch prior to passing into the dispersal system.
- Cesspools are not allowed anywhere within the state.
- Additional treatment will be required for systems with insufficient soil depth, high BOD or high TSS levels, and systems requiring nitrogen reduction or disinfection.
- At least a three foot separation will be required between the dispersal system and any bedrock, high groundwater levels or impermeable strata. The three feet must be a continuous soil that has been undisturbed and is unsaturated. The soil may not contain more than thirty percent of rock. (AB 885).
- If the effluent has undergone additional treatment prior to entering the dispersal system, a reduced separation of two feet may be allowed.
- For systems unable to meet the minimum separation requirement engineered fill is recommended to elevate the system. A foot and a half of engineered fill is the equivalent of one foot of natural soil.

35 SWRCB, OWTS Regulations http://www.swrcb.ca.gov/ab885/index.html, 2007.

Sacramento and San Joaquin River Basin Plan

The Water Quality Plan for the Sacramento and San Joaquin River Basins (Basin Plan) includes the entire Sacramento and San Joaquin River basins (including all the tributary rivers such as the Feather River). The Sacramento River basin covers 27,210 square miles and drains to the Sacramento River. For planning purposes, this includes all watersheds tributary to the Sacramento River that are north of the Cosumnes River watershed. Because the County is located within the Central Valley RWQCB's jurisdiction, discharges to surface water or groundwater are subject to Basin Plan requirements. Beneficial uses for specific water bodies are developed in the Basin Plan.

Collection System Regulations

Sanitary Sewer Overflow (SSO) Waste Discharge Requirements (WDRs) were issued by the State Water Resources Control Board (SWRCB) on May 2, 2006. The WDRs apply to collection systems within the state. As part of these regulations, collection system owners and operators are required to develop a Sewer System Management Plan (SSMP).

The beneficial uses of surface waters that can be impaired by SSOs include, but are not limited to the following: aquatic life, drinking water supply, recreation, and aesthetics.

The beneficial uses of groundwater that can be impaired by SSOs include, but are not limited to, drinking water and agricultural supply. Surface and groundwater throughout the state support these uses to varying degrees.

To facilitate proper funding and management of sanitary sewer systems to avoid SSOs, each sanitary sewer system owner or operator is required to develop and implement a system specific SSMP. To be effective, SSMPs must include provisions to provide proper and cost-effective management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Additionally, an SSMP must contain a spill response plan that establishes standard procedures for immediate response to an SSO in a manner designed to minimize water quality impacts and potential nuisance conditions. The SSMP would need to be developed over a three or four year period, depending on the size of the service area.

Local

Sutter County has become increasingly concerned about nitrates from septic systems leaching into groundwater. This is especially a concern in the community of Sutter and the City of Live Oak that maintain public groundwater wells and have septic systems operating in town. Sutter County has adopted an on-site sewage ordinance, Ordinance No. 700, which is based upon the California Health and Safety Code, Porter-Cologne Water Quality Control Act, Water Code Section 1300 and the Central Valley Regional Water Quality Control Board Water Quality Control Plan. The goals of the Ordinance are to protect the public from on-site sewage hazards, regulate the design, installation, maintenance and removal of on-site sewage systems and minimize the effect of on-site sewage systems on groundwater supplies and waters of the State.

The County Environmental Health Division issues permits for septic systems to serve residential, industrial and commercial projects in Sutter County. However, depending on the flows and composition of the waste, additional permitting from the State and Federal government may be required.

Sutter County's sanitary sewer design criteria are published on the County's website (http://www.co.sutter.ca.us/doc/government/depts/pw/design_standards). The criteria identify the requirements for planning and designing sewer systems within the county with a Peak Wet Weather Flow (PWWF) of up to 10 mgd.

3.1.4 Stormwater Drainage

INTRODUCTION

This section describes the various stormwater drainage systems throughout the county, including the incorporated cities within Sutter County. This stormwater drainage section covers the storm drains, detention basins, channels, and pump stations within the interior of the levees that protect and surround much of Sutter County. The levee systems are evaluated in Section 3.1.5 of this report. Information for this section was obtained from applicable reports and studies from Sutter County, as well as communication with staff from the County, Live Oak, the Gilsizer Slough County Drainage District, the California Department of Water Resources, and Reclamation District 70, 1001, and 1500.

SUMMARY OF KEY FINDINGS

- Stormwater drainage throughout much of Sutter County is provided by piped storm drain conveyance systems (in the cities) and open channel systems. Stormwater flowing in these systems is either pumped or gravity drains the water into the Sacramento River, the Sutter Bypass, or the Feather River.
- Within the county and cities, there are several areas where minor field, road, and street flooding occur from the relatively large storms that have occurred over the last 10 years. However, flood damage from local runoff to homes and other structures occurs very rarely within Sutter County.
- There are a few areas that are at risk of flooding even without a levee failure, including the Butte Sink area, an area between Bear River and the Yankee slough, the area east of the RD 1001 watershed, and small areas within Yuba City and the City of Live Oak.
- Additional growth in or around the cities of Yuba City and Live Oak could contribute to increased flooding in the county upstream or downstream of these cities. However, Yuba City has developed a flood control project to address this potential for increased flooding. Similarly, RD 777 is developing a Master Drainage Study to address the potential for increased flooding from growth in the City of Live Oak.

OVERVIEW

There are 11 major watersheds within Sutter County, as shown on Figure 3.1-12. These watersheds generally drain from the northeast to the southwest, consistent with the general ground slope across the county. Most of Sutter County is protected from flooding from the Feather River and the Sutter Bypass by levees; consequently, most of the rainfall and resulting runoff must be pumped into the Feather River. This is done with the pump stations shown as red dots on Figure 3.1-12.

However, one exception to this is the Wadsworth Basin (shown in green on Figure 3.1-12) which flows by gravity into the Wadsworth Canal and then into the Sutter Bypass. Another

exception is the west half of the Sutter Buttes and the Butte Sink Area, which is located west of the Sutter Buttes (the unshaded area on Figure 3.1-12). These areas simply drain into the Sutter Bypass.

As long as the levees function properly, Sutter County is relatively free of flooding problems and resulting flood damage. However, the areas where flooding does occur periodically (a few times over the last 10 years) are shown with red stars on Figure 3.1-12.

Flooding from levee and dam failure is discussed in Section 3.1.5, Levees and Flood Control.

EXISTING CONDITIONS

Adequate stormwater drainage is important because it contributes to the safety of the citizens in Sutter County and the cities within the county. Adequate drainage also eliminates property damage caused by flooding.

Stormwater drainage throughout much of Sutter County is provided by piped storm drain conveyance systems (in the cities) and open channel systems. Stormwater flowing in these systems is either pumped or gravity drains into the Sacramento River, the Sutter Bypasss, or the Feather River. These stormwater systems are owned and operated by a variety of agencies including reclamation districts, cities, Sutter County, and the State of California.

The mean annual precipitation for Sutter County ranges from 21 inches on the eastern boundary to approximately 16 inches along the western boundary, with a county wide average of approximately 18 inches. Historically, there have been several large storms that have resulted in flooding within the county, the largest of which include:[36]

- December 1955 – In this storm 8 to 11 inches of rain fell in an 8 day period.
- October 1962 – In this storm 6 to 9 inches of rain fell in a 3 day period.
- February 1986 – In this storm 6 to 9 inches of rain fell in a 10 day period.
- January 1995 – In this storm over 3 inches of rain fell in a 1 day period.
- January 1995 – In this storm over 7 to 8 inches of rain fell in a 6 day period.

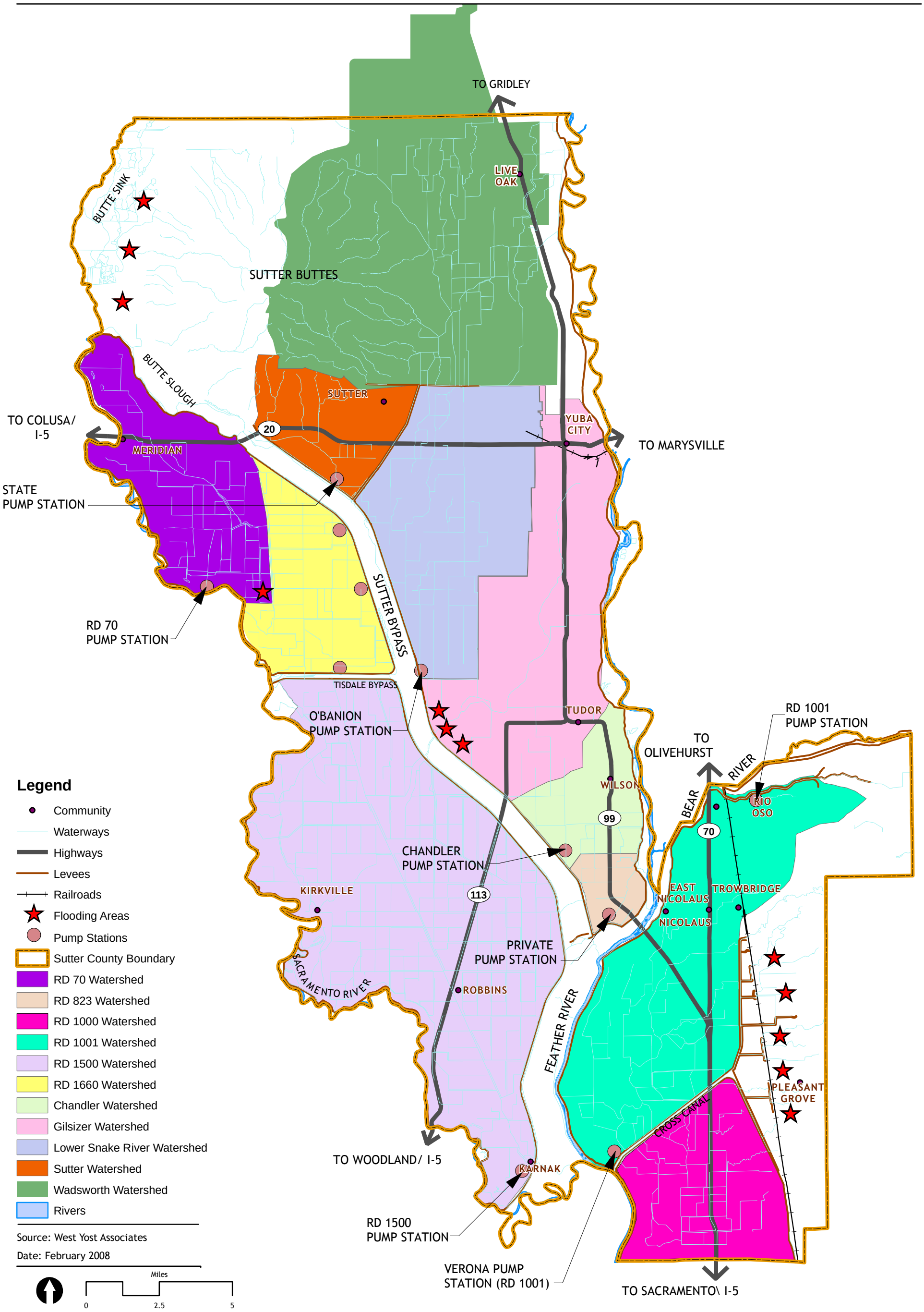
Stormwater drainage facilities are typically sized to address design storms with return frequencies of 2-years to 100-years. A storm with a 2-year rainfall or a larger event is statistically expected to return once every 2 years over a long term average. Alternatively, a storm with a 2-year rainfall or a larger event has a 50 percent probability of occurring in any single year. A storm with a 100-year rainfall or a larger event is statistically expected to return once every 100 years over a long term average. Alternatively, a storm with a 100-year rainfall or a larger event has a 1 percent probability of occurring in any single year.

Design storm rainfall depths have been determined for Sutter County, as summarized in Table 3.1-1.

36 Goodridge, James D., *Design Rainfall Study for Sutter County*, prepared for Sutter County, June 11, 1998.

SUTTER COUNTY
General Plan Update

SUTTER COUNTY
GENERAL PLAN UPDATE



WATERSHEDS WITHIN SUTTER COUNTY
Figure 3.1-12

Table 3.1-1. Average Design Storm Rainfall Depths for Sutter County

Design Storm Return Frequency	Rainfall Depth for 1-Day Duration (inches)	Rainfall Depth for 4-Day Duration (inches)
2-Year	1.91	2.90
10-Year	2.98	4.86
100-year	4.23	7.16

Source: Goodridge, James D., *Design Rainfall Study for Sutter County*, prepared for Sutter County, June 11, 1998.

There are 11 major watersheds within Sutter County, and each watershed is discussed below:[37]

Wadsworth Watershed

This watershed is located in the northeast corner of the county, and includes a total area of approximately 91 square miles. This watershed includes the eastern portion of the Sutter Buttes and a small area within Butte County. The City of Live Oak is fully contained within this watershed. This watershed drains from the north to the south through a series of channels, including:

- Live Oak Slough (also called the RD777 Main Canal), which is owned, operated and maintained by RD 777. This channel drains portions of the City of Live Oak.
- RD 777 Laterals 1, 2, and the RD777 West Intercepting Canal (RD 777 WIC), which are owned, operated and maintained by RD 777. This channel drains portions of the City of Live Oak.
- Morrison Slough is within the RD 2056 service area; however, the majority of Morrison Slough is located on private property, and does not receive routine maintenance by a public agency, except at public roadway crossings.
- Snake River is within the RD 2054 service area; however, the majority of the Snake River is located on private property, and does not receive routine maintenance by a public agency, except at public roadway crossings.
- Sand Creek and the Sutter City Lateral are not within a public district service area. These channels are mostly located on private property, and do not receive routine maintenance unless provided by the property owners.

These channels all drain into the East Intercepting Canal or the West Intercepting Canal, which drain into the Wadsworth Canal (see Figure 3.1-13 for a picture of the Wadsworth canal at Franklin Road). The Wadsworth Canal is a leveed channel that flows into the Sutter Bypass channel. The West and East Intercepting Canals and the Wadsworth Canal are owned, operated, and maintained by the California Department of Water Resources.

The City of Live Oak is currently updating their General Plan, and will prepare a Master Drainage Study for RD 777 to address the increase in flows resulting from the future growth of Live Oak. This Master Drainage Study is expected to be completed in early 2008, and will identify a flood control system that will eliminate increased flooding from the City's growth.[38]

37 [Psomas 1998] Psomas and Associates, *Sutter County Master Drainage Plan*, prepared for Sutter County, March 2002.

38 West Yost Associates, in work draft *Reclamation District 777 Master Drainage Study* prepared for RD 777,

Gilsizer Slough Watershed

The Gilsizer Slough watershed is located in eastern Sutter County and includes approximately 49 square miles. This watershed includes the eastern half of Yuba City. The Gilsizer Slough was originally a natural channel, and it flows generally to the southwest until it reaches the Sutter Bypass Levee. At the levee, the slough enters a constructed channel (the State Drain) that flows to the northwest, against the ground slope to the O'Banion Pump Station. Because this channel must flow against the ground slope, overtopping of the channel banks has occurred, although very infrequently. Most recently, it occurred during the large storm in December 2005 when two of the O'Banion Pump Station pumps were not operational.[39] The Gilsizer Slough is owned and maintained by the Gilsizer County Drainage District or by private property owners.

The O'Banion Pump Station is owned by the State of California and includes 6 pumps, each with a capacity of 120 cfs. It lifts water from the Gilsizer Slough (and the lower Snake River, see below) into the Sutter Bypass. This pump station does not currently have back up power nor does it have automatic/remote monitoring and controls to turn the pumps on/off as water levels rise/fall at the pump station. In 1995 and in 1997 lightning strikes caused power failures at this pump station during storm events.[40] This pump station is shown on Figure 3.1-14. The State is currently in the process of installing a back-up generator adequate to power at least 2 of the pumps and providing automatic/remote monitoring and controls to operate the pumps.[41]

Lower Snake River Watershed

The Lower Snake River watershed is located in central Sutter County, includes the western half of Yuba City, and is approximately 40 square miles. This watershed was disconnected from the Wadsworth Watershed by the construction of the East and West Intercepting Canals. The Lower Snake River watershed drains from the north to the southwest through a series of channels, including:

- Live Oak Canal, which is owned, operated and maintained by Sutter County. Because this facility drains the West Yuba City area, in which significant development is planned, this channel was studied in detail in the West Yuba City Master Drainage Study.[42] With full buildout development, the 10-year peak flow leaving the City would increase from 223 to 1081 cfs, and the 100-year flow would increase from 229 to 1625 cfs. Several flood control alternatives were evaluated to address these increased flows, and one alternative was recommended. The capital cost of the recommended project was estimated at $64 million.
- Lower Snake River – Much of the Lower Snake River is located on private property, and receives maintenance only if provided by the property owners.

currently in work 2007.

39 Kimerer, Dave, Operations Supervisor, Gilsizer Slough County Drainage District, personal communication, October 10, 2007.

40 Dickerson, Ken, Utility Craftsworker Supervisor, California Department of Water Resources, personal communication, August 31, 2005.

41 Dickerson, Ken, Utility Craftsworker Supervisor, California Department of Water Resources, personal communication, October 10, 2007.

42 West Yost Associates, In work draft *Reclamation District 777 Master Drainage Study* prepared for RD 777, currently in work 2007.



Figure 3.1-13

Sutter County General Plan Update
Technical Background Report

WADSWORTH CANAL AT FRANKLIN ROAD

WEST YOST ASSOCIATES
Consulting Engineers



Figure 3.1-14

Sutter County General Plan Update
Technical Background Report

O'BANION PUMP STATION

WEST YOST ASSOCIATES
Consulting Engineers

- Little Blue Creek – Little Blue Creek is mostly located on private property and receives little maintenance.
- State Drain – This channel is owned, operated, and maintained by California Department Water Resources.

These channels all drain to the O'Banion Pump Station, which was described above.

Sutter Watershed

The Sutter Watershed is located in northwest Sutter County and includes an area of approximately 16 square miles. This watershed includes the unincorporated Community of Sutter and drains to the south through several ditches, all of which lead to the State of California DWR Pump Station 3.

Pump Station 3 is owned by the State of California, Department of Water Resources and includes 4 pumps, each with a capacity of 45.5 cfs, for a total capacity of 182 cfs.[43] It lifts water from the Sutter Basin into the Sutter Bypass. This pump station does not currently have back up power nor does it have automatic/remote monitoring and controls to turn the pumps on/off as water levels rise/fall at the pump station. The State is currently in the process of installing a back-up generator adequate to power at least 2 of the pumps and is providing automatic/remote monitoring and control of the pumps.

Chandler Watershed

The Chandler Watershed is located in southeast Sutter County and includes an area of approximately 14 square miles. This watershed drains to the south through several ditches, all of which lead to the Chandler Pump Station.

The Chandler Pump station (also called the State Pump Station 1) is owned by the State of California and includes four pumps, each with a capacity of 70 cfs, for a total capacity of 280 cfs.[44] It lifts water from the Sutter Basin into the Sutter Bypass. This pump station does not currently have back up power nor does it have automatic/remote monitoring and controls to turn the pumps on/off as water levels rise/fall at the pump station. The State is currently in the process of installing a back-up generator adequate to power at least 2 of the pumps and is providing automatic/remote monitoring and controls of the pumps.

RD 823 Watershed

The RD 823 watershed is located in southeast Sutter County and includes an area of approximately 5 square miles. This watershed drains to the south through several ditches, all of which lead to a privately owned pump station that discharges to the Feather River.

RD 70 Watershed

The RD 70 watershed is located in northwest Sutter County and includes an area of approximately 30 square miles. The RD 70 area drains to the southwest through several

43 Dickerson, Ken, Utility Craftsworker Supervisor, California Department of Water Resources, personal communication, October 10, 2007.

44 Dickerson, Ken, Utility Craftsworker Supervisor, California Department of Water Resources, personal communication, October 10, 2007.

ditches, all of which lead to the RD 70 pump station that discharges to the Sacramento River. This pump station has 6 pumps with capacities ranging from 29 to 67 cfs, with a total capacity of 255 cfs.[45] Shallow field flooding in the southeast corner of this district occurs during relatively large storm events, but this flooding has not caused damage to homes or other structures.

RD 1660 Watershed

The RD 1660 watershed is located in northwest Sutter County and includes an area of approximately 20 square miles. Most of this watershed drains to the southwest through one primary ditch to the RD 1660 main pumping station, which has six pumps, each with a capacity of approximately 33 cfs.[46] The RD 1660 Main pumping plant lifts water into the Tisdale Bypass. RD 1660 also has a pumping plant along the Sutter Bypass at Oswald Road with a capacity of 56 cfs, and a pumping plant along the Sutter Bypass at McClatchy Road with a capacity of 49 cfs. During large storms when the Sacramento River and the Tisdale and Sutter Bypasses are full, minor flooding of fields occurs. Twice in the last 35 years this minor flooding caused damage to some low garages within the watershed.[47]

RD 1500 Watershed

The RD 1500 watershed is located in southwest Sutter County and includes an area of approximately 90 square miles. This district includes a total area of 67,851 acres.[48] RD 1500 provides agricultural drainage, levee maintenance (54.35 mile of levees), and flood control services. This watershed drains to the southeast through the Main Drain that runs from near the Tisdale Bypass to the southeast to the District's Pumping Plants 1, 2, and 3, located at the Sutter Bypass. Pumping Plant No. 1 includes six pumps, each with a capacity of 197 cfs. Pumping Plant 2 has no operable pumps. Pumping Plant 3 has four pumps, each with a capacity of 178 cfs.

RD 1001 Watershed

The RD 1001 watershed is located in southeast Sutter County and includes an area of approximately 54 square miles. The communities of Nicolaus, East Nicolaus, Trowbridge, and Rio Oso are located within this watershed. This watershed drains to the south through several ditches and channels to the Verona Pump Station which lifts the water into the Cross Canal. This pump station has 5 pumps, with a total capacity of 577 cfs. This pump station does not have an on-site back up power generator; however, RD 1000 is able to bring in portable generators if needed. RD 1001 also has three small pump stations that lift stormwater from the northern portion of this watershed into the Yankee Slough.[49]

Minor flooding of agricultural fields has occurred, although infrequently, in this watershed during the larger storm events over the last 10 years; however, flooding of homes and other structures has not occurred.[50]

45 Long, Ron, Manager of Reclamation District 70, personal communication October 10, 2007.
46 Long, Ron, Manager of Reclamation District 70, personal communication October 10, 2007.
47 Long, Ron, Manager of Reclamation District 70, personal communication October 10, 2007.
48 Sakato, Max, Manager of RD 1500, personal communication, October 14, 2007.
49 Fales, Diane, Manager of Reclamation District 1001, personal communication, October 10, 2007.
50 Fales, Diane, Manager of Reclamation District 1001, personal communication, 2007.

Butte Sink

The northwest most corner of Sutter County is a low area called the Butte Sink that experiences routine flooding. Floodwater from this area flows into the Sutter Bypass. The FEMA 100-year flood plain extends from the county boundary east to near West Butte Road.

City of Live Oak

Minor street flooding occurs, although infrequently, in the City of Live Oak. Some of these locations include De Ree Road, Luther School, L Street (between Date Street and Pennington Road), and at several Highway 99 cross culverts that do not have connections to the City's storm drain systems.[51] A small downtown area within the City of Live Oak is within the FEMA 100-year flood plain. Many of the road and streets within the City of Live Oak were constructed without curbs and gutters, which contributes to minor nuisance ponding of storm water.

City of Yuba City

The western half of Yuba City is drained by the Live Oak Canal. Within this watershed, minor street flooding has occurred during the larger storm events over the last 10 years. In a 100-year storm event many areas would experience shallow street flooding.[52]

The eastern half of Yuba City is drained by the Gilsizer Slough. In recent years, the Gilsizer Slough County Drainage District has constructed several culvert improvements from the George Washington Boulevard crossing upstream into Yuba City. Since those improvements were constructed, there has not been flooding problems along the Gilsizer Slough.[53]

Within Yuba City only a small area adjacent to the Feather River Levee north of Von Geldern Way is currently within the FEMA 100-year flood plain.

Most of Sutter County is protected from major flooding by the levees along the Sacramento River, Feather River, Sutter Bypass, Tisdale Bypass, and Cross Canal. Because of these levees, runoff from much of the county must be pumped into these rivers and bypasses. During large storm events this sometimes results in minor field flooding, but has very rarely caused damage to homes or other structures. The ditches, channels, and pump stations are owned and operated by a variety of different agencies.

The cities of Yuba City and Live Oak have storm drain collection and conveyance systems that drain into open channels that flow through the county. Within these cities minor street flooding occurs at a few locations in large storm events, although damage to houses or other structures is very rare.

Most of Sutter County is not currently mapped in the FEMA 100-year flood plain. The areas that are within the 100-year FEMA flood plain are listed below:

- The Sacramento and Feather Rivers

51 Bolander, Mike, Public Works Director, City of Live Oak, personal communication with June 19, 2007 and October 17, 2007.

52 West Yost Associates, In work draft *Reclamation District 777 Master Drainage Study* prepared for RD 777, currently in work 2007.

53 Kimerer, Dave, Operations Supervisor, Gilsizer Slough County Drainage District, personal communication, October 10, 2007.

- The Sutter and Tisdale Bypasses
- The Cross Canal and East Side Canal
- Butte Sink area
- An area between Bear River and Yankee Slough
- The area east of the RD 1001 watershed (Figure 3.1-12)
- An area in downtown Live Oak
- A small area in Yuba City near Von Geldern Way

These areas, as shown on Figure 3.1-15, are mapped with the most recent FEMA Q3 data, which is digitized FEMA Flood Insurance Rate Map information used for GIS mapping, and have significant risk of flooding even without a levee failure (see Section 3.1.5, Levees and Flood Control, for a discussion of the levees in the county).

REGULATORY CONTEXT

This section summarizes regulations that are relevant to stormwater drainage.

Federal

Federal FEMA Regulations are described below in Section 3.1.5, Levees and Flood Control.

State

In October 2007, the State of California enacted several relevant bills, including Senate Bills 5 and 17, and Assembly Bills 70, 156, and 162. These bills are described in Section 3.1.5, Levees and Flood Control.

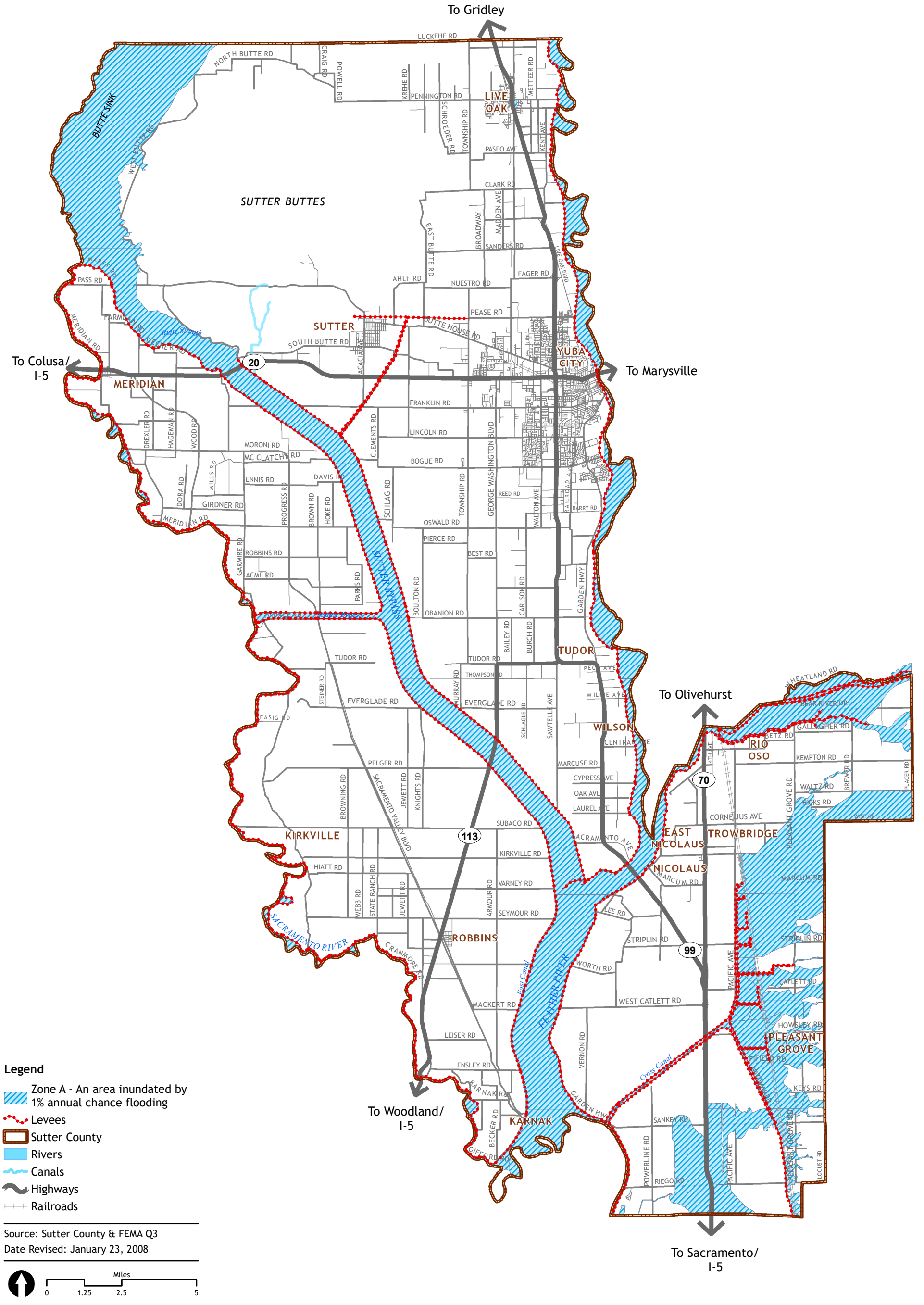
Local

Local drainage regulations are described in the Local Governments drainage design criteria. The drainage Criteria for Sutter County, Yuba City, and Live Oak are summarized below.

Sutter County Drainage Design Criteria

Sutter County's storm drainage design criteria are published on the County's website (http://www.co.sutter.ca.us/doc/government/depts/pw/design_standards); however, these criteria are currently being revised.

- Habitable structures shall be protected from the 100-year flood. For arterial roads, two travel lanes in each direction shall be protected from the 100-year flood. For other roads, one travel lane in each direction shall be protected from the 10-year flood.
- Drainage systems shall be designed to accommodate the ultimate development of the entire upstream watershed.
- The grading plan shall ensure that the flow from a 100-year design storm can flow through the development without flooding structures even in the event of a failure of the storm drain collection system.



Legend

- Zone A - An area inundated by 1% annual chance flooding
- Levees
- Sutter County
- Rivers
- Canals
- Highways
- Railroads

Source: Sutter County & FEMA Q3
Date Revised: January 23, 2008

Miles
0 1.25 2.5 5

PBS&J

FLOOD ZONES AND FLOOD CONTROL LEVEES
Figure 3.1-15

- Runoff rates shall be calculated using the rational method for areas less than 100 acres. For areas greater than 100 acres, or watersheds of any size using runoff detention storage, a unit hydrograph method (using a rainfall-runoff computer model like HEC-1) shall be used with a storm duration of 24 hours.
- Storm drains (closed conduits) shall be designed for the peak 10-year runoff with the maximum hydraulic grade line at least 0.5 foot below the inlet grate/maintenance hole covers. The minimum pipe size shall be 12 inches. The minimum velocity shall be 2 fps. The pipe slope shall equal the hydraulic gradient and the pipe shall be sized with full flow.
- Open channels shall be designed for the peak 100-year flood event. The minimum velocity shall be 2 fps for the 100-year flow rate. The maximum velocity shall be 6 fps for earthen channels, 8 fps for bottom-lined channels and 10 fps for fully lined channels. No channel freeboard requirements are provided.

No detention basin criteria are provided.

City of Live Oak Drainage Design Criteria

City of Live Oak drainage design criteria were published in the June 2003 *City of Live Oak Public Works Improvement Standards*. The criteria are summarized below:

- Placement of fills of any magnitude across an existing drainage course shall incorporate a means by which excess flows not handled by the design drainage system can flow overland via essentially the same course as prior to placing the fill across the drainage course without inundating or damaging any structure.
- The rational formula shall be used for calculating hydrologic and pipe and/or channel design characteristics, i.e., size, type, slope, velocities and entrance, and outlet structures, etc.
- When the flow of water in gutters, caused by a 10-year storm, extends more than eight feet from the face of the curb or overtops the curb underground storm drains are required. Inlet spacing shall not exceed 500 feet. Valley gutters, flow across sidewalks (except on streets abutting single family residential development), concentrated discharges of drainage onto the street shall be eliminated.
- Building pads shall not be inundated during a 100-year frequency (1 percent probability) storm. Traffic lanes shall not be inundated during a design frequency storm. All existing streets shall be assumed to be constructed to ultimate standards. All major drainage channels and natural streams shall be assumed to be constructed to ultimate standards.
- Culverts shall be analyzed using a ponded (i.e., zero velocity) condition upstream unless a definite channel exists or is proposed upstream. Inlet and outlet transition structures shall be provided to minimize entrance and exit losses.
- Minimum size of proposed culverts shall be 12-inches in diameter. The minimum size of pipes shall also be 12-inches in diameter if the City is to maintain the pipes.
- Areas less than forty acres, and where the proposed drainage structure will not be placed in a natural or constructed sump, shall be protected from a 10-year

frequency storm. Culverts under moderate fills are to pass a ten-year storm without static head, and under high fills are to pass a 25-year storm with head; however, no damage due to ponding is to occur.

- Areas larger than 40 acres and less than 160 acres shall be protected from a 25-year frequency storm. Culverts under moderate fills on collector and local streets are to pass a 25-year storm without static head, and under high fills are to pass a 100-year storm with head; however, no damage due to ponding is to occur.
- Areas larger than 160 acres, or where culverts are to be placed under high fills, or where a sump condition exists and damage would result due to ponding and where major streets or a freeway are to be crossed, shall be protected from a 100-year frequency storm. Culverts are to pass a 100-year storm with head; however, no damage due to ponding is to occur.
- The minimum time of concentration shall be 10 minutes.
- Storm drain pipelines shall be accurately constructed to the design lines and grades. The extremely flat grades necessary in the City of Live Oak require particularly careful construction to maintain invert grades within ±0.05 feet vertically. All storm drains should be designed for a minimum velocity of 2 feet per second, flowing full. Precast pipes 24" or larger in diameter may be laid on a horizontal curve. The radius of curve shall not be less than 300' unless special pipe joints with longer lips are used. D-Load criteria shall be used to design all pipes. Precast RCP drains are required in all roadway areas unless top of pipe is more than 36" below subgrade. For non-traffic areas non-reinforced concrete pipe may be allowed.
- Existing drainage ditches and channels belonging to RD 777 adjoining the City shall be piped, improved, or graded and/or enlarged as necessary to carry the design flows listed in the City of Live Oak Master Drainage Plan at the design grade of the channels. Headwalls and wingwalls shall be provided at each end of pipes or box culverts and cleanout access structures shall be provided at intervals of 1,000 feet maximum. Roadway crossings of existing ditches shall be a reinforced concrete pipe, box culvert, or slab bridge with headwalls and wingwalls, sized to carry the design flow of the ditch, at the design grade of the ditch.

No detention basin or pump station criteria are provided.

Yuba City Drainage Design Criteria

The Yuba City drainage design criteria are summarized below. These criteria are not provided in a specific document, but nevertheless represent the general design approach used by the City for storm drain facilities.[54]

- Habitable structures shall be protected from the 100-year flood. All roads shall be protected from the 10-year flood, with the water level at least 1 foot below the gutter elevation. All flow greater than the capacity of the pipe system shall be conveyed or detained in the street section while maintaining a water surface below the adjacent building pad elevation.

54 Musallam, George, Yuba City Public Works Director, January 22, 2008.

- Drainage systems shall be designed to accommodate the ultimate development of the entire upstream watershed.
- The grading plan shall ensure that the flow from a 100-year design storm can flow through the development without flooding structures even in the event of a failure of the storm drain collection system.
- Runoff rates shall be calculated using the rational method for areas less than 100 acres. For areas greater than 100 acres, or watersheds of any size using runoff detention storage, a unit hydrograph method (using a rainfall-runoff computer model like HEC-1) shall be used with a storm duration of 24 hours, 48 hours, or whichever time period is the most critical.
- The minimum storm drain pipe size shall be 18 inches. The minimum velocity shall be 2 feet per second (fps). The pipe slope shall equal the hydraulic gradient and the pipe shall be sized with full flow.
- Detention basins shall be sized to hold a 24-hour, 100-year storm event without pumping, maintaining a water elevation one foot below the lowest drain inlet.

3.1.5 Levees and Flood Control

INTRODUCTION

This section describes the levees and the flood control infrastructure that surrounds much of Sutter County, which provides flood protection from the major waterways in the county. Information for this section was obtained from applicable reports and studies prepared by Sutter County, the Federal Emergency Management Agency, and the U.S. Army Corps of Engineers. See Section 5.5, Flood Hazards, for additional information.

SUMMARY OF KEY FINDINGS

- The primary method of flood control in Sutter County is a system of levees along the Sacramento and Feather Rivers. There are approximately 280 miles of levees within the county.
- Recent and on-going studies have found that some levees within the county do not meet, or have not been certified as meeting, the current levee design criteria. As a result, much of the county is considered vulnerable to flooding due to levee failure.
- SAFCA has a levee improvement project underway that is designed to provide 100-year flood protection to the Natomas Basin by 2010 and 200-year flood protection by 2012.
- It is anticipated that the Sutter County Feasibility Study being performed by the Army Corps of Engineers will produce a plan to provide 100-year flood protection to the major urban areas within the county. It will be several years before this study is complete; however, the non-federal sponsor's planning objective is to achieve 200-year flood protection and to obtain FEMA levee certification.[55]

55 Sutter County California Feasibility Study, October 2004, Feasibility Scoping Meeting (F3 Milestone) Report.

OVERVIEW

The primary method of flood protection provided in the County is via a system of levees or earthen embankments along the Sacramento and Feather Rivers that contain high river flows within these constructed channels.[56] When the capacity of the river levee system is exceeded, the bypass system accommodates the additional flows. A bypass is an auxiliary channel used to pass floodwater. Bypass systems are used in flood protection projects when the potential high flow is larger than the primary river channel capacity. The bypass is usually leveed creating the additional capacity. This type of system can take the load off the primary levee system during critical peak flow periods.

As the Sacramento River flows southward from Shasta Dam, natural overflow areas and two fixed weirs, Moulton and Colusa, permit floodwater to escape from the river into the Butte Sink Basin (Figure 3.1-15). This basin is a natural flowage area that has not been drained and developed as have similar basins to the west and south, and water from the Butte Sink Basin moves into the upstream end of the Sutter Bypass. At the Tisdale Weir, additional water can be diverted from the Sacramento River directly into the Sutter Bypass. The Feather River system, which drains the east side of the Sacramento Valley, enters the Bypass directly. The Sutter Bypass and the Sacramento River join just above the Fremont Weir. This weir divides the joint flow of the river-bypass system, limiting flow into the Sacramento River channel to its capacity and permitting the excess flow to cross the river and enter the Yolo Bypass. Near Sacramento, the Sacramento Weir provides the final escape route from the Sacramento River to the Yolo Bypass.

Failure of any one of these levees could cause major flooding of areas within Sutter County. Similarly, failure of a dam on the Feather River, Sacramento River, or their tributary rivers could lead to flows that exceed the capacity of the river/bypass/levee system and thereby cause major flooding of Sutter County.

Sutter County is actively working with several other agencies to ensure that the levee system that protects the County has adequate capacity, that the structural integrity of the levees is thoroughly evaluated, and that required repairs and maintenance are performed.

EXISTING CONDITIONS

There are approximately 280 miles of levees protecting Sutter County lands from flooding (Figure 3.1-15). A large majority of these levees are part of the Sacramento River Flood Control Project that was constructed by the U.S. Army Corps of Engineers and are now owned and maintained by the State of California. The state has delegated most of the operation and maintenance responsibility to local levee and reclamation districts. The levees provide the County with protection against flooding from the Sacramento River, Feather River, Sutter Bypass, Tisdale Bypass, Wadsworth Canal, Bear River, Yankee Slough, Natomas Cross Canal, East Side Canal, and the Pleasant Grove Canal.

Current flood maps published by the Federal Emergency Management Agency (FEMA) show that the levee systems, with some exceptions, protect the county from flooding during a 100-year storm event; however, most of these flood maps were published in 1988 with a few in 1998 and they do not necessarily reflect the most recent flood studies. When FEMA first produced flood maps for the county, most of the levees were assumed to provide adequate protection based on studies prepared by the U.S. Army Corps of Engineers in the 1960's. However, these

56 Sutter County, *Sutter County General Plan 2015: Background Report*, November 1, 1996.

levees have not been certified as meeting current levee protection criteria. This is a significant issue because FEMA, as a part of its Map Modernization Program, now requires that all levees be certified before the protection they provide will be recognized and reflected on new or updated flood maps. This is true for all levees, even those that were recognized as providing protection on previous maps. To obtain certification, a levee owner must provide FEMA with engineering data that demonstrates compliance with all of the appropriate levee criteria. These requirements include evaluations of freeboard, closure structures, embankment protection, embankment and foundation stability, settlement potential, interior drainage, operations and maintenance, and as-built conditions.

Currently there are draft FEMA floodplain maps that show much of Sutter County within the 100-year floodplain. These maps are expected to be adopted by FEMA around December 2008.

Areas that are currently mapped by FEMA within the 100-year flood zones are shown on Figure 3.1-15 and are based on Q3 data, which is digitized FEMA Flood Insurance Rate Map information used for GIS mapping. A number of studies have been completed or are in progress that will affect the flood protection and FEMA flood mapping within the county (see Section 5.5, Flood Hazards, for additional information).

REGULATORY CONTEXT

This section summarizes regulations that are relevant to levees and flood control systems.

Federal

The National Flood Insurance Act of 1968 made federally subsidized flood insurance available to property owners in communities that participate in the National Flood Insurance Program (NFIP). Sutter County participates in the NFIP and is subject to its regulations. The NFIP is administered by FEMA.

State

California Code of Regulations Title 23 establishes regulations related to the State Plan of Flood Control and State adopted floodways. These regulations are applicable to the levee systems included in the Sacramento River Flood Control Project.

In October 2007, the State of California enacted several relevant bills, as summarized below:

Senate Bill 5 - This bill requires:

- The State must develop 100-year and 200-year flood maps for the Central Valley by July 1, 2008.
- The State must establish a Central Valley flood protection plan by 2012.
- Within 2 years after the adoption of a flood protection plan by the Central Valley Flood Protection Board (formerly the Reclamation Board), communities within the Sacramento-San Joaquin Valley must amend their general plans to include the data and analysis contained in the plan, goals and policies for the protection of lives and property from flooding, and related feasible implementation measures. Within 1 year of the general plan adoption, zoning ordinance amendments must be enacted to maintain consistency with the general plan.

- By 2015, for areas with a population of 10,000 or greater, local governments cannot approve new developments unless the land under review has 200-year flood protection or efforts are in place to provide that level of protection. For areas with a population of less than 10,000, new developments cannot be approved unless the area has 100-year flood protection.
- Requires counties to collaborate with cities within its jurisdiction to develop flood emergency plans.

Senate Bill 17 - Renames the Reclamation Board to the Central Valley Flood Protection Board, sets new criteria for members of the Board, and establishes Senate confirmation for Board members nominated by the Governor.

Assembly Bill 70 - Beginning in 2008, local governments could be held financially liable if they unreasonably approve new developments that are susceptible to flood damage.

Assembly Bill 162 - Requires local governments to consider flood risks in their general plans (after January 1, 2009), including:

- Annually review areas covered by the general plan that are subject to flooding as identified by FEMA or the State Department of Water Resources.
- The Safety Element of the general plan must include flood hazards and set goals, policies and objectives for the protection of the community.
- For communities/counties within the Central Valley, the Safety Element must be submitted to and reviewed by the State Central Valley Flood Protection Board (Formerly the Reclamation Board).
- Allows flood risk to be considered in evaluating the available land suitable for urban development if the flood protection infrastructure required for development would be impractical due to cost or other considerations.
- There is no reimbursement from the State to the local communities for implementing the requirements of this bill.

Assembly Bill 156 - Requires the state to prepare flood maps for areas in the Central Valley that are protected by state levees and to annually notify owners of property behind those levees of their flood risks, starting in 2010.

Local

As a participant in the NFIP, Sutter County is required to adopt and enforce a floodplain management ordinance that minimizes future flood risks to new or existing construction. The County adopted a flood damage prevention ordinance in 1993 and updated it in 2000. It is anticipated that the ordinance will be updated again in 2008. Sutter County's flood damage prevention ordinance is intended to promote public health and safety and minimize losses due to flooding. The ordinance seeks to accomplish these goals by:

- Restricting land-use in flood prone areas;
- Requiring flood protection measures at the time of initial construction for uses that are vulnerable to floods;
- Controls the alteration of natural floodplains;

- Controls activities that may increase flood damage; and
- Prevents or regulates unnatural diversions of floodwaters that could increase flood hazards in other areas.

3.1.6 Solid Waste Management

INTRODUCTION

This subsection discusses the solid waste service providers within the county, solid waste facilities, and solid waste generation rates and diversion. Information for this section was obtained from the California Integrated Waste Management Board (CIWMB) website and communication with staff from the Yuba-Sutter Regional Waste Management Authority and Yuba-Sutter Disposal Inc.

The collection and disposal of solid waste plays an important role in planning for and accommodating both existing and potential future growth in Sutter County. Given stricter standards for the operation and development of landfills, continued advancements in collection and disposal technologies, and additional requirements to divert materials from the waste stream, solid waste management continues to be an evolving and increasingly critical issue for communities. Because solid waste management in Sutter County is addressed through a joint effort with Yuba County and the local cities, the information on solid waste is presented in a bi-county context.

SUMMARY OF KEY FINDINGS

- The Yuba-Sutter Regional Waste Management Authority provides solid waste services to Sutter and Yuba Counties by way of a Joint Powers Agreement between Sutter and Yuba Counties and the Cities of Live Oak, Marysville, Wheatland and Yuba City.
- Yuba Sutter Disposal Inc. provides collection, recycling, and disposal services to all of the incorporated and unincorporated areas of Sutter County via an exclusive franchise agreement with the Yuba-Sutter Regional Waste Management Authority.
- Within the Yuba Sutter Disposal Inc. service area there are more than 30,000 residential customers and 5,000 commercial customers that produce approximately 147,000 tons of waste a year.
- The Ostrom Landfill is the primary disposal site for waste collected by Yuba Sutter Disposal Inc. The Ostrom Landfill can accept a maximum of 3,000 tons of waste a day and is estimated to have enough capacity to remain open until the year 2066.
- The Yuba-Sutter Waste Management Authority and Yuba Sutter Disposal provide a number of recycling facilities and programs available to Sutter County residents and businesses.
- In 2006 Yuba Sutter Disposal Inc. had a 63 percent diversion rate or approximately 150,000 tons of waste diverted from the landfill.

EXISTING CONDITIONS

The Yuba County Environmental Health Program serves as the local enforcement agency (LEA). The LEA oversees solid waste facilities in both counties along with associated reviews permits and regulations under this program for compliance with State and local regulations. Together with the LEA, the Yuba-Sutter Regional Waste Management Authority oversees regional solid waste management, monitoring and evaluation of programs, waste removal services, and solid waste planning

Yuba-Sutter Regional Waste Management Authority was formed in 1990 to provide solid waste services to Sutter and Yuba Counties. The Authority operates by way of a Joint Powers Agreement between Sutter and Yuba counties and the cities of Live Oak, Marysville, Wheatland and Yuba City. The Regional Waste Management Authority office is located in Marysville and is overseen by a Board of Directors made up of a Supervisor from both counties and a City Council member from each of the four cities. All board members are appointed by the associated Boards of Supervisors and City Councils. The Sutter and Yuba Counties' Public Works Department acts as the liaison between city officials and the Yuba-Sutter Regional Waste Management Authority.

The Yuba-Sutter Regional Waste Management Authority is the only multi-county solid waste planning agency in the State of California and was formed for the purpose of providing reliable, economical, integrated and environmentally sound waste management services to the residents, businesses and organizations of the bi-county area. The Regional Waste Management Authority is responsible for municipal solid waste management planning and compliance efforts required by the California Integrated Waste Management Board, California Department of Toxic Substances Control and the California Water Quality Control Board.

Solid Waste Collection

The Regional Waste Management Authority works in conjunction with Yuba-Sutter Disposal, Inc. (YSDI) to provide for the collection, recycling and disposal of municipal solid waste from each member jurisdiction under an exclusive franchise agreement. The YSDI serves more than 30,000 residential customers and 5,000 commercial customers.[57] YSDI provides weekly refuse collection of: commercial and residential solid waste, garden waste, curb-side recycling, and oversized items. They also provide refuse and recycling bins for construction sites. YSDI's main offices are located in Marysville.

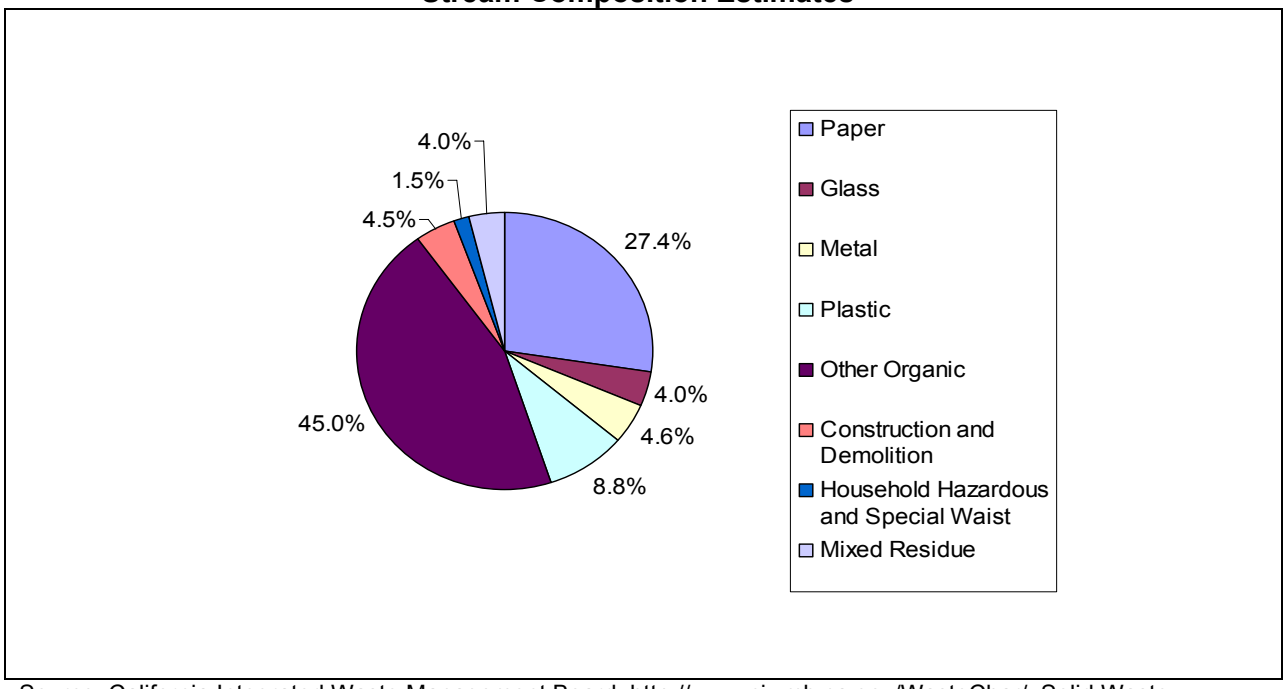
The 2005 California Integrated Waste Management Board data shows that the YSDI collected approximately 146,772 tons of waste within the Yuba-Sutter Regional Waste Management Authority service area. Of the waste collected, approximately 31,000 tons (21 percent) of refuse was from residential sources, and 116,000 tons (79 percent) of refuse was from commercial sources. Almost 80 percent of the yearly refuse was non-residential with medical and health service sectors contributing the highest business percentage of waste disposal at fifteen percent.[58]

As illustrated on Figure 3.1-16, almost half of the Yuba Sutter household waste stream is composed of organic material with paper being the second highest material discarded.

57 California Integrated Waste Management Board, http://www.ciwmb.ca.gov/WasteChar/rescomp.asp Solid Waste Characterization, Retrieved on 8/29/07.

58 California Integrated Waste Management Board, http://www.ciwmb.ca.gov/Profiles/Juris/JurProfile2.asp Jurisdiction Profile, Retrieved on 8/29/07.

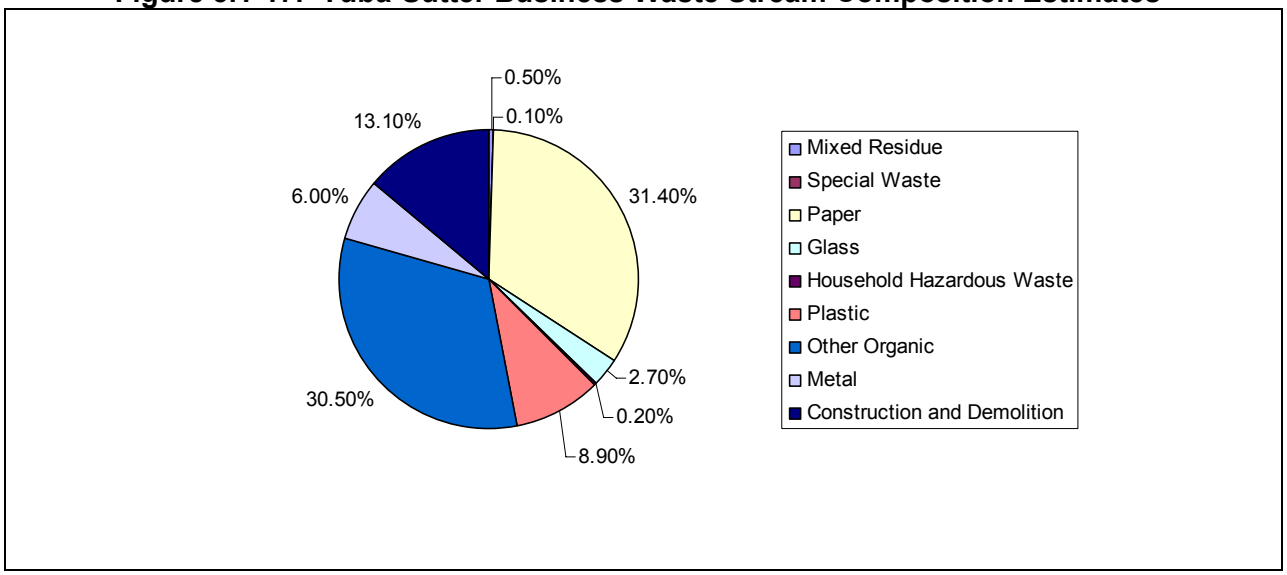
Figure 3.1-16. Yuba-Sutter Household Waste Stream Composition Estimates[1]



Source: California Integrated Waste Management Board, http://www.ciwmb.ca.gov/WasteChar/, Solid Waste Characterization, accessed August 29, 2007.
[1]Based on 2000 Statewide Estimates.

Yuba-Sutter Business waste stream composition estimates are illustrated on Figure 3.1-17 and show that both paper and other organic materials combined account for over 61 percent of the waste stream.

Figure 3.1-17. Yuba-Sutter Business Waste Stream Composition Estimates[1]



Source: California Integrated Waste Management Board, http://www.ciwmb.ca.gov/WasteChar/, Solid Waste Characterization, accessed August 29, 2007.
[1]Based on 1999 Statewide Estimates.

Table 3.1-2 shows the amount of solid waste disposal amounts for each RWMA jurisdiction including direct self waste haulers.

Table 3.1-2. 2006 Ostrom Road Landfill Disposal Amounts for Each RWMA Jurisdiction[1]

	Via Marysville Transfer Station	Via Ponderosa Transfer Station	Via Direct Hauler	Total Disposal At Ostrom Road Landfill
Marysville	17,293	N/A	1,011	18,304
Yuba City	54,130	N/A	576	54,706
Wheatland	1,383	N/A	1,245	2628
Yuba County	35,195	N/A	3,859	39,054
Sutter County	17,235	N/A	368	17,603
Live Oak	5,262	N/A	0	5,262
Total	130,497	433	7,059	137,989

Source: Correspondence, Aurora Environmental, Alyson Burleigh January 18, 2008.
[1]The disposal amounts in this table represent most of the disposal reported for 2006. Additional disposal amounts were reported at landfills outside of Yuba and Sutter Counties, but are usually reported for the region, rather than by jurisdiction.

Solid Waste Facilities

Table 3.1-3 outlines area solid waste facilities and their operational status, with the location of each facility.

Table 3.1-3. Sutter-Yuba Solid Waste Facilities

	Land Owner	Operator	2007 Status
Ponderosa Transfer Station	US Bureau of Land Management	YSDI	Open
Yuba-Sutter Disposal, Inc. M.R.F.	YSDI	YSDI	Open
Household Hazardous Waste Facility	Waste Management Authority	YSDI	Open
Yuba-Sutter Disposal Inc. Recycling Buy-Back Center	YSDI	YSDI	Open
Ostrom Landfill	Norcal Waste Systems Ostrom Road LF Inc	Norcal Waste Systems Ostrom Road LF Inc	Open
Yuba-Sutter Disposal Area (YSDA)	D. Barbieri	D. Barbieri	Abandoned
YSDI Sanitary Landfill – Marysville	YSDI	YSDI	Closed

Source: Yuba Sutter Disposal Incorporated. http://www.ysdi.com/, accessed August 29, 2007.
California Integrated Waste Management Board. http://www.ciwmb.ca.gov/swis/SiteListing.asp, accessed August 29, 2007.

As noted in Table 3.1-3, the North Levee Road Marysville Landfill operated by the YSDI is closed to the acceptance of all waste. This facility closed in 1997. The refuse previously disposed of at this facility is now transported to the Ponderosa Transfer Station located in Brownsville and the YSDI Transfer Station located in Marysville where the refuse is processed for the Ostrom Road Landfill in Wheatland.

Each of the open solid waste facilities is briefly described below:

Ponderosa Transfer Station

Yuba-Sutter Disposal, Inc. operates the Ponderosa Transfer Station leased from the United States Bureau of Land Management. The facility is located on Ponderosa Way in Brownsville California. The facility is the processing location for municipal solid waste that is unloaded from collection vehicles and briefly held while it is reloaded onto larger long-distance transport vehicles for shipment to the Ostrom landfill.

Yuba-Sutter Disposal, Inc Materials Recovery Facility (MRF)

Yuba-Sutter Disposal, Inc. owns and operates the MRF, located on North Levee Road in Marysville. The facility includes a refuse transfer station, material recovery (recycling) facility, composting facility, buy-back recycling center and certified used oil collection center. The seven acre facilities permitted capacity is 1,615 tons per day.[59]

Yuba-Sutter Disposal Inc. Recycling Buy-Back Center

The Yuba-Sutter Recycling Buy-Back Center is housed at the Yuba-Sutter Disposal, Inc. MRF located at North Levee Road in Marysville. The facility provides payment to customers for containers that have an associated California Redemption Value.

Household Hazardous Waste Collection Facility

The Yuba-Sutter Household Hazardous Waste Facility located on Burns Drive in Yuba City is operated by Yuba-Sutter Disposal, Inc. under an agreement with the Regional Waste Management Authority. The facility recycles common household products such as cleaning supplies, oils, batteries, and paint.

Ostrom Landfill

The Ostrom Road Landfill is located in Wheatland (Yuba County) and is owned and operated by Norcal Waste Systems Ostrom Road LF Inc., a sister company to YSDI, and is the primary location for the disposal of waste by the YSDI. The 225 acre Class II Landfill is permitted to accept the following types of waste: solid waste; waste water treatment sludge; construction debris; food and green waste; some types of contaminated soils; and non-friable asbestos.[60] The landfill can accept a maximum of 3,000 tons of waste a day; and is estimated to have enough capacity to remain open until the year 2066 with only about three percent in use as of 2006.[61]

Leachate Control

Leachate is the moisture that comes from the decomposition of material in a landfill. If left uncontrolled, landfill leachate can seep into area groundwater contaminating potential water sources. Federal regulations adopted in 1993 require municipal landfills to incorporate liners with a leachate collection, removal and monitoring system.

59 California Integrated Waste Management Board. http://www.ciwmb.ca.gov/swis/SiteListing.asp, Retrieved 8/29/07.

60 California Integrated Waste Management Board, http://www.ciwmb.ca.gov/Profiles/Facility/LandFill/LFProfile1.asp.

61 Ostrom Landfill, http://www.ostromroadlandfill.com/. Retrieved on 8/29/07.

Ostrom Road Landfill began operation in 1995 as the first landfill facility in California to receive approval to operate under the new Subtitle D regulations requiring liner systems, leachate collection and recovery systems, water quality monitoring systems, and other environmental protection measures.

Solid Waste Diversion

The Integrated Waste Management Act (Assembly Bill (AB) 939) requires that all California jurisdictions must prepare a Source Reduction and Recycling Element (SRRE) that outlines programs to achieve the mandated 50 percent diversion rate by the year 2000[62]. The Yuba-Sutter Waste Management Authority has met the requirements set forth by AB 939. In 1992 a joint Yuba-Sutter SRRE was prepared outlining graduated steps to achieve the waste stream reduction requirements. The existing (1992) SRRE is still being utilized by the Yuba-Sutter Waste Management Authority, however it is not required to have diversion rate reduction plan past the 50 percent mandated mark for 2000. In 2006 YSDI had a 63 percent diversion rate or approximately 150,000 tons of waste diverted from the landfill.[63] Diversion rates are calculated under the joint powers agreement that includes both Sutter and Yuba counties. The joint diversion rates are used to meet the standards set forth by AB 939.

Tons of waste diverted from the Sutter-Yuba joint service area has continued to increase over the last seven years to meet the diversion requirements of AB 939. The Yuba-Sutter Regional Waste Management Authority continues to implement programs to reduce waste streams and have maintained a diversion rate higher than the mandated 50 percent since 2000. Table 3.1-4 gives an overview of Yuba-Sutter diversion rates with associated waste generation numbers. It is noted that the sharp increase in diversion rates between 2003 and 2004 is due to the recalculation of the Yuba-Sutter base waste stream numbers from the 1990 figures previously used by CIWMB as base rates for estimated waste stream and diversion numbers.

Table 3.1-4. Sutter-Yuba Solid Waste Disposal and Diversion Estimations

Year	Tons Disposed	Tons Diverted	Tons Generated	Diversion Rate
1999	132,294	53,900	185,863	29%
2000	134,134	69,029	203,026	34%
2001	137,442	51,103	189,272	27%
2002	125,467	64,961	191,063	34%
2003	124,351	62,649	174,026	36%
2004[1]	126,818	258,525	385,343	69%
2005	146,772	252,575	399,347	63%

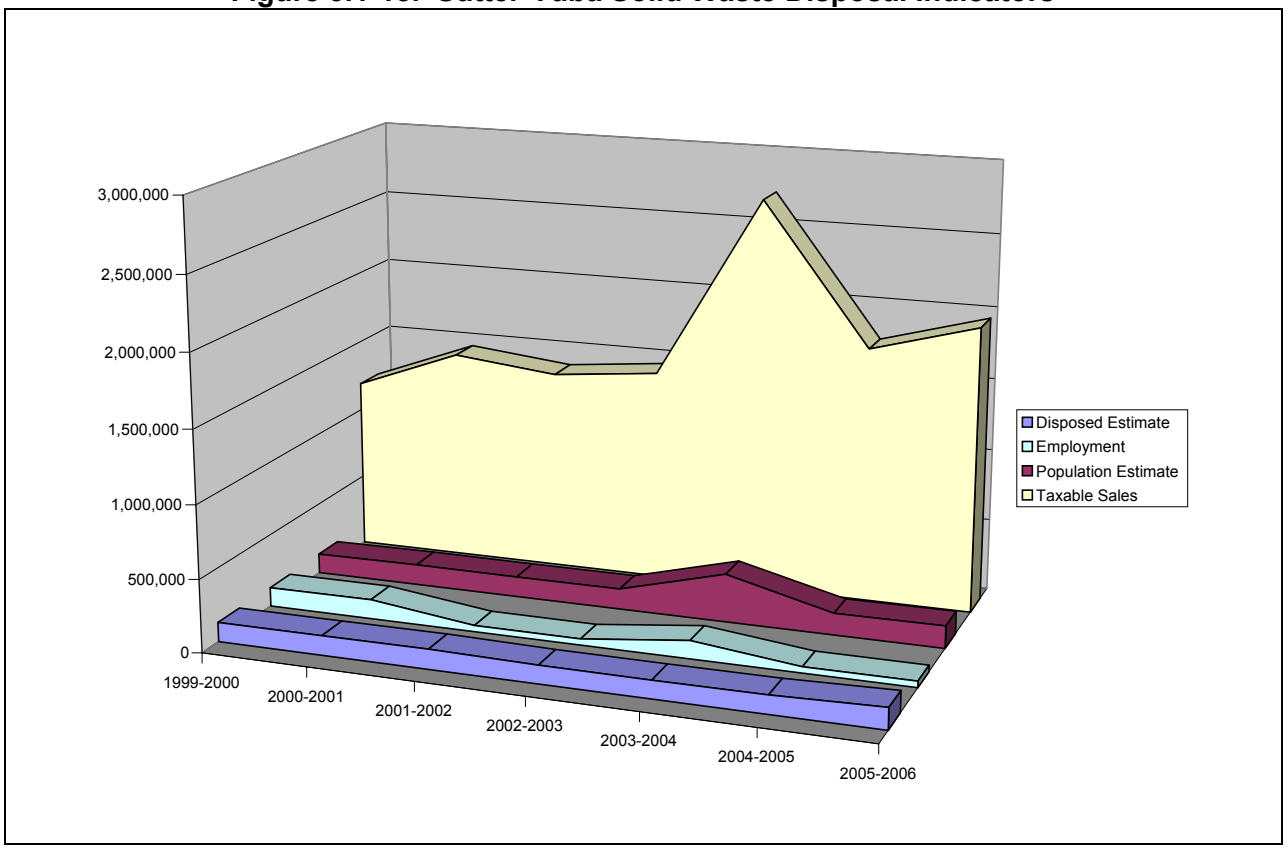
Source: California Integrated Waste Management Board, http://www.ciwmb.ca.gov/Profiles/Juris/JurProfile2.asp Jurisdiction Profile, accessed August 29, 2007.
[1]2004 diversion rate reflects the increased biomass diversion in both the counties.
Note: preliminary diversion rates subject to change with board approval.

Population, employment and taxable sales are used as area indicators for solid waste disposal rates. The Sutter-Yuba region showed positive growth in all indicators with relatively flat growth in solid waste disposal rates. With the onset of AB 939 diversion rates have steadily increased

62 California Integrated Waste Management Board, http://www.ciwmb.ca.gov/Statutes/Legislation/CalHist/1985to1989.htm, Legislation, Retrieved on 8/29/07.
63 Correspondence Waste Resource Management, 11/26/07.

over the last seven years resulting in less waste disposed in area landfills as illustrated on Figure 3.1-18.

Figure 3.1-18. Sutter-Yuba Solid Waste Disposal Indicators



Source: California Integrated Waste Management Board, http://www.ciwmb.ca.gov/Profiles/Juris/JurProfile2.asp Jurisdiction Profile, accessed August 29, 2007.
Note: preliminary diversion rates subject to change with board approval.

Solid Waste Recycling and Disposal Programs

The YSDI has several recycling and solid waste disposal programs in place within Sutter County. YSDI currently operates a materials recovery facility that extracts recyclables from the waste stream, two transfer stations, one Household Hazardous Waste Collection facility, a buy-back center and a green waste composting facility.

In conjunction with the services provided by the YSDI, the Regional Waste Management Authority provides recycling programs in the member jurisdictions that include: free tire disposal vouchers; reuse opportunities; alternative nontoxic household chemicals; waste reduction programs; school and business recycling programs as outlined in Table 3.1-5.

Recycling

Curbside recycling is available to county residents for plastic, glass, paper, cardboard, green waste, aluminum, tin, and other ferrous and non-ferrous metals. Glass and aluminum containers with a California redemption value can be recycles at the Yuba-Sutter Disposal Inc. Recycling Buy-Back Center or alternative private recycling locations as outlined in Table 3.1-6.

Table 3.1-5. Sutter County Waste Stream Diversion Programs

Type of Program	Program Implementation
Source Reduction	Backyard and On-Site Composting/Mulching
	Business Waste Reduction Program
	Procurement
	Material Exchange, Thrift Shops
Recycling	Residential Curbside
	Residential Drop-Off
	Residential Buy-Back
	Commercial On-Site Pickup
	School Recycling Programs
	Special Collection Seasonal (regular)
	Special Collection Events
Composting	Residential Curbside Green Waste Collection
	Residential Self-haul Green Waste
	Commercial Self-Haul Green Waste
Special Waste Materials	Tires
	Scrap Metal
	Wood Waste
	Concrete/Asphalt/Rubble
	Rendering
Public Education	Electronic (radio ,TV, web, hotlines)
	Print (brochures, flyers, guides, news articles)
	Outreach (tech assistance, presentations, awards, fairs, field trips)
	Schools (education and curriculum)
Policy Incentives	Economic Incentives
Facility Recovery	MRF
	Transfer Station
	Composting Facility
	Alternative Daily Cover
Transformation	Biomass

Source: Yuba-Sutter Regional Waste Management Authority, http://www.yubasutterrecycles.com, accessed November 26, 2007.

Table 3.1-6. Private Recycling Facilities

Name	Location	Materials Accepted
EH Recycling	593 Bridge St Yuba City	California Redemption Value (CRV) beverage containers.
Empire Steel	3094 N. Township Rd, Yuba City	California Redemption Value (CRV) beverage containers and scrap aluminum, copper, brass, steel and tin.
NexCycle/Bel Air Market	1286 Stabler Lane, Yuba City	California Redemption Value (CRV) beverage containers.
NexCycle/Raley's	007 W. Onstott Rd, Yuba City	California Redemption Value (CRV) beverage containers.
Recycling Industries	389 Wilbur Ave, Yuba City	California Redemption Value (CRV) beverage containers; other aluminum, plastic and glass beverage containers; cardboard, newspaper, office paper, colored paper and magazines.
Yuba City Scrap & Steel, Inc.	1312 Garden Hwy, Yuba City	California Redemption Value (CRV) beverage containers and scrap aluminum, copper, brass, stainless steel and lead.

Source: Yuba-Sutter Regional Waste Management Authority, http://www.yubasutterrecycles.com, accessed November 26, 2007.

Additional recycling opportunities are available through the Household Hazardous Waste Collection facility that recycles used motor oil, antifreeze and other vehicle fluids, batteries, paints, and varnishes. The Household Hazardous Waste Facility also maintains a Reuse Center with products such as recycled paint, gardening supplies, automotive fluids and cleaning products that are free to the public.

Electronic Waste Program

The Regional Waste Management Authority and Yuba-Sutter Disposal, Inc. have implemented an Electronic Waste Recycling Program for Yuba and Sutter County residents and businesses. The YSDI electronic waste (e-waste) program takes in about 20,000 pounds of e-waste per week. In 2005 the e-waste facility processed approximately 330 tons of material.[64] Electronic waste items can be recycled at Yuba-Sutter Disposal, Inc Transfer Station in Marysville or the Household Hazardous Waste Facility in Yuba City.

Infectious Waste

Infectious waste includes hypodermic needles, syringes and lancets, from area residents, medical and veterinary facilities. Infectious waste stored in puncture resistant containers can be dropped-off at the Yuba-Sutter Household Hazardous Waste Facility.

Construction and Demolition Debris

YSDI in conjunction with the Ostrom landfill offer designated construction and demolition debris bins that separate materials from the general landfill waste stream for further processing and recycling. Constriction and demolition debris is composed of a variety of waste materials including steel, asphalt, concrete, brick, plaster, wallboard and piping. Some materials may need additional handling due to hazardous materials such as asbestos and lead paint.

Tire Disposal Program

Proper disposal of old tires is important due to the danger to public health and safety with tires being a potential fire hazard and a potential breeding ground for rodents or insects. Through the tire disposal program Sutter County residents can request a voucher for the free drop-off of up to 19 passenger car and light truck tires at either the Yuba-Sutter Disposal, Inc. MRF or the Ponderosa Transfer Station. Tires received at these facilities are sent to a recycling facility. State law limits the number of used and waste tires that can be hauled at one time without a valid and current waste and used tire hauler registration. Waste tire bin service is also available to county businesses through YSDI.

Waste Audit Programs

The YSDI offers free waste audits available to local businesses to determine what part of their waste stream is recyclable along with the financial advantage to reducing waste flows. Through the program larger exterior recycling carts are typically provided along with smaller interior collection containers to maximize the recycling by employees. The program is free to participating businesses and is partially funded by the Regional Waste Management Authority with grants from the California Department of Conservation.

64 Hightower, Eve. Yuba-Sutter Joining Battle Against E-Waste. Appeal-Democrat, February 3, 2006.

Public Education Programs

Public education programs are provided by the YSDI and the Yuba-Sutter Regional Waste Management Authority to outline the benefits of waste reduction. Educational programs include business waste reduction education and assistance, instructional and promotional programs, award programs, and educational materials.

YSDI offers classroom presentations to area schools on waste management, recycling, and composting topics. School tours of the Marysville Material Recovery Facility, Buy-Back Center and Transfer Station are also available to promote environmental awareness. Additionally educational information links can be found on the Yuba-Sutter Regional Waste Management Authority web site including, educational games, videos, as well as information on recycling and waste management.

Financing and Revenue

Regulatory fees are collected to service the bi-county region curb side pickup, education programs and local enforcement agency such as the Regional Waste Management Authority.

REGULATORY CONTEXT

Federal and State

Solid waste management is conducted under Federal and State regulatory policies as implemented and enforced by the California Integrated Waste Management Board (CIWMB) and the Regional Water Quality Control Board (RWQCB).

Title 40 of the CFR

Title 40 of the Code of Federal Regulations (CFR), Part 258 (Resource Conservation and Recovery Act RCRA, Subtitle D) contains regulations for municipal solid waste landfills and requires states to implement their own permitting programs incorporating the federal landfill criteria. The federal regulations address the location, operation, design, groundwater monitoring, and closure of landfills

Assembly Bill 939

Requirements set forth in federal regulations are enacted by the California Public Resources Code Sections 40000 et seq. (California Integrated Waste Management Act). The state agency charged with the permitting of solid waste facilities is the California Integrated Waste Management Board. Assembly Bill 939 (AB 939) (Public Resources Code 41780) is designed to increase landfill life and conserve other resources through increased source reduction and recycling. AB 939 requires cities and counties to prepare Solid Waste Management Plans to implement AB 939's goals, particularly to divert approximately 50 percent of solid waste from landfills. AB 939 also requires cities and counties to prepare Source Reduction and Recycling Elements. These elements are designed to develop programs to achieve diversion goals, stimulate local recycling in manufacturing and stimulate the purchase of recycled products.

State Water Quality Control Board

The State Water Resources Control Boards (SWRCB) resolution number 93-62 (Policy for Regulation of Discharges of Municipal Solid Waste) regulates the discharge of municipal solid waste that can adversely affect area water quality. The policy was adopted in 1993 to bring

discharges into compliance with the SWRCB's Title 27 regulations and with the federal MSW regulations. The policy directs each Regional Water Quality Control Board (RWQCB) to revise the waste discharge requirements for each discharger in its region who owns or operates a municipal solid waste landfill (MSW landfill) that received waste after October 9, 1991.

Local

The Yuba County Environmental Health Program serves as the local enforcement agency (LEA) designated by the County Board of Supervisors, upon certification by the Integrated Waste Management Board, and is empowered to implement local and Waste Management Board programs. LEAs have the main responsibility for ensuring the proper operation and closure of solid waste facilities in their jurisdiction. They also have responsibilities for assuring the proper containment and transportation of solid wastes.

The County Department of Environmental Health regulates hazardous material use and disposal.

The Sutter County Subdivision Ordinance section 1400-825 requires multi-family development projects to incorporate measures which address recycling and solid waste disposal for new development.

3.1.7 Energy Resources

INTRODUCTION

This chapter provides an overview of the energy trends and forecasts in Sutter County as well as the existing and potential types of energy production for the county. Information for this section was obtained from the California Energy Commission, the California Division of Oil Gas and Geothermal Resources, the State Division of Mines and Geology, and communications with staff from Pacific Gas & Electric (PG&E).

In general, consideration of energy resources in land use decision-making is absent from the planning process. Although some exceptions exist, most energy considerations of current land use planning practices relate exclusively to transportation issues: reducing the number of vehicle miles traveled (VMT), thus reducing fuel consumption, air pollution, and roadway congestion. There is also a focus on increasing density, changing zoning to allow for mixed use development, and building near transit stations to achieve these aims. An additional consideration in making planning decisions should include the host of related energy support services and infrastructure—fueling stations, transmission lines, power plants and pipelines—and the potential for distributed renewable generation and energy efficient design.

SUMMARY OF KEY FINDINGS

- PG&E provides electrical and gas service to customers within Sutter County.
- Natural gas service is provided only to the urbanized areas of Yuba City and Live Oak, and to the community of Nicolaus.
- In 2005, Sutter County consumed 568 million kilowatts of energy.
- Sutter County contains extensive natural gas deposits at the base of the Sutter Buttes and in the Meridian and Robbins Basins.

- Sutter County has a total of 922 gas wells, 293 of those in productive status.
- In 2006, the county produced roughly 25 million cubic feet (mcf) of natural gas. This represents nearly 3 percent of the total natural gas production in the state.
- Natural gas well production and permitting has become a concern to the Board of Supervisors.
- There are four existing cogeneration facilities in Sutter County. The facilities are fueled by natural gas, supporting industrial or commercial uses, while generating surplus electricity.
- Solar energy is an alternative energy opportunity in the county.
- PG&E sponsors several energy conservation programs that include education, solar energy incentives, florescent lighting business program and a weatherization program.

EXISTING CONDITIONS

Electricity Provider

Electricity purchased from PG&E by local customers is generated and transmitted to the County by a large network of power plants and transmission lines located throughout California. Most of the electrical service in the County is carried through above-ground lines. However, new urban development is now typically served by underground service. In addition, PG&E maintains a program to underground existing service lines. PG&E currently has sufficient energy supplies and distribution facilities to meet anticipated demands and growth in the county. PG&E also has two public utilities yards located in Sutter County to aid with service calls, maintenance and area outages. One maintenance yard is located on Central Street in the community of Meridian and the other yard is located on North Live Oak in Yuba City. Sutter County has five energy generation facilities composed of two peaker facilities (the Yuba City Energy Center and the Feather River Energy Center) and three cogeneration facilities that sell excess power to PG&E and the open market. There has continued to be a steady increase in electric energy use in the county with additional growth and energy needs. Natural gas has a more demand driven market and fluctuates during the years with the fluctuation of weather and temperature. As the population of the county increases, the demand for these energy sources will also increase. Table 3.1-7 shows energy consumption and number of accounts for Sutter County.

Table 3.1-7. Sutter County Energy Consumption

	Residential		Nonresidential		Totals	
	# of Accounts	Kwh Million	# of Accounts	Kwh million	# of Accounts	Kwh million
1996	27,308	221	7,550	278	34,858	498
2000	27,591	244	6,945	337	34,536	581
2005	32,035	258	7,770	310	39,805	568

Source: California Energy Commission, Quarterly Fuel and Energy Report Database.

Yuba City Energy Center

The Yuba City Energy Center is owned and operated by the Calpine company and is contracted by the State of California as a “peaker facility”, to provide additional power during periods of

high power demand in the state. The Yuba City Energy Center is located on North Walton Avenue. The facility began operation in 2002 and consists of a single combustion turbine with a base load capacity with peaking at 47,000 kilowatts (kW) of energy.[65] The electricity from the Yuba City Energy Center is dedicated for 10 years to the Department of Water Resources.

Feather River Energy Center

The Feather River Energy Center is also a peaker facility located on Burns Drive. The facility began operation in 2002 and consists of a single combustion turbine with a baselaod capacity at 47,000 kW of energy. The facility was opened in 2002 and is owned and operated by Calpine Corporation and provides electricity during times of peak demand. The electricity from the Yuba City Energy Center is dedicated for 10 years to the Department of Water Resources.

Transmission Lines and Substations

Electricity purchased from PG&E by local customers is generated and transmitted to the county by a large network of power plants and transmission lines located throughout California. Sutter County is presently crossed and served by two general types of transmission lines, comprised of local and regional lines.

The first type is the 500 kV regional transmission lines that are part of the Pacific Intertie. Which is comprised of three separate lines named the Pacific AC Intertie (PACI) that represents two of those lines, and the California Oregon Transmission Project (COTP) that represents the third line. Together, these three lines form part of the backbone of California's high voltage grid which is interconnected with other states around the west. The purpose of this line is to enhance service reliability throughout the western states with power being imported to California from the Pacific Northwest.

The second type is the 60 kV-220 kV local transmission lines that serve the specific energy needs in the county. These lines serve to move power form the larger regional transmission lines through area transformers down into the smaller local lines that ultimately serve the businesses and residents of Sutter County.

The siting of new transmission lines is regulated by the Public Utilities Commission. Currently, there are no designated transmission line corridors in the county. Any new transmission facilities would need to be evaluated on a case by case basis.

According to PG&E, there is no immediate need for new transmission lines or substations in the county. Future development of these facilities will continue to be demand driven, based on the location, type and number of new electricity users in the county.

Natural Gas Resources

Sutter County has extensive natural gas resources located throughout the western portion of the county, with the majority of the operational gas wells located in the Meridian Basin, Robbins Basin and the area around the Sutter Buttes as seen on Figure 3.1-19. One of the largest natural gas pockets is centered around the community of Grimes (Colusa County) in the Meridian Basin, just west of the western boundary of Sutter County. Transmission lines across the county transport gas from local wells in the western portion of the county as well as gas that

65 Calpine Corporation, http://www.calpine.com/power/plants.asp, accessed November 28, 2007.

is imported from Texas and Canada through a series of pipelines in the northern half of the county.

Even though Sutter County is rural in nature, much of the housing has access to county or city utilities with almost 65 percent of county households being heated by natural gas utilities as outlined in Table 3.1-8.

Table 3.1-8. Sutter County Housing Units and Type of Housing Heating Fuel, 2000

House Heating Fuel	Number of households	Percent of households
Utility gas	17,497	64.7
Bottled, tank, or LP gas	1,400	5.2
Electricity	7,024	26.0
Fuel oil, kerosene, etc	49	0.2
Coal or coke	3	0.0
Wood	899	3.3
Solar energy	7	0.0
Other fuel	61	0.2
No fuel used	93	0.3
Total Occupied housing units	27,033	100.0

Source: Bureau of Census, 2000. Census of Housing Detailed Housing Characteristics, http://factfinder.census.gov, accessed 11/30/07. QT-H8. Rooms, Bedrooms, and House Heating Fuel: 2000. Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data.

As of 2007, according to the California Geological Survey, Sutter County has 922 gas wells; however, many of them have been abandoned with only approximately 293 complete wells in a productive status.[66] Figure 3.1-19 shows the approximately 922 well heads in the county, with many of them no longer operational.

Table 3.1-9 gives a breakdown of the different well types currently in the county, with approximately 49 wells in the process of being drilled. Approximately 577 wells have been plugged and abandoned with 181 of those wells still containing some natural gas resources no longer at a level for extraction.

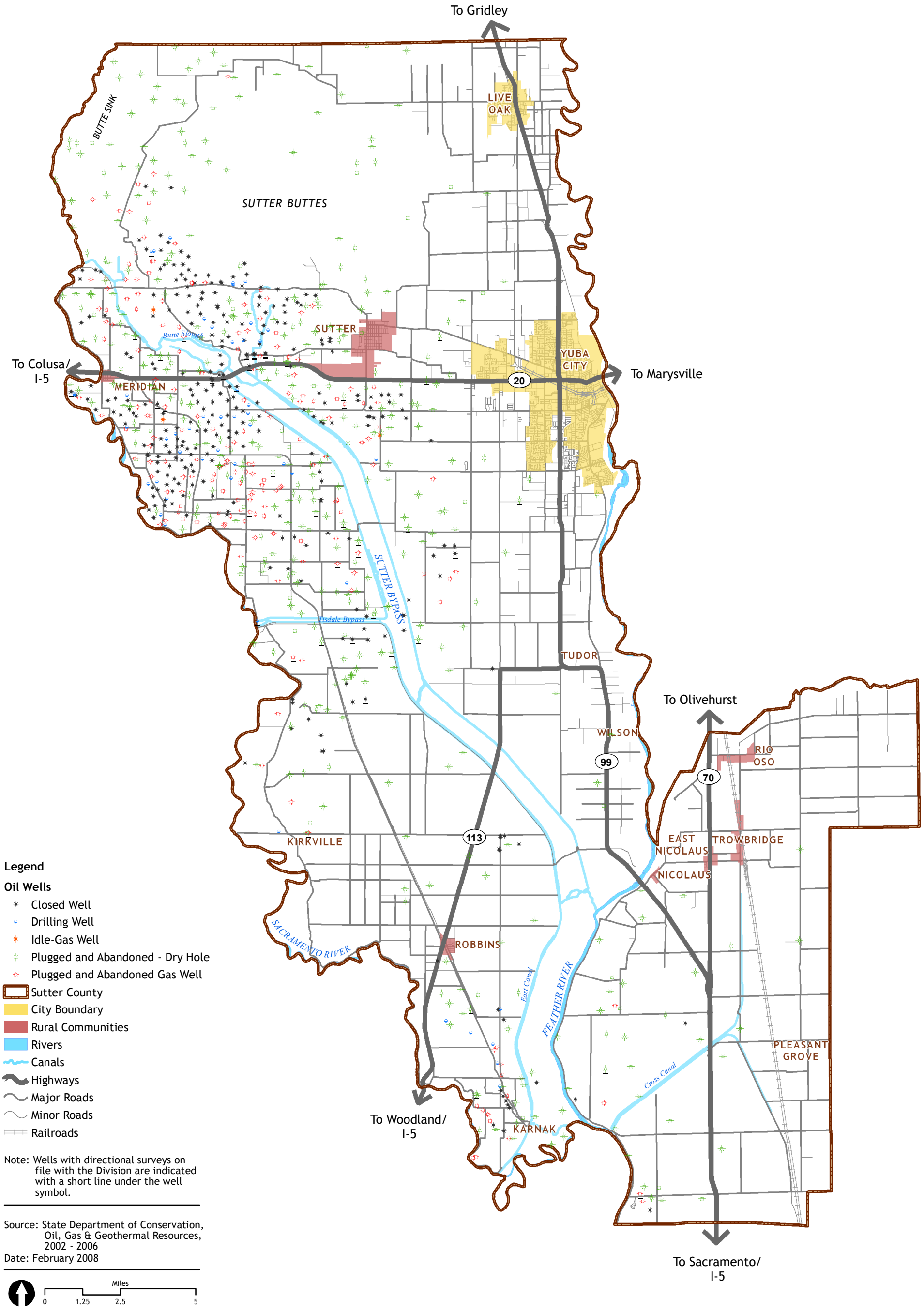
The reserve figures estimated by the California Division of Oil, Gas, and Geothermal Resources are forecasts of the proven developed and producing portion of natural gas wells and represent the most conservative estimate of the total natural gas resource that could potentially be recovered from a field or pool (Figure 3.1-19).

Table 3.1-9. County Gas Wells by Type

Gas Well Type	Amount
Complete – gas	293
Drilling	49
Idle-gas	3
Plugged and abandoned - dry hole	396
Plugged and abandoned gas	181
Total	**922**

Source: California Department of Conservation, http://www.conservation.ca.gov/dog/Pages/Index.aspx, accessed 9/19/07.

66 State Division of Mines and Geology, http://www.consrv.ca.gov/cgs/information/publications/online_maps_data.htm, accessed 10/3/07.



PBS&J

OIL, GAS and GEOTHERMAL RESOURCES
Figure 3.1-19

Sutter County has permitted 286 natural gas wells over the past eight years as seen in Table 3.1-10. Current County zoning regulations allow gas wells to be permitted on land zoned Upland Agricultural (UA), Exclusive Agricultural (A-2), and General Agricultural (AG). Based on historical activity, it is likely that additional wells will be established at similar rates. Recent concern, however, has been expressed by the public and the Board of Supervisors over the existing permitting process. Changes to the regulatory environment are anticipated in the future.

Table 3.1-10. Natural Gas and Oil Well Permits Issued

Year issued	Number of permits
2000	3
2001	75
2002	27
2003	15
2004	28
2005	31
2006	52
2007	55

Source: Board of Supervisors Staff Report, September 11, 2007.

Future potential of natural gas resources in Sutter County is anticipated to be good.[67] Historically, Sutter County has produced approximately 12-16 mcf of natural gas on an annual basis. In 2006 the county produced roughly 25 mcf of natural gas as outlined in Table 3.1-11. This represents nearly 3 percent of the total natural gas production in the State of California. The Grimes Natural Gas Field, which straddles the Colusa/Sutter County border is rated as the largest gas field in Sutter County and contains the nineteenth single largest natural gas well in California.[68]

Alternative Energy Sources

Distributed generation (DG) and cogeneration are seen as potentially attractive energy resource options, both in the near-term and long-term. They can provide added capacity to meet peak demand, provide additional energy supply, and can be integrated into the current electrical infrastructure to reduce congestion. However, DG and cogeneration are, in many regards, major departures from how energy is procured, generated, and delivered to end-use customers. Therefore, policy issues need to be considered in a comprehensive, integrated approach.

In this context, DG is defined as electricity production that is on-site or close to a load center and is interconnected to the utility distribution system. In practical terms, this limits the definition of DG to less than 20 megawatts (MW) since systems larger than this would be interconnected at sub-transmission or transmission system voltages. This definition includes such technologies as photovoltaics; small wind; small biomass; small combined heat and power (CHP) or small cogeneration; small combined cooling, heat and power (CCHP); and small non-CHP systems.

67 California Division of Oil Gas and Geothermal Resources. www.conservation.ca.gov/dog/geothermal/pubs_stats/Pages/general_info.aspx., accessed November 28, 2007.

68 California Division of Oil Gas and Geothermal Resources. www.conservation.ca.gov/dog/geothermal/pubs_stats/Pages/general_info.aspx., accessed November 28, 2007.

Table 3.1-11. Sutter County Active Gas Well Production and Reserve Estimates

Field Name	Number Producing of Wells	Gas			Water
		Gross Gas (Mcf)	Cumulative Gas (MMcf)	Estimated Gas Reserves (MMcf)	water (bbl)
Butte Slough Gas	3	55,294	9,583	161	1,111
Everglade Gas	6	820,556	13,726	4,239	1,937
Grimes Gas	98	8,202,826			29,915
Grimes Gas	158	10,955,831	669,451	55,979	62,642
Karnak Gas	1	5,601	3,547	1,223	n/a
Karnak Gas	1	5,601	3,493	1,220	n/a
Kirk Gas (Forbes)	14	352,801	19,329	5,863	10,612
Pierce Road Gas	1	23,868	10,810	1,337	138
Pierce Road Gas (Forbes)		23,868	9,709	1,337	138
Robbins Gas	3	4,588	30,675		
Sacramento Airport Gas (Mokelumne River)	4	43,066	11,857		3,562
Sacramento Airport Gas (Starkey)	1	14,826	3,390	461	108
Sutter Buttes Gas	55	1,286,674	203,470	15,724	20,926
Sutter City Gas	25	1,078,604	120,002	4,612	3,899
Sutter City Gas Main Area)	25	46,708	23,224	3,135	493
Sutter City Gas (South Area)	25	610,896	96,778	1,477	3,406
Sycamore Gas	2	211,977			2,754
Tisdale Gas	16	49,4624	61,218	2,989	8,009
Tisdale Gas (Main Area)	8	249,030	48,383	1,417	4,535
Tisdale Gas	8	245,594	12,845	1,572	3,474
Tisdale Gas	7	180,302	8,625	990	3,066
Tisdale Gas	1	65,292	4,220	582	408
Verona Gas		3,284	105	163	1,043
West Butte Gas	2	44,858	3,024	426	190
Totals	**464**	**25,026,569**	**1,367,464**	**104,907**	**162,366**

Source: California Division of Oil Gas and Geothermal Resources. www.conservation.ca.gov/dog/geothermal/pubs_stats/Pages/general_info.aspx., accessed November 28, 2007.
Note: Gross gas produced is the total amount of natural gas produced from a well, without deducting for gas used on lease, shrinkage, flaring, or injection.

Cogeneration is defined as electricity and heat production that is on-site or close to the load center that could be interconnected at distribution, sub-transmission, or transmission system voltages. Cogeneration in many instances can be systems from several kW to hundreds of MW in size.[69] Sutter County currently has four cogeneration facilities as discussed below.

Cogeneration

There are four existing cogeneration facilities in Sutter County that include Greenleaf 1 and 2 owned by LFC Systems, a plant owned by Yuba City Cogeneration, and a plant owned by the Yuba City Racquet Club. All four facilities are fueled by natural gas, supporting industrial or commercial uses, and generate surplus electricity.

69 California Energy Commission, Distributed Generation and Cogeneration Policy Roadmap for California, March 2007, page 1.

Cogeneration has been used to in recent years in the county as an alternative power source that conserves energy, while making industries more self sufficient. Electricity can be produced through cogeneration of waste heat in business, industry, and governmental facilities, thus saving money and conserving energy.

There are many types of cogeneration systems, including dual-purpose power plants, some waste heat use systems, certain types of district heating systems, space heating and cooling in municipal and commercial applications, and total energy systems. By recapturing and using some of the thermal energy that is normally discharged in the industrial process, cogeneration can reduce system fuel requirements by one to 30 percent (CEC 1982).

Industrial uses offer the greatest potential fuel savings through cogeneration with its improved efficiency, greater control and increased service reliability. Industry often uses process steam in applications requiring low temperature heat (less than 400 degrees Fahrenheit), but generates steam through direct combustion of fossil fuels with resulting temperatures of over 3,000 degrees Fahrenheit. By using this high-temperature combustion heat to generate electricity, and then using the normally wasted exhaust heat for the industrial process, substantial fuel savings can be made.

Greenleaf 1 Power Plant

The Greenleaf 1 Power Plant is a gas-fired cogeneration facility owned and operated by Calpine. The facility went online in 1989 and is located on South Township Road near Yuba City. The facility is composed of a single combustion turbine that is routed to a heat recovery steam generator, which provides steam to the steam turbine. The plant's baseload and peaking capacity generates 49,500 kW, and in addition to steam generation, the plant also generates heat which is used to dry wood products.[70] Electricity generated at Greenleaf 1 is sold as thermal energy, in the form of hot exhaust, to a thermal host that is owned and operated by Calpine.

Greenleaf 2 Power Plant

The Greenleaf 2 Poser Plant, like Greenleaf 1, is a gas-fired cogeneration facility. Greenleaf 2 is located on Walton Avenue in Yuba City. The facility consists of two combustion turbine generators (CTGs), two heat recovery steam generators (HRSGs) with duct burners and a steam turbine generator (STG). The CTG's exhaust gases will be used to generate steam in the HRSGs. In turn, the steam from the HRSGs will be admitted in to a condensing steam turbine for additional electrical power generation. The plants baseload and peaking capacity generates 49,000 kW.[71] Electricity generated by the Greenleaf 2 Power plant is sold to PG&E under a power sales agreement until the year 2019, which includes payment provision for capacity and energy. In addition to the sale of electricity to PG&E, the Greenleaf 2 faculty sells thermal energy to Sunsweet Growers, Inc. pursuant to a 30-year contract.

Racquet Club Cogeneration Plant

The Yuba City Racquet Club, located on Jones Road, has a small cogeneration facility that generates 60 kW of power.

70 Calpine Corporation, http://www.calpine.com/power/plants.asp, accessed November 28, 2007.

71 Calpine Corporation, http://www.calpine.com/power/plants.asp, accessed November 28, 2007.

Potential Energy Sources

Several potential energy sources have been identified as viable energy production systems for Sutter County these include several forms of waste to energy and solar energy. Other energy production systems were looked at for the county and found to be not viable for large scale energy production; these include hydroelectric, geothermal and wind energy.

WASTE TO ENERGY

There are currently no waste to energy (WTE) facilities in Sutter County; however, future development of energy using a form of waste to energy process could potentially be utilized. There are several types of WTE conversion processes including: biomass, digester gas, municipal solid waste, and landfill gas. The Biomass process uses steam boilers to burn green waste and other organic matter, to produce energy. The Digester Gasification process can be used in oil fired boiler conversions to produce energy from a cleaner source, by burning chemically treated human and animal waste and other organic byproducts to produce energy. This process involves the collection and processing of locally collected garbage which is then burned to produce energy and electricity. The gas is collected and burned to produce energy and electricity. WTE facilities are typically located near their primary fuel source to minimize the transportation of fuel to the conversion site. Another essential siting requirement is proximity to electrical transmission facilities with available capacity.

SOLAR

Sutter County has been identified as having a reasonable potential for solar energy development. The most common solar development is small scale residential use. Although there are presently no solar producing facilities or "solar farms" in the county, the following discussion addresses the potential for solar production in Sutter County.

1. Solar-thermal processes, in which sunlight is collected and transformed into heat energy.
2. Photovoltaic processes, in which sunlight is directly converted into electrical energy.

Each of these processes can be used in a variety of applications. For example, solar-thermal and photovoltaic processes can be used for heating buildings or, under proper conditions, can generate steam to operate electrical generating boilers. Additionally, a solar energy production facility could be developed in a large open area to mass produce energy. Produced electricity could be tied into the local transmission lines to aid in serving the overall energy needs of Sutter County.

Given Sutter County's climatic conditions, the technical potential for solar development is almost unlimited. New solar projects proposed in Sutter County are regulated by the California Energy Commission (CEC). Typically, the CEC reviews only projects over 50 MW.

REGULATORY CONTEXT

The California Energy Commission (CEC) maintains jurisdiction over WTE facilities with generated capacity of 50 MW or greater. For projects less than 50 MW, the California Waste Management Board (CWMB) acts as an advisory agency and reviews all applications. The permit process for these smaller projects is handled by local agencies, such as the Sutter County Community Services Department and the Feather River Air Pollution Control District.

The Solar Shade Control Act prohibits the planting of any tree or shrub on property adjacent to a previously installed solar collector which would block the collector during 10:00 a.m. and 2:00 p.m. The Solar Rights Act specifically recognizes the legality of easements for solar access between property owners; prohibits ordinances or covenants restricting the use of solar systems; and requires tentative subdivision maps to provide for solar access.

Energy Conservation

PG&E sponsors several energy conservation programs that include education, solar energy incentives, florescent lighting business program and a weatherization program for low income families. These services are intended to reduce energy consumption in homes through the replacement of inefficient appliances and minor housing repairs, making the home more energy efficient. Consumers will also receive valuable educational materials that provide useful energy saving tips and information.

Additional conservation measures can be encouraged through programs and policies that address areas within the county that are can potentially reduce energy consumption by reducing wasteful energy consumption practices and habits.

Home Construction

Implementation of energy conservation measures during construction of new homes is easier and more cost effective than improving the energy efficiency of existing homes. However, since today's existing building stock is responsible for the major bulk of energy consumption, it is imperative to encourage energy conservation measures in existing structures. Options for reducing local energy use in old and new buildings are discussed below in terms of the energy uses of space heating, water heating, lighting systems, appliances, industrial processes, plumbing, and transportation and land use.

Environmental and cost concerns tend to provide greater incentives to save energy. Title 24 of the California Administrative Code contains provisions for energy conservation in new residences. These provisions are currently enforced by the Building Inspection Program, and create energy savings of approximately 50 percent over residential construction practices used prior to their enactment. It should be noted that failures to build certain efficiencies into the design of long-lived buildings are often irreversible for the lifetime of the building.

Space Heating

The efficiency with which a structure can be heated and cooled depends on a number of factors, including the type of energy used, orientation and construction of the building, amount of insulation in the building, type of heating and cooling equipment used, and habits of the building's occupants.

Electrical heating appliances are more efficient at the point of use than are natural gas appliances. However, the considerable amount of primary energy required to generate and distribute electricity results in a very inefficient use of this energy form. There are substantial energy losses in the conversion process, particularly in a fossil fuel power plant and in the transmission of electricity to the buildings where it is used. Small energy losses occur in the transport of natural gas from its source to the final place of consumption and, overall, natural gas presents a much higher efficiency than electricity. On the whole, gas space heating is 60-75 percent efficient, compared to electric space heating efficiencies of 30-40 percent. Title 24 contains provisions discouraging the use of electric space heating in new buildings.

Whether equipped with gas or electricity, there are many opportunities for increasing the efficiency of space heating and cooling. The type of unit built and its orientation, size, and volume contribute to the resulting energy requirement of the building. Generally, buildings which share common walls, such as multi-family and some commercial units, use significantly less energy than detached structures. Common walls reduce the outside surface-to-volume ratio of each unit, so there is less surface area through which heat can pass. Building orientation is also an important factor in determining the amount of energy required for space heating and cooling. Buildings oriented in a north-south direction can take maximum advantage of solar radiation and therefore reduce heating energy needs. In addition, adequate landscaping, providing shading in summer and solar access in winter, can maximize the use of solar designs in space heating and cooling.

The resistance of a wall, ceiling, or floor to heat flow, known as the "R-value", is directly related to the extent of insulation. The greater the "R" value of an insulating material, the greater resistance it has to heat flow. A well-insulated house will have a minimum of R-11 insulation in the walls and R-19 in the ceiling. Under-insulated homes have ceiling insulation rated at less than R-19, typically R-7 or R-11. Improvement of the insulation level of existing houses or apartments, an operation known as retrofitting, can substantially reduce the energy required for space heating. It is estimated that adding R-19 ceiling insulation to an uninsulated residence can save between 20 to 30 percent of the energy necessary for heating.

Windows and exterior doors are major sources of heat losses in a building. Adequate weather-stripping for doors and windows can help reduce air leaks and consequently reduce the heating requirements of a structure. The use of thermopane windows can also contribute to a reduction in energy consumption and can prove to be cost effective.

In addition to the above mentioned energy conservation measures requiring physical changes in a structure or its site, energy savings are achievable if the building occupants are willing to make some behavioral changes. Setting back the thermostat at night can reduce furnace energy use. Shutting off the pilot light on a residential furnace during the warm seasons can reduce annual furnace energy use. Lowering the winter thermostat temperature setting and raising the summer setting reduces the rate at which heat flows in and out of a structure.

Even though most of the energy conservation options discussed above are directed primarily at reducing heating loads, these same measures will often reduce cooling loads as well.

Title 24 establishes required levels of thermal performance for new residential and non-residential buildings. The standards include insulation requirements for ceilings, walls, and floors and weather-stripping requirements for all exterior doors and windows.

Water Heating

Inefficient energy use for water heating results from the use of electric resistance water heaters, little or no insulation around the water heater tank, maintenance of water at a higher temperature than needed, and wasteful use of hot water.

As with space heating, electricity is much less efficient than gas for heating water. Another major source of inefficient thermal performance is the lack of adequate insulation around the hot water tank. Installation of a tank insulation jacket (a layer of R-6 insulation) around the tank's exterior can substantially reduce annual energy requirements for heating water. Reducing the thermostat setting on a typical heater by 10°F and adding shower and faucet flow restrictors can cause additional energy savings. Flow restrictors save energy by reducing the amount of hot water used and the amount of energy required for water pumping.

Title 24 standards for new residential and non-residential buildings set a number of requirements for water heating. The use of electric resistance water heating is discouraged due to its inefficient use of energy. Performance standards are set for all plumbing fixtures to limit water flow, and insulation is required for water pipes that traverse unheated spaces.

Lighting Systems

Typically, the largest single commercial use of energy is for lighting. Lighting is also an important use of energy in the residential sector. Lighting systems, particularly in commercial buildings, tend to uniformly light the interior space. Often the activities occurring do not require the same level of lighting throughout the building; therefore, considerable energy is wasted by unnecessary light fixtures. Additional energy is wasted because lighting adds heat to the building interior, requiring air conditioning equipment to operate longer.

In existing buildings, these inefficient lighting systems can be replaced with more efficient task-oriented lighting which selectively illuminates activity areas. Other options for reducing the energy requirements of lighting include: disconnecting unnecessary light fixtures (delamping) and replacing incandescent lights with more energy efficient fluorescent or sodium-vapor lighting (relamping). It is estimated that lighting energy savings of 25-50 percent are possible by employing these conservation options.

Title 24 Building Codes include illumination efficiency standards for new non-residential building interiors. The standards are based upon the type of activities carried out within a structure.

Appliances

There are a number of voluntary options for reducing energy use by existing appliances. Most of these are aimed at reducing the duration and frequency of appliance use. The more significant options for space and heating appliances have already been described (i.e., setting back thermostats). Utility companies also recommend the following measures to residential customers:

- Check the seals around the door edges of refrigerators and freezers and make sure they are in good condition. Keep the condenser clean so that it can operate most efficiently. Keep manual units as frost-free as possible.
- Skip the drying cycle and prop dishwasher doors open to air dry dishes. Wash only full loads. Use short-wash cycles as much as possible.
- Use cold water in clothes washers whenever possible. Wash full loads only. Use a clothesline instead of a dryer.
- Clean filters regularly in furnaces and heaters. Maintain heater outlets and air intakes in a clean condition.
- Avoid preheating oven. Do not use small pans on large cooking elements. Cover pots and pans as much as possible.

Like buildings, appliances were designed to reduce manufacturing costs and be fairly durable. Now that energy costs have made operation of appliances more expensive, there is sufficient reason to design and use equipment which is more energy efficient.

In order to prevent the continued manufacturing of energy inefficient appliances, California has adopted energy efficiency standards for new appliances (known as Title 20) which require significant energy consumption. At present, standards have been adopted for the following

appliances: electric refrigerators, freezers and combined units, gas space heaters, water heaters, plumbing fittings, gas clothes dryers, gas cooking appliances, and air conditioners.

These standards apply to new appliances retailed in California, regardless of where they are manufactured. Typically, the standard for each appliance is stated as a required measure of operation efficiency. Most of the standards include two or more implementing phases, so that manufacturers will have sufficient time to make the necessary design and production changes and to clear present stock inventories. Following each phase deadline, an appliance cannot be sold in California unless it has been tested and certified as complying with the standards.

Industrial Processes

A large potential exists for improving the energy efficiency of industrial operations. However, as with non-residential buildings, the diversity among industries means that no single conservation measure is broadly applicable. Conservation measures must be identified on a plant-by-plant basis. Some of the general options for achieving industrial energy conservation are summarized below. Monitoring of industrial processes can lead to improvements in energy efficiency. Changes in the timing of processing operations or in the monitoring practices themselves can result in substantial energy savings. Maintaining optimal boiler efficiencies by monitoring flue gases and adjusting boiler equipment is one example. The use of automatic timing devices on equipment which is used only intermittently is another option.

Modifying industrial equipment to improve its energy efficiency generally requires substantial investment, but the energy and dollar savings can be significant. Installing equipment to recover and use waste heat given off by process hot water, steam, and other heat sources to generate electricity (cogeneration) is already successfully in use in the county.

New processes coming into use for a number of industries will significantly decrease the energy requirements of new plants and equipment. In the design of new plants and processes, there are often capital or labor-intensive alternatives available which will save energy compared to the more economic options. With today's increasing energy prices, these energy conserving alternatives are becoming more economic as the energy cost savings potential begins to offset the added capital costs.

Pumping

Water pumping is conducted mainly through the use of electricity. Most of this end use is attributable to pumping water to irrigate crops. State programs are available for the peak load of electrical energy used for agricultural water pumping. Further study of using time-of-way pricing to promote crop irrigation during off peak, night time hours could be appropriate. The energy efficiency of all pumping can be improved with adjustments to, and maintenance of, pumping equipment.

Transportation and Land Use Planning

The increased energy consumption associated with development patterns contribute to increased air pollution and other environmental problems. Suburban residential development located far from employment, commercial, and transit routes require greater dependence on the automobile; development of outlying areas makes the provision of transit and other public services more costly and less efficient; and low density land use plans that provide low density, detached development requires more energy for use in space heating and cooling compared to higher density units with common walls. The relationships between energy consumption, land use planning, and air quality have been determined in the past years, and are reflected in documents such as Air Quality Attainment Plans.

Utility Assistance Programs

A number of programs are offered to county residents that need assistance with utilities. The Community Resource Project, Inc. (CRP) is a nonprofit organization that helps potential low income families' access resources to help with heating, cooling and other energy costs.

The CRP office is located on Burns Drive in Yuba City offering application assistance for programs addressing Utility Payment Assistance, Energy Crisis Intervention, and home Weatherization. A specialist will assist customers with completion of a simple one-page application.

PG&E's sponsors the California Alternate Rate for Energy (CARE) program that assists low income families with energy costs by offsetting the monthly PG&E bill. The CARE program is based on household size and annual income. Eligible households will receive a 20 percent discount on their energy bills.

The Home Energy Assistance Program (HEAP) is a federally funded program that provides financial assistance to eligible, low-income families to offset the costs of heating and/or cooling. Assistance is in the form of a direct payment to a utility company on behalf of an eligible applicant. Eligibility is based on the household's total monthly income, which cannot exceed the HEAP income guidelines.

REGULATORY CONTEXT

Federal and State

The California Energy Commission (CEC) is responsible for establishing statewide energy policies which guide energy development, distribution and conservation. In carrying out this function, the CEC determines the probable demand for various energy sources and develops programs to assure the efficient delivery of energy resources to the consumer, at a reasonable price. The CEC is authorized by the Warren-Alquist Act of 1975 to regulate the siting of all thermal power plants larger than 50,000 kW, including cogeneration plants.

Supplies of natural gas transported to and from Sutter County are subject to California Public Utilities Commission (CPUC) and Department of Energy (DOE) regulation.

The energy consumption of new buildings in California is regulated by State Building Energy Efficiency Standards, Title 24. These are contained in the California Code of Regulations, Title 24, Part 2, Chapter 2-53. Enforcement of the regulations is addressed in the California Code of Regulations, Title 20, Chapter 2, Subchapter 4, Article 1. Title 24 applies to all new construction of both residential and non-residential buildings, and regulates energy consumed for heating, cooling, ventilation, water heating, and lighting. Title 24 is the minimum requirement for energy efficiency. All cost effective efficiency is not necessarily installed in projects.

There are numerous other federal and state regulations which establish cogeneration requirements regarding fuel use (Federal Fuel Use Act - FUA, and Natural Gas Policy Act - NGPA), power exchanges (Public Utility Regulatory Polices Act - PURPA), environmental quality, financing and ownership.

The State Division of Mines and Geology are the oversight agency for all Natural Gas in the state of California

Local

Natural gas wells within the county are subject to Sutter County siting and operational requirements under section 1500-8018 of the County Zoning Code. Sutter County has regulatory power over power generation facilities to ensure compliance with local general plan and zoning provisions. For projects under 50,000 kW, the County would be the lead agency and would conduct the environmental review required under CEQA.

3.1.8 Telecommunications

INTRODUCTION

This section discusses the telecommunication services provided within Sutter County, including, telephone, internet, and cable services. Information for this section was obtained from the California Utilities Commission, the 2000 housing census, and local service providers.

Telecommunications link people with information and with each other. In a dynamic world market businesses rely on telecommunication services to build their market base and increase their competitiveness regionally, nationally and internationally. Technology in the last several years has transformed the telecommunications business with faster high speed DSL, fiber optics, and digital voice services. Telecommunications companies are diversifying services providing customers multiple services as bundle packages to meet customers growing needs.

SUMMARY OF KEY FINDINGS

- SBC/AT&T California provides telephone service for the entire County. The main office is located in Sacramento. Currently, most of the SBC/AT&T service lines within the County are above ground.
- Although telephone service is available throughout the County over 500 residents do not have phone service as of the 2000 census.
- High speed DSL is limited to customers no further than 18,000 feet away from a serving central office or remote terminal.

EXISTING CONDITIONS

Recent mergers have streamlined the carriers currently offering telecommunication services in Sutter County. Many of the companies have bundled services to offer residents and businesses telephone, internet and television broadcast services as one package. Telephone land line service is also changing with more companies offering digital voice messaging through cable services and wireless networks taking the place of traditional land line service.

Landline and cellular telephone service is available in all areas of Sutter County. High-speed internet capabilities are available to those areas located within or in close proximity to the city limits. Although telephone service is available throughout the county, over 500 residents do not have phone service as of the 2000 census as outlined in Table 3.1-12. With the increase in cellular telephone use and expanded service coverage, home landline phone service may decrease in the coming years.

Table 3.1-12. Tenure by Telephone Service Available, 2000		
Owner-occupied housing units		
With telephone service	16,495	99.3%
No telephone service	120	0.7%
Renter-occupied housing units		
With telephone service	10,022	96.2%
No telephone service	396	3.8%
Source: 2000. Census of Housing Detailed Housing Characteristics, http://factfinder.census.gov, accessed 11/30/07.		

Telecommunication Service Providers

SBC/AT&T California

SBC/AT&T California, formerly Pacific Bell, is the primary service provider in Sutter County for local and long distance telephone service, digital satellite television, data communications and high speed internet. SBC has laid fiber optic lines in all new developments and continues to convert older copper coaxial cable to fiber optic lines. Fiber optic lines are replacing traditional copper lines in most new construction because of the lower overall price and controls by the service provider on line access.

Telephone Service

AT&T Local Services supplies data communications, 911 service, high-speed local and long distance telephone service to Sutter County.

SBC/AT&T provides short haul and local toll call telephone service for the entire County with long distance provided through contract with outside affiliates. The main office is located in Sacramento. Currently, most of the SBC/AT&T service lines within the County are above ground. Underground service has become more common for new projects, in or adjacent to, developed areas of the County. SBC/AT&T participates in a joint undergrounding program with PG&E and has been incrementally undergrounding service in the urban areas of the County.

Internet Service

AT&T Broadband for DSL internet service is offered throughout Sutter County; however, high speed DSL is only limited to customers located within 18,000 feet from a serving central office or remote terminal.

Television Service

AT&T provides digital DISH network throughout the Sutter County area accessed via satellite. TV service from AT&T | DISH Network was launched in 2004, offering consumers a choice for their entertainment service.

Comcast

Comcast provides cable television service in Sutter County. In addition to its own facilities, it leases certain fiber optic cable capacity from AT&T Local Services. Comcast serves Sutter County with a combination of underground and overhead fiber optic cable and copper coaxial cable. Additional improvements or relocations of hub sites are generally made as the need arises to meet customer demand.

Basic Broadcast Service

Broadcast media is also available in the county from out-of-the-area access via microwave relay, and at local radio stations. Most of the television stations broadcast out of Sacramento.

Cellular Phone Service

Several cellular phone companies offer wireless phone services in the county such as, Sprint, Cingular/AT&T, T-Mobil, Verizon, Metro PCS, Virgin Mobil and Net 10. Cellular tower locations along with some underground facilities connect customers to wireless and long distance telephone service in most of Sutter County. Additional cellular towers are planned for the Sutter County area to provide better wireless service.

Electric Lightwave, Inc.

Electric Lightwave, Inc. (ELI) provides data communications, point to point internet feed, T1 internet access, and long distance voice communication in the Sutter County area. ELI serves the Sutter County area with a combination of underground and overhead fiber optic cable and copper cable. The company has fiber optic connections to most SBC switching sites. Some customer sites may be connected to ELI facilities using SBC's T-1 connections. Additional improvements or relocations are generally made as the need arises to meet customer demand.

REGULATORY CONTEXT

State & Federal

The State of California Utilities Commission oversees all emergency telecommunication services, consumer protection, service reform, area code and regulation of service rates.

There are no federal regulations that directly affect telecommunications systems within Sutter County.

Local

Sutter County Zoning Code Division 95 regulates wireless communication facilities and siting to encourage the appropriate location and development of wireless communication facilities.

3.2 MOBILITY

This section describes the existing transportation system within Sutter County and provides details on the various modes of transportation available within the county. This section also summarizes information on existing transportation deficiencies, proposed transportation projects, and planned operational improvements.

Key components of the mobility system include:

- Streets and Highways (Section 3.2.1)
- Transit and Rail (Section 3.2.2)
- Bikeways (Section 3.2.3)
- Air Travel and Airports (Section 3.2.4)

The mobility system is critical in ensuring the efficient movement of goods and people through Sutter County and is an essential component in the economic development of the county. The importance of alternative modes of transportation continues to increase as air pollution, fuel costs, and traffic congestion increases.

3.2.1 Streets and Highways

INTRODUCTION

This section describes the street and highway network in Sutter County, presents the existing operating conditions on major roadways, and identifies future planned roadway improvements. This section also discusses truck routes and accident rates in the county. Information for this section was obtained from applicable reports and studies prepared by Sutter County and Caltrans and through communications with staff from the Sutter County Public Works Department.[1]

SUMMARY OF KEY FINDINGS

- Sutter County is served by a system of primarily rural roadways. Automobile travel is the primary mode of transportation throughout the county.
- State Route (SR) 20, 70, 99, and SR 113 are the primary regional transportation corridors within the county. SR 20 serves east-west regional travel and, SR 70, 99, and 113 serve north-south regional travel.
- SR 99 is of particular importance to Sutter County as it accommodates large volumes of truck traffic and also connects Sutter County to Butte County and to the Sacramento Metropolitan Area.
- Several natural and manmade barriers to the circulation system exist in Sutter County including the major rivers, the Sutter Bypass, and railroad lines.

1 James Walton, Public Works Engineer 2.

- Sutter County has adopted LOS "D" as the minimum acceptable standard for county roadways. All county roadways are operating at LOS "C" or better and therefore currently meet the adopted standard.
- Caltrans has adopted LOS "D" as the minimum acceptable standard for SR 20 west of Humphrey Road and LOS "E" as the minimum acceptable standard for SR 20 east of Humphrey Road. SR 20 is operating at LOS "C" or better and therefore currently meets the adopted standard.
- Caltrans has adopted LOS "D" as the minimum acceptable standard for SR 70. SR 70 is operating at LOS "E" and therefore currently does not meet the adopted standard.
- Caltrans has adopted LOS "E" as the minimum acceptable standard for SR 99. SR 99 is operating at LOS "E" or better and therefore currently meets the adopted standards.
- Caltrans has adopted LOS "D" as the minimum acceptable standard for SR 113. SR 113 is operating at LOS "C" or better and therefore currently meet the adopted standard.
- Local truck traffic along rural roadways is a significant safety and maintenance concern for Sutter County.
- A total of 840 traffic accidents were reported on unincorporated roadways within Sutter County between 2003 and 2007. A high proportion of the accidents occur at or near the State highway access points (i.e., the junctions of the State highways and Sutter County roadways).
- There are a number regional highway and roadway improvements identified in various Caltrans corridor studies and route concept reports, as well as in the draft 2035 Regional Metropolitan Transportation Plan prepared by SACOG. Included are improvements to SR 99, SR 70 and SR 20.
- The South Placer Regional Transportation Authority and the Federal Highway Administration, in cooperation with Caltrans, are working to select a route and ultimately construct Placer Parkway—a new east-west roadway linking SR 65 to SR 70/99 through southern Sutter County.

EXISTING CONDITIONS

Existing Street and Highway System

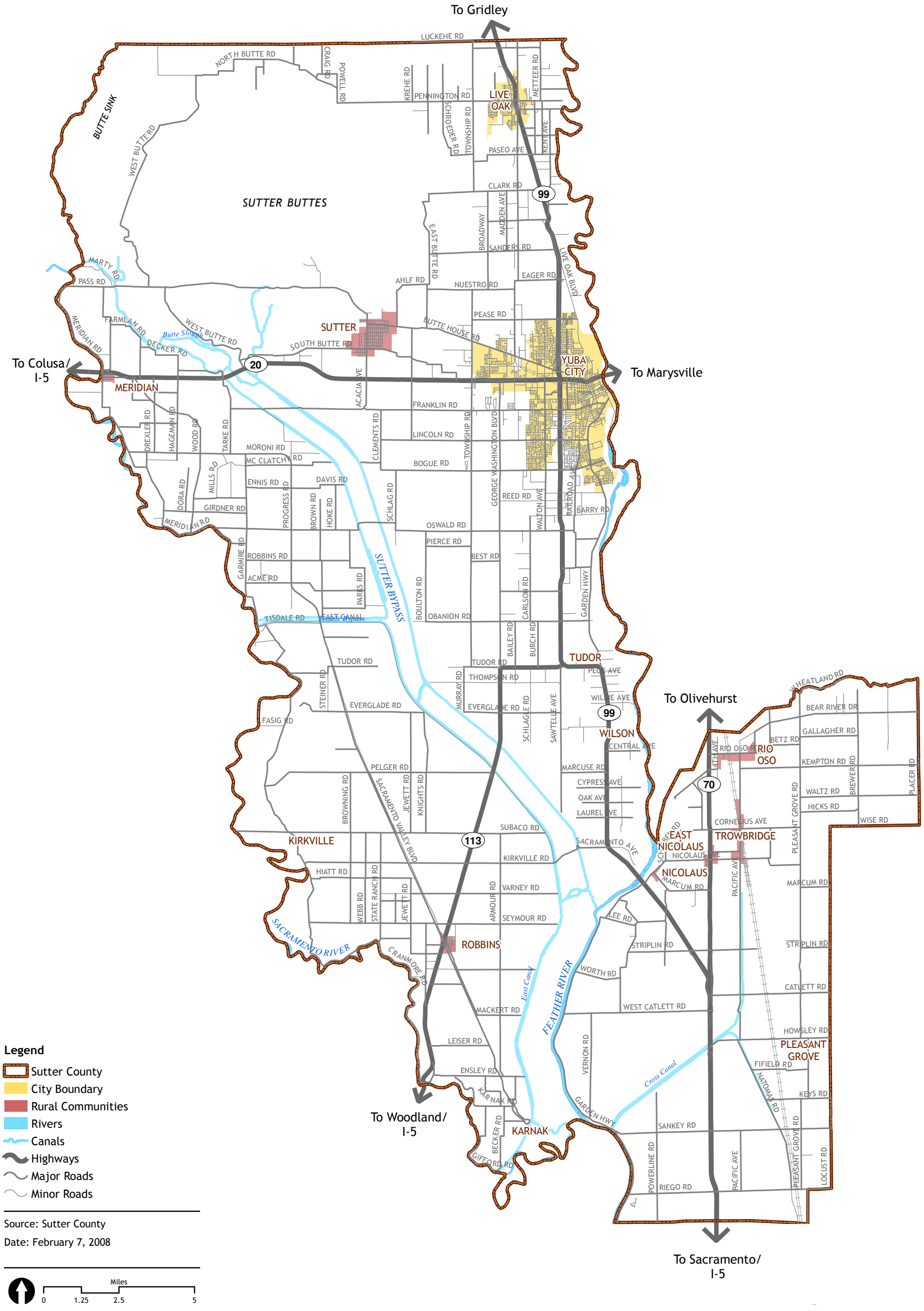
Sutter County has approximately 1,107 miles of public roadways including the roadways within the incorporated cities. These roadways carry an estimated 663 million vehicle miles of travel demand annually.[2] Table 3.2-1 shows road miles by jurisdiction in Sutter County and Figure 3.2-1 shows the roadway network system in the county.

The roadways in Sutter County lie predominantly in north-south and east-west directions. SR 20 and SR 99 are the primary regional transportation corridors within the county. SR 20 serves east-west regional travel providing connection to Yuba County and beyond to the east, and Colusa County and beyond to the west. SR 99 serves as the north-south regional travel corridor providing connection to Butte County and beyond to the north, and Sacramento County

2 Daily traffic volumes from the SACOG (2005) SACMET model were summarized to estimate 2005 VMT.

SUTTER COUNTY
General Plan Update

SUTTER COUNTY
GENERAL PLAN UPDATE



Legend

- Sutter County
- City Boundary
- Rural Communities
- Rivers
- Canals
- Highways
- Major Roads
- Minor Roads

Source: Sutter County

Date: February 7, 2008

Miles
0 1.25 2.5 5

PBS&J

Roadway Network
Figure 3.2-1

Table 3.2-1. Roadway Miles in Sutter County by Jurisdiction

Jurisdiction	Miles
Sutter County	788
State of California	84
City of Yuba City	215
City of Live Oak	20
Total	**1,107**

Source: 2006 California Public Road Data, Statistical Information Derived from the Highway Performance Monitoring System. Caltrans, (July, 2007).

and beyond to the south. SR 70 and SR 113 are two other State highways that support north-south regional travel. This regional system of State highways is interconnected by a system of major (arterial / collector) and minor (local) county roads; the combination of regional and local roadway systems compliment each other to support the basic movement of goods and people.

Physical Constraints

Physical constraints to the County's circulation system include both natural and man-made barriers that limit roadway connections and alignments. The main natural barriers to travel are the three rivers (Sacramento, Feather and Bear Rivers) that border Sutter County. The Sacramento River flows along the majority of both the Colusa and Yolo County lines. The Feather and Bear Rivers flow along the Yuba County line from the north and east, respectively. Downstream of the Bear River's confluence with the Feather River, the Feather River flows diagonally through the southern part of the county before entering the Sacramento River. The major man-made barrier to travel in Sutter County is the Sutter Bypass, bisecting the county from the Sutter Buttes in the northwest to the Sacramento River in the south.

Functional Classification and Roadway Design Standards

Sutter County's streets and highways are organized in a hierarchy according to their functional classification. This hierarchy recognizes the distinct stages which are involved in making a trip; primary movement on highways and arterials, collection / distribution on collectors, and access with termination on local streets. In addition, the streets are also classified as rural and urban to reflect the areas and the type of traffic the streets serve. It is necessary to understand that the service provided by the rural and urban roadways is different in character. Often rural roadways serve dual functions, i.e., distribution as well as termination / access.

The following is a brief discussion of different types of roadways classified by the function they serve. The first two classifications serve both rural and urban areas by providing travel on important, usually high volume, corridors.

State Roadways (Freeways and Expressways)

Freeways and expressways serve both inter-regional and intra-regional circulation needs. These facilities are typically accessed by collector or arterial roadways and have few or no at-grade crossings. These facilities have the highest carrying capacity.

Regional Highways

Regional Highways are classified as Rural Arterials and are used as primary connections between major traffic generators or as primary links to State and interstate highway networks. Such routes often have long sections through rural environments without traffic control interruptions.

Urban Roadways

- **Urban Arterials** provide intra-city circulation and connections to regional roadways. They are fed by both local and collector streets. Even though the principal function of these roadways is movement, occasionally they provide access to adjacent properties, especially in commercial areas.
- **Urban Collectors** accumulate traffic from local roadways and distribute that traffic to roadways that are higher in the classification hierarchy. Collectors also provide access to adjacent properties. These roads carry light to moderate traffic volumes.
- **Urban Local** roads provide direct access to adjacent properties and are typically designed to discourage through-traffic. Urban local roads also provide access to collector roadways carrying very low traffic volumes.

Rural Roadways

- **Rural Arterials** provide primary connections between rural areas and also distribute traffic between rural and urban areas. In addition, rural arterials provide considerable statewide and interstate circulation.
- **Rural Collectors** typically serve intra-county rather than regional or statewide circulation needs. Their primary function is to provide access to adjacent properties and connections between rural local roads and other roadways that are higher in the classification hierarchy.
- **Rural Local** roads provide access to adjacent properties and distribute traffic to rural collectors. They differ from their urban counterparts in their design cross section and location. Major Roadways in Sutter County.

Following is a brief description of important roadways that serve Sutter County.

Freeways

- **State Route 99** between Highway 20 and to a point north of Eager Road is the only freeway segment in the county. The SR 99 freeway segment starts from north of SR 20 in Yuba City as a four-lane facility with interchanges at Queens Avenue, Pease and Eager Road. Just south of Encinal Road, the freeway segment transitions to a two-lane roadway.

Regional Highways

- **State Route 20** is a two, four and six lane roadway which extends through Sutter County from Colusa County to Yuba County. This roadway is one of the two roadways that cross the Sacramento River in Sutter County.
- **State Route 70** is a two-lane roadway which extends from the Yuba County line in the north, south to a junction with SR 99. At the junction with SR 99, SR 70 continues south as SR 70 / 99 to the Sacramento County line. The roadway provides regional access to the cities of Sacramento and Marysville.
- **State Route 99** extends from the Sacramento County line north through Sutter County to the Butte County line. The roadway has two and four lanes over its length and provides regional access to the Sacramento metropolitan area in the south and the cities of Gridley and Chico in the north and beyond.

- **State Route 113** within the county extends from the Yolo County line over the Sacramento River to SR 99 near the community of Tudor. This two-lane roadway is one of the two roadways that cross the Sacramento River in Sutter County.

Major Urban and Rural Roadways

- **Acacia Avenue** is a two-lane north / south roadway that extends from Pass Road in the north to Franklin Road in the south. This roadway provides access to SR 20 for the community of Sutter.
- **Bear River Drive** is an east / west two-lane roadway extending from the Placer County line in the east to slightly beyond Swanson Road in the west.
- **Bogue Road** is an east / west two-lane roadway extending from Rapid Water Way in the east to Clements Road in the west. This roadway provides access to SR 99.
- **Broadway** is a north / south two-lane roadway extending from Clark Road in the north to Nuestro Road in the south.
- **Butte House Road** is an east / west two-lane roadway that extends from Acacia Avenue in the west to Yuba City in the east and provides access between the communities of Yuba City, Tierra Buena and Sutter.
- **Cranmore Road** is a north / south two-lane roadway aligned along the Sacramento River from Tisdale Bypass in the north to SR 113 in the south. This roadway provides regional access to the communities of Knight's Landing, Cranmore and Kirkville. Cranmore Road along with Garmire Road and Meridian Road is part of the roadway system that fronts the Sacramento River in Sutter County.
- **East Butte Road** is a north / south two-lane roadway extending from Clark Road in the north to Butte House Road in the south. This roadway is part of a circulation system that encircles the Sutter Buttes.
- **El Margarita Road** is a north / south two-lane roadway that extends from Jefferson Avenue in the north to the Colusa Highway frontage road in the south and continues from SR 20 to Franklin Road.
- **Encinal Road** is an east / west two-lane roadway that extends from SR 99 in the east to Broadway in the west.
- **Franklin Road** is an east / west two-lane roadway between Tarke Road and Garden Highway. This roadway is located to the south of and provides an alternate route parallel to SR 20 through a major part of the county.
- **Garden Highway** is a north / south two-lane roadway that extends from Second Street in Yuba City and continues south joining SR 99 near Tudor. Garden Highway diverges from SR 99 near Nicolaus and extends south along the Feather River and then along the Sacramento River towards the City of Sacramento. Garden Highway serves as an alternative north / south route to SR 99 south of Yuba City.
- **Garmire Road** is a north / south two-lane roadway that extends from Moroni Road in the north to Cranmore Road in the south. A segment of this roadway

forms part of the road system that fronts the Sacramento River through the county.

- **George Washington Boulevard** is a north / south two-lane roadway that extends from SR 20 in the north joining SR 113 at Tudor Road and continuing to just north of Cranmore. George Washington Boulevard provides an alternate route parallel to and west of SR 99.
- **Harter Road** is a north / south two-lane roadway extending from Butte House Road in the north to SR 20 in the south and continues from north of High School Boulevard to just south of Redhaven Avenue.
- **Hooper Road** is a north / south two-lane roadway extending from True Road in the north to the Colusa Highway's frontage road in the south.
- **Howsley Road** is an east / west two-lane roadway that extends from Powerline Road in the west across SR 99 through the community of Pleasant Grove and to the Placer County line in the east.
- **Kirkville Road** is an east / west two-lane roadway that extends from Cranmore Road in Kirkville to Reclamation Road in the east and continues from Sacramento Valley Boulevard to Sacramento Road, east of SR 113.
- **Larkin Road** is a north / south two-lane roadway located west of SR 99 that extends from Eager Road in the south to Broadway in the north in the City of Live Oak. The roadway continues from Archer Avenue, east of SR 99 and extends north to Butte County.
- **Lincoln Road** is an east / west two-lane roadway that extends from Clements Road in the west and, after intersecting with SR 99, ends at Garden Highway in the east.
- **Live Oak Boulevard** is a north / south two-lane roadway extending from the Butte County line as a joint road with SR 99 in the north to Yuba City in the south, where the roadway terminates at SR 20. The roadway diverges from SR 99 at a point just south of Encinal Road.
- **Nicolaus Avenue** is an east / west two-lane roadway that serves the communities of Nicolaus, East Nicolaus and Trowbridge and provides regional access by connecting to SR 70 and SR 99. Nicolaus Avenue extends from Pleasant Grove Road in the east to Garden Highway in the west.
- **O'Banion Road** is an east / west two-lane roadway that extends from east of Garden Highway in the east and, after intersecting with SR 99, ends just west of Boulton Road.
- **Oswald Road** is an east / west two-lane roadway that extends from Garden Highway in the east to Schlag Road in the west and continues from west of the Sutter Bypass at Hughes Road to Meridian Road.
- **Pacific Avenue** is a north / south two-lane roadway that extends from north of Rio Oso Road in the community of Rio Oso to Howsley Road. Pacific Avenue provides direct access between the communities of Trowbridge and Rio Oso. It continues south from Sankey Road to Riego Road paralleling SR 99 and SR 70.
- **Pease Road** is an east / west two-lane roadway that extends from Live Oak Boulevard in the east to Township Road in the west.

- **Pelger Road** is an east / west two-lane roadway that provides access to the community of Cranmore from SR 113. Pelger Road extends from SR 113 in the east to Cranmore Road in the west.

- **Pennington Road** is an east / west two-lane roadway that extends from east of the City of Live Oak in the east to Powell Road in the west. This roadway is part of the circulation system that surrounds the Sutter Buttes and, in addition, provides regional access to the community of Pennington.

- **Pleasant Grove Road** is a north / south two-lane roadway that is parallel to and east of SR 70 and SR 99 and extends from the Sacramento County Line in the south to the Yuba County line in the north. Pleasant Grove Road serves as a local alternative north / south route to the State highways. From the County line, Pleasant Grove Road continues north as Forty Mile Road in Yuba County.

- **Railroad Avenue** is a north / south two-lane roadway that extends from Messick Road in the south to Winship Road in Yuba City and continues south from an agricultural facility northeast of Tudor to SR 99.

- **Reclamation Road** is a two-lane rural roadway that extends from Karnak Road in a northwestern direction through the community of Robbins, crossing SR 113 before terminating at Progress Road near Tisdale. This roadway along with Progress, McGrath and Tarke Roads serves as a direct route between SR 113 / Robbins and SR 20 / Meridian bypassing the urbanized Yuba City section of the county.

- **Richland Road** is an east / west two-lane roadway that extends from Main Street in the east to Walton Avenue in the west. This road crosses SR 99 providing access to the greater Yuba City area.

- **Riego Road** is an east / west two-lane roadway that is a continuation of Base Line Road in Placer County and extends west intersecting SR 99 before terminating at Garden Highway. Riego Road (Baseline Road) provides local access to the City of Roseville urban area in Placer County.

- **Rio Oso Road** is an east / west two-lane roadway extending from west of SR 70 east through the community of Rio Oso to Warren Road.

- **South Butte Road** is an east / west two-lane roadway extending from SR 20 west of Township Road through the community of Sutter to West Butte Road. There is also a section connecting Tarke Road to Hageman Road through Tarke north of SR 20.

- **Stewart Road** is an east / west two-lane roadway that extends from Garden Highway across SR 99 to Walton Avenue.

- **Tierra Buena Road** is a north / south two-lane roadway that extends from Hooper Road in Tierra Buena to Eager Road.

- **Township Road** is a three part, north / south two-lane roadway. South Township Road extends from Tudor Road in the south to Franklin Road in the north. North Township Road extends from Franklin Road north to Nuestro Road. Township Road then continues north from Clark Road to the Butte County line.

- **Walton Avenue** is a north / south two-lane roadway that extends from Oswald Road in the south to SR 20 in the north.

- **West Butte Road** is a north / south two-lane roadway that extends from North Butte Road in the north to SR 20 in the south. This roadway is part of the circulation system that surrounds the Sutter Buttes.
- **West Catlett Road** is an east / west two-lane roadway that extends from the Placer County Line in the east and across SR 99 and SR 70 to Garden Highway in the west.

Roadway Analysis Methodology

To quantitatively evaluate traffic operating conditions and to provide a basis for comparison of operating conditions, roadway LOS were determined. LOS as defined in the 2000 Highway Capacity Manual is "a quantitative measure describing operational conditions within a traffic stream". LOS definitions generally describe these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions and comfort and convenience. Six levels of service are defined and given letter designations, from "A" to "F", with LOS "A" representing the best operating conditions and LOS "F" the worst. Tables 3.2-2 through 3.2-5 present the characteristics associated with each LOS grade for urban street segments, rural highways, expressways, and freeways.

Table 3.2-2. Levels of Service Definitions – Urban Street Segments

Service Levels	Description
A	Primarily free-flow operations at average travel speeds, usually 90 percent of the free-flow speed for the given street class. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal.
B	Reasonably free-flow operations at average travel speeds, usually 70 percent of the free-flow speed for the given street class. The ability to maneuver within the traffic stream is only slightly restricted and control delay at signalized intersections are not significant.
C	Stable operations: however, ability to maneuver and change lanes in midblock locations may be more restricted than at LOS B and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50 percent of the free-flow speed for the street class.
D	Borders on a range in which small increases in flow may cause substantial increases in delay and decreases in travel speed. LOS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or a combination of these factors. Average travel speeds are about 40 percent of the free-flow speed.
E	Characterized by significant delays and average travel speeds of 33 percent or less of the free-flow speed. Such operations are caused by a combination of adverse progression, high signal delay, high volumes, extensive delays at critical intersections and inappropriate signal timing.
F	Characterized by urban street flow at extremely low speeds, typically one-third to one-fourth of the free-flow speed. Intersection congestion is likely at critical signalized locations, with high delays, high volumes and extensive queuing.

Source: 2000 Highway Capacity Manual, Transportation Research Board (TRB) Special Report 209.

Table 3.2-3. Levels of Service Definitions – Expressways

Service Levels	Description
A	Completely free-flow conditions. The operation of vehicles is virtually unaffected by the presence of other vehicles and operations are constrained only by geometric features of the highway and by driver preference. Maneuverability within the traffic stream is good. Minor disruptions to flow are easily absorbed without a change in travel speed.
B	Indicates free-flow, although the presence of other vehicles becomes noticeable. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver, minor disruptions are still easily absorbed, although local deterioration in LOS will be more obvious.
C	The influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles. On multilane highways with a free-flow speed above 50 mph, the travel speeds reduce somewhat. Minor disruptions can cause serious local deterioration in service and queues will form behind any significant traffic disruption.
D	The ability to maneuver is severely restricted due to traffic congestion. Travel speed is reduced by the increasing volume. Only minor disruptions can be absorbed without extensive queues forming and the service deteriorating.
E	Operations at or near capacity, an unstable level. The densities vary, depending on the free-flow speed. Vehicles are operating with the minimum spacing for maintaining uniform flow. Disruptions cannot be dissipated readily, often causing queues to form and service to deteriorate to LOS F. For the majority of multilane highways with free-flow speeds between 45 and 60 mph, passenger-car mean speeds at capacity range from 42 to 55 mph but are highly variable and unpredictable.
F	Forced or breakdown flow. It occurs either when vehicles arrive at a rate greater than the rate at which they are discharged or when the forecast demand exceeds the computed capacity of a planned facility. Although operations at these points-and on sections immediately downstream-appear to be at capacity, queues form behind these breakdowns. Operations within queues are highly unstable, with vehicles experiencing brief periods of movement followed by stoppages.

Source: 2000 Highway Capacity Manual, Transportation Research Board (TRB) Special Report 209.

Table 3.2-4. Levels of Service Definitions – Rural Highways

Service Levels	Description
A	Motorists are able to travel at their desired speed. Would result in average speeds of 55 mi/h on Class I highways. The passing frequency required to reach these speeds has not reached a demanding level, so that passing demand is well below passing capacity, and platoons of three or more cars are rare. Drivers are delayed by no more than 35 percent of their travel time by slower moving vehicles.
B	Traffic flow of 50 mi/h or slightly higher on level terrain Class I highways. The demand for passing to maintain the desired speed becomes significant and approximates the passing capacity at the lower level of LOS B. Drivers are delayed by platoons up to 50 percent of the time.
C	Further increases in flow, resulting in noticeable increases in platoon formation, platoon size, and frequency of passing impediments. The average speed still exceeds 45 mi/h on level terrain Class I highways, even though unrestricted passing demand exceeds passing capacity. At higher volumes the chaining of platoons and significant reductions in passing capacity occur. Although traffic flow is stable, it is susceptible to congestion due to turning traffic and slow moving vehicles. Percent time spent following may reach 65 percent.
D	Unstable traffic flow. Two opposing traffic streams begin to act separately at higher volume levels, as passing becomes extremely difficult. Passing demand is high, but passing capacity approaches zero. Mean platoon sizes of 5 to 10 vehicles are common, although speeds of 40mi/h still can be maintained under base conditions on Class I highways. Turning vehicles and roadside distractions cause major shock waves in the traffic stream. Motorists are delayed in platoons nearly 80 percent of the time.
E	Traffic flow conditions have a percent time-spent-following greater than 80 percent on Class 1 highways. Speeds may drop below 40 mi/h. Passing is virtually imposable, and platooning becomes intense, as slower vehicles or other interruptions are encountered. The highest volume attainable defines the capacity of the highway.
F	Represent heavily congested flow with traffic demand exceeding capacity. Volumes are lower than capacity and speeds are highly variable.

Source: 2000 Highway Capacity Manual, Transportation Research Board (TRB) Special Report 209.

Table 3.2-5. Levels of Service Definitions – Freeways

Service Levels	Description
A	Free-flow operations. Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The effects of incidents or point breakdowns are easily absorbed at this level.
B	Represents reasonably free-flow operations and free-flow speeds are maintained. The ability to maneuver within the traffic stream is only slightly restricted and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents and point breakdowns are still easily absorbed.
C	Flow with speeds at or near the free-flow speed of the freeway. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service will substantial. Queues may be expected to form behind any significant blockage.
D	Speeds begin to decline slightly with increasing flows and density begins to increase somewhat more quickly. Freedom to maneuver within the traffic stream is more noticeably limited and the driver experiences reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.
E	Operation at capacity. Operations at this level are volatile, because there are virtually no usable gaps in the traffic stream. Vehicles are closely spaced, leaving little room to maneuver within the traffic stream at speeds that still exceed 49 mph. Any disruption of the traffic stream, such as vehicles entering from a ramp or a vehicle changing lanes, can establish a disruption wave that propagates throughout the upstream traffic flow. At capacity, the traffic stream has no ability to dissipate even the most minor disruption and any incident can be expected to produce a serious breakdown with extensive queuing. Maneuverability within the traffic stream is extremely limited and the level of physical and psychological comfort afforded the driver is poor.
F	Breakdowns in vehicular flow. Such conditions generally exist within queues forming behind breakdown points.

Source: 2000 Highway Capacity Manual, Transportation Research Board (TRB) Special Report 209.

Traffic operations on Urban Street segments are primarily controlled by traffic signals (Table 3.2-2). Intersection spacing is typically less than two miles apart and traffic along the entire roadway is influenced by signals due to traffic platooning. Regular access to roadside commercial and residential development is common. These elements increase the potential for traffic conflicts.

Traffic operations on Expressways are less controlled by traffic signals and more controlled by traffic density (Table 3.2-3). Intersection spacing is typically more than two miles apart and traffic between signals is less influenced by platoons because platoons break up between intersections. There is normally very limited access provided to roadside commercial and residential development. This reduces the potential for traffic conflicts.

Traffic operations on two lane Rural Highways is controlled by the limited ability to pass slower vehicles (Table 3.2-4). The ability to pass is limited by the volume of vehicles traveling in the opposite direction. Speed is decreased as the percent of time following slower vehicles increases. Platoons develop behind slower moving vehicles.

Traffic operations on Freeways are only controlled by the ability to maneuver (Table 3.2-5). There are no traffic signals or stop signs. Access is fully controlled and only provided at interchanges.

LOS is commonly dictated by a facility's "volume to capacity" (V/C) ratio. V/C ratios are a measure of the proportion of the roadways capacity that is being used by traffic, and are simply the traffic volumes on the roadway divided by the roadway's capacity. As an example, a V/C ratio of 1.00 represents complete utilization of the roadway's capacity. LOS represents the roadway's service rating, corresponding to a range of V/C ratios.

Roadway Capacity

The capacity of a roadway segment is the maximum rate at which vehicles can be expected to traverse a point or section of a facility during a given period of time. The 2000 Highway Capacity Manual (HCM) contains standard procedures for highway capacity analysis and level of service determination for most types of roadway facilities.

The HCM defines levels of service for freeways and rural expressways (multi-lane highways) as functions of the density of vehicles on the road; density is usually expressed in units of vehicles per miles per lane. Vehicular density correlates to quality of service as a vehicle's freedom to maneuver and proximity to other vehicles is captured by vehicular density.

For **four-lane freeways**, the HCM presents an estimated maximum average daily traffic (ADT) of 67,400 for level terrain and a threshold of 48,400 ADT for LOS "D". This is based on a K factor (design hour factor, i.e., the proportion of ADT expected to occur in the design hour, usually the PM peak hour) of 10 percent and other standard assumptions for directionality of flow (60-40 percent), heavy vehicle percentage (9 percent), passing opportunity, and roadway geometrics.

For **four-lane expressways** (multi-lane highways), the HCM prescribes an estimated maximum ADT of 59,500 for level terrain and a threshold of 41,800 ADT for LOS "D". This is based on a K factor of 10 percent and other standard assumptions for directionality of flow (60-40 percent), heavy vehicle percentage (9 percent), passing opportunity, and roadway geometrics.

For **rural two-lane roadways**, the HCM defines percent-time delayed as the primary measure for determining the levels of service. Percent-time delayed is the average percent of the time that vehicles are delayed while traveling in platoons because of the inability to pass. Passing demand increases rapidly as traffic volumes increase, while passing capacity in the opposing lane declines as volumes increase. Thus, unlike other types of uninterrupted flow facilities, normal traffic flow in one direction influences flow in the other direction on two-lane facilities. Motorists are forced to adjust their individual travel speed as volumes increase, and as the ability to pass declines. In conjunction with this, terrain, shoulder width, percent of heavy vehicles and available access points are relevant factors.

For **rural two-lane roads**, the HCM presents an estimated maximum ADT of 25,200 for level terrains and a threshold of 10,600 ADT for LOS "D". This is based on a K factor of 10 percent and other standard assumptions for directionality of flow (60-40 percent), heavy vehicle percentage (9 percent), passing opportunity, and roadway geometrics.

A typical daily volume assumed to correspond with peak hour capacity (i.e., LOS "E" to LOS "F" threshold) of an urban roadway would be calculated as follows:

- 1,800 vehicles per hour per lane (an average urban saturation flow rate)
- x 0.50 fraction of time right-of-way is given (g / c) in the case of major cross streets
- x 100 / 60 total volume / greater direction volume (@ 60:40 directionality)
- x 1 / 0.10 daily volume / peak hour volume

- = 15,000 vehicles per day per two lanes (theoretical capacity)

The 15,000 vpd capacity threshold is based on ideal conditions and may vary depending on various conditions. To reflect traffic operating conditions in the urbanized areas of Sutter County and the City of Yuba City, the Levels of Service thresholds were calibrated in the Traffic Impact Fee Study for Sutter County / Yuba City, 1993.

Table 3.2-6 shows the Levels of Service thresholds and capacities for various roadway facilities.

Table 3.2-6. Roadway Levels of Service Thresholds

Roadway	LOS C	LOS D	LOS E
Rural - Two Lane	7,000 - 10,600	10,600 - 16,400	16,400 - 25,200
Urban - Three Lane	15,330 - 17,520	17,520 - 19,700	19,700 - 21,900
Urban - Five Lane	30,660 - 35,040	35,040 - 39,420	39,420 - 43,800
Expressway - Four Lane	29,100 - 41,800	41,801 - 53,500	53,501 - 59,500
Freeway - Four Lane	33,700 - 48,400	48,401 - 60,000	60,001 - 67,400
Freeway - Six Lane	51,800 - 73,900	73,901 - 90,900	90,901 - 101,800

Source: DKS Associates, 2007.

Local governments adopt LOS standards for roadways under their jurisdiction. Generally, LOS "C" or "D" is considered adequate, although some communities adopt higher or lower standards depending on the circumstances and the needs of the community. Sutter County utilizes LOS "D" as the minimum acceptable standard for its roadways. Sutter County intends to utilize LOS "C" as the minimum acceptable standard for its roadways in the General Plan update.

Caltrans has adopted LOS standards for its highway and freeway facilities. These are described in the route concept reports.[3] SR 99 has a Route Concept of LOS "E". SR 20 has a Route Concept of LOS "D" on the rural western two-lane portion and a Route Concept of LOS "E" on the urban eastern four lane portion. Both of these route concept reports are subject to being updated before the General Plan is complete. The route concept report for SR 70 and 113 is currently unavailable.

Existing Roadway Operating Conditions

To assess the traffic operating conditions of the street and highway system in Sutter County, existing daily traffic count data was collected from both the State and the County. Levels of Service for primary roadways in Sutter County were evaluated using the existing ADT's. Table 3.2-7 and Table 3.2-8 show the existing Levels of Service on the State Highways and County roadways, respectively.

As indicated by Table 3.2-7, all SR 20 and SR 113 segments currently operate at LOS "C" or better, while SR 70 and SR 99 segments currently operate at LOS "E" or better. A review of available Caltrans Route Concept and Development Reports (RCDR) for State highway segments indicates all segments are within their respective concept LOS standard except for SR 70.

As shown in Table 3.2-8, all Sutter County roadways are currently operating at the County minimum LOS "D" standard, or better.

3 The SR 99 and SR 20 Route Concept Reports are currently being updated by Caltrans. Updated information will be used in the Sutter County General Plan Update process as it becomes available for all subsequent traffic analysis and reporting.

Table 3.2-7. Existing Operating Conditions on State Highway Segments

Roadway Name	From	To	Classification	Lane	Count	LOS
SR 20	Colusa County Line	Sutter Bypass	Rural Arterial	2	7,200	C
	Sutter Bypass	Acacia Avenue	Rural Arterial	2	7,200	C
	Acacia Avenue	Humphrey Road	Rural Arterial	2	9,500	C
	Humphrey Road	Township Road	Expressway	4	9,500	A
	Township Road	George Washington Blvd	Expressway	4	12,200	A
	George Washington	Yuba City Limits	Expressway	4	17,500	A
SR 70	Junction 99	Nicolaus Avenue	Rural Arterial	2	18,700	E
	Nicolaus Avenue	Yuba County Line	Rural Arterial	2	19,200	E
SR 99	Sacramento County	Riego Road	Expressway	4	39,500	C
	Riego Road	Sankey Road	Expressway	4	33,500	C
	Sankey Road	Howsley Road	Expressway	4	33,500	C
	Howsley Road	SR 70	Expressway	4	33,500	C
	Junction 70	Garden Highway	Rural Arterial	2	16,200	D
	Garden Highway	Sacramento Avenue	Rural Arterial	2	17,400	E
	Sacramento Avenue	Tudor Road	Rural Arterial	2	17,600	E
	Tudor Road	Junction Route 113	Rural Arterial	2	14,400	D
	Junction Route 113	O'Banion Road	Rural Arterial	2	17,300	E
	O'Banion Road	Oswald Road	Expressway	4	17,300	A
	Oswald Road	Barry Road	Expressway	4	19,600	B
	Barry Road	Bougue Road	Expressway	4	21,100	B
	Bougue Road	Lincoln Road	Expressway	4	26,500	B
	Lincoln Road	Franklin Road	Expressway	4	26,500	B
	Franklin Road	Bridge Street	Expressway	4	36,000	C
	Bridge Street	Junction Route 20	Expressway	4	21,800	B
	Junction Route 20	Queens Avenue	Freeway	4	20,300	A
	Queens Avenue	Pease Avenue	Freeway	4	20,300	A
	Pease Avenue	Eager Road	Freeway	4	20,300	A
	Eager Road	End Freeway	Freeway	4	17,800	A
	End Freeway	Encinal Road	Rural Arterial	2	17,800	E
	Encinal Road	Live Oak Blvd	Rural Arterial	2	19,900	E
	Live Oak Blvd	Paseo Avenue	Rural Arterial	2	15,600	D
	Paseo Avenue	Live Oak City Limits	Rural Arterial	2	15,600	D
	Live Oak City Limits	Pennington Road	Urban Arterial	3	15,600	C
	Pennington Road	Live Oak City Limits	Urban Arterial	3	15,600	C
	Live Oak City Limits	Butte County Line	Rural Arterial	2	15,600	D
SR 113	Yolo County Line	Knights Road	Rural Arterial	2	7,400	C
	Knights Road	Del Monte Avenue	Rural Arterial	2	7,400	C
	Del Monte Avenue	Sutter Bypass	Rural Arterial	2	5,500	B
	Sutter Bypass	George Washington Blvd	Rural Arterial	2	5,800	B
	George Washington	Junction Route 99	Rural Arterial	2	3,850	B

State Route Traffic Count Source: Caltrans Traffic and Vehicle Data Systems Unit web page (2006 counts).
Level of Service Source: DKS Associates, 2007.

Table 3.2-8. Existing Operating Conditions on Sutter County Roadways

Roadway Name	From	To	Classification	Lane	Count	LOS
Acacia Ave	Butte House Road	SR 20	Rural Collector	2	4,660	B
	SR 20	Franklin Road	Rural Collector	2	1,070	A
Bear River Road	Swanson Road	Pleasant Grove Road	Rural Collector	2	990	A
	Pleasant Grove Road	Brewer Road	Rural Collector	2	1,040	A
Bogue Road	Township Road	George Washington Blvd	Rural Collector	2	934	A
	George Washington Blvd.	Walton Avenue	Rural Collector	2	2,410	A
	Walton Avenue	SR 99	Urban Arterial	3	5,070	A
Broadway	Clark Road	Encinal Road	Rural Collector	2	850	A
	Encinal Road	Nuestro Road	Rural Collector	2	1,610	A
Butte House Road	Acacia Avenue	East Butte Road	Urban Arterial	3	2,450	A
	East Butte Road	Township Road	Urban Collector	3	4,370	A
	Township Road	Madison Road	Urban Collector	3	4,120	A
Catlett Road	Garden Highway	SR 70 / SR 99	Rural Collector	2	90	A
	SR 70 / SR 99	Pleasant Grove Road	Rural Collector	2	620	A
	Pleasant Grove Road	Brewer Road	Rural Collector	2	200	A
El Margarita Road	SR 20	Franklin Road	Rural Collector	2	2,320	A
Franklin Road	Acacia Avenue	Township Road	Rural Collector	2	1,070	A
	Township Road	George Washington Blvd	Rural Collector	2	2,620	A
	George Washington Blvd	El Margarita Road	Rural Collector	2	5,140	B
	El Margarita Road	Walton Avenue	Urban Collector	3	8,110	B
Garden Highway	Stewart Road	Messick Road	Rural Collector	2	5,230	B
	Messick Road	O'Banion Road	Rural Collector	2	4,290	B
	O'Banion Road	Tudor Road - SR 99	Rural Collector	2	4,280	B
	SR 99	Catlett Road	Rural Collector	2	520	A
	Catlett Road	Reigo Road	Rural Collector	2	150	A
	Reigo Road	Sacramento County limit	Rural Collector	2	200	A
George Washington	SR 20	Franklin Road	Rural Arterial	2	7,420	C
	Franklin Road	Lincoln Road	Rural Collector	2	4,280	B
	Lincoln Road	Bougue Road	Rural Collector	2	3,390	B
	Bougue Road	Oswald Road	Rural Collector	2	3,940	B
	Oswald Road	Tudor Road - SR 113	Rural Collector	2	3,040	A
Howsley Road	SR 70 – SR 99	Pleasant Grove Road	Rural Collector	2	2,270	A
	Pleasant Grove Road	Brewer Road	Rural Collector	2	1,380	A
Humphrey Road	Butte House Road	South Butte Road	Rural Collector	2	680	A
	South Butte Road	SR 20	Rural Collector	2	1,910	A
	SR 20	Franklin Road	Rural Collector	2	830	A
Larkin Road	Butte County Line	Live Oak City Limits	Rural Collector	2	2,990	A
	Live Oak City Limits	Paseo Avenue	Rural Collector	2	1,500	A
	Paseo Avenue	Clark Road	Rural Collector	2	1,500	A
	Clark Road	Encinal Road	Rural Collector	2	1,450	A
	Encinal Road	Eager Road	Rural Collector	2	1,390	A
Lincoln Road	Clements Road	Township Road	Rural Collector	2	560	A
	Township Road	George Washington Blvd	Rural Collector	2	1,040	A
	George Washington Blvd	Sanborn Rd	Rural Collector	2	3,670	B
Live Oak Blvd	SR 99	Yuba City Limits	Rural Collector	2	6,620	B

Table 3.2-8. Existing Operating Conditions on Sutter County Roadways

Roadway Name	From	To	Classification	Lane	Count	LOS
Marcum	Pleasant Grove Road	Brewer Road	Rural Collector	2	2,200	A
Morehead Rd	South Butte Road	SR 20	Rural Collector	2	1,350	A
Moroni-McGarth	Tarke Road	Progress Road	Rural Collector	2	1,270	A
Nicolaus Road	SR 99	SR 70	Rural Collector	2	1,470	A
	SR 70	Pleasant Grove Road	Rural Collector	2	1,220	A
Oswald Road	Township Road	George Washington Blvd	Rural Collector	2	590	A
	George Washington Blvd	Walton Avenue	Rural Collector	2	1,360	A
	Walton Avenue	SR 99	Urban Collector	3	2,150	A
	SR 99	Railroad Avenue	Rural Collector	2	200	A
Pease Road	Township Road	Tierra Buena Road	Urban Collector	3	810	A
	Tierra Buena Road	Live Oak Blvd	Urban Collector	3	1,670	A
Pennington Road	North Butte Road	Township Road	Rural Collector	2	1,660	A
	Township Road	Live Oak City Limits	Rural Collector	2	1,790	A
Pleasant Grove Road	Yuba County Line	Nicolaus Avenue	Rural Collector	2	3,140	A
	Nicolaus Avenue	Catlett Road	Rural Collector	2	3,000	A
	Catlett Road	Howsley Road	Rural Collector	2	2,330	A
	Howsley Road	Sankey Road	Rural Collector	2	1,210	A
	Sankey Road	Riego Road	Rural Collector	2	1,750	A
	Riego Road	Sacramento County limit	Rural Collector	2	1,180	A
Power Line	Riego Road	Sacramento County limit	Rural Collector	2	220	A
Progress Road	McClatchy Road	Acme Road	Rural Collector	2	1,010	A
	Acme Road	Reclamation Road	Rural Collector	2	1,250	A
Railroad Avenue	Bogue Road	Stewart Road	Urban Collector	3	2,250	A
	Stewart Road	Barry Road	Urban Collector	3	1,320	A
	Barry Road	Oswald Road	Rural Collector	2	1,050	A
Reclamation Road	Progress Road	Pelger Road	Rural Collector	2	1,060	A
	Pelger Road	SR 113	Rural Collector	2	1,890	A
Riego Road	Garden Highway	Powerline Road	Rural Collector	2	650	A
	Powerline Road	SR 70-99	Rural Collector	2	650	A
	SR 70 – SR 99	Pacific Avenue	Rural Collector	2	9,900	C
	Pacific Avenue	Pleasant Grove Road	Rural Collector	2	9,900	C
Rio Oso	SR 70	Swanson Road	Rural Collector	2	1,060	A
Rivera Road	Township Road	SR 99	Rural Collector	2	450	A
	SR 99	Larkin Road	Rural Collector	2	460	A
Sankey Road	SR 70-99	Pacific Avenue	Rural Arterial	2	1,180	A
	Pacific Avenue	Pleasant Grove Road	Rural Arterial	2	1,080	A
	Pleasant Grove Road	Locust Road	Rural Arterial	2	670	A
South Butte Road	Morehead Road	Acacia Avenue	Rural Collector	2	3,620	B
	Acacia Avenue	Humphrey	Rural Collector	2	1,480	A
	Humphrey	SR 20	Rural Collector	2	290	A
Stewart Road	Walton Avenue	SR 99	Rural Collector	2	400	A
	SR 99	Railroad Avenue	Rural Collector	2	890	A
	Railroad Avenue	Garden Highway	Rural Collector	2	720	A
Swanson Road	Rio Oso Road	Bear River Road	Rural Collector	2	980	A
Tarke Road	SR 20	Moroni Road	Rural Collector	2	890	A
Tierra Buena Road	Eager Road	Pease Avenue	Rural Collector	2	2,180	A
	Pease Avenue	Butte House Road	Urban Collector	3	2,360	A

Table 3.2-8. Existing Operating Conditions on Sutter County Roadways

Roadway Name	From	To	Classification	Lane	Count	LOS
Township Road	Butte County Line	Pennington Road	Rural Arterial	2	1,730	A
	Pennington Road	Paseo Avenue	Rural Arterial	2	1,920	A
	Paseo Avenue	Clark Road	Rural Arterial	2	1,960	A
	Nuestro Road	Pease Avenue	Rural Arterial	2	1,540	A
	Pease Avenue	Butte House Road	Urban Collector	3	2,350	A
	Butte House Road	SR 20	Urban Collector	3	2,470	A
	SR 20	Franklin Road	Urban Collector	3	3,330	A
	Franklin Road	Lincoln Road	Rural Arterial	2	1,530	A
	Lincoln Road	Bogue Road	Rural Arterial	2	1,140	A
	Bogue Road	Oswald Road	Rural Arterial	2	750	A
	Oswald Road	O'Banion Road	Rural Arterial	2	380	A
	O'Banion Road	Tudor Road	Rural Arterial	2	170	A
Walton Avenue	Bogue Road	Reed Road	Rural Arterial	2	2,690	A
	Reed Road	Oswald Road	Rural Arterial	2	1,540	A
W. Catlett	Garden Highway	SR 70-99	Rural Collector	2	300	A

Source: DKS Associates, 2007.
Note: Traffic counts are ongoing (as of December 5, 2007). Missing count data and LOS estimates will be provided as additional count data becomes available.

Truck Routes and Traffic

There are a number of designated truck routes within Sutter County. These include both County and State designated routes. Rural roads in Sutter County are not officially designated as truck routes. Trucks using these roads are subject to load limits of bridges, and county transport permitting requirements.

County Truck Routes

In 1990, Sutter County adopted a truck route ordinance, restricting 14,000+ gross weight vehicles to specific routes. County designated truck routes within the urbanized area of Yuba City are displayed on Figure 3.2-2.

State Truck Routes

The California Department of Transportation (Caltrans) has designated SR 20, SR 70, SR 99 and SR 113 as truck routes. Table 3.2-9 lists the State designated truck routes within Sutter County with their beginning and end points and regulatory designations.

Traffic Accident Rates

Recent accident history in Sutter County was researched to identify primary accident factors and high accident locations. The purpose of this investigation was to identify any problems that may be addressed within the scope of the transportation planning for the General Plan, such as the identification of general goals for safety improvements on County roads. This is not a detailed traffic engineering study of County road accidents.

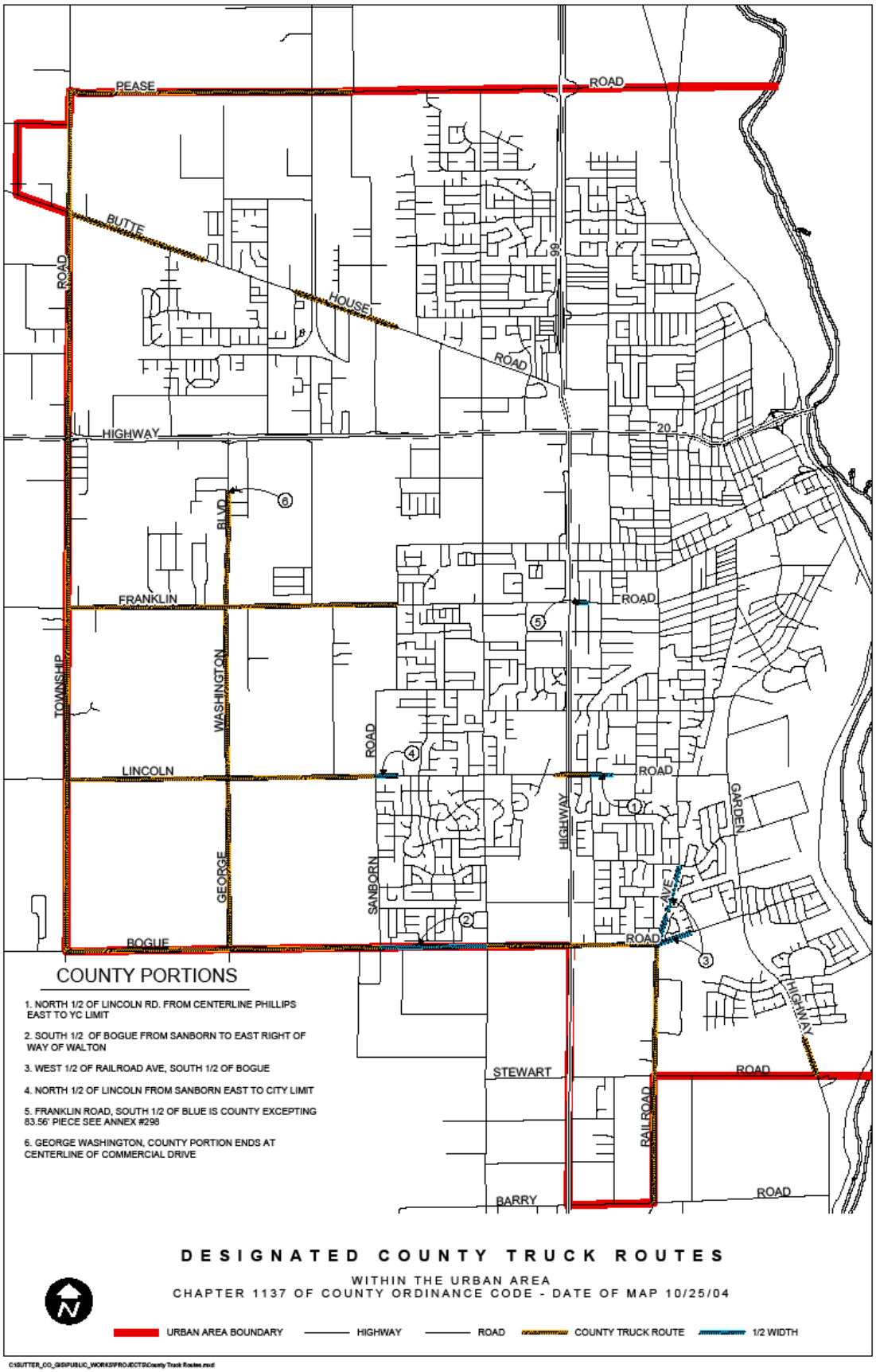


Figure 3.2-2 County Designated Truck Routes in Yuba City Urban Area

Table 3.2-9 Truck Route Designations on State Highways

Route	Beginning PM	Ending PM	Segment Miles	Segment Type	Begin	End
20	R0.00	E15.573	15.46	TA	Colusa / Sutter County Line	Jct Rte 99
20	15.57	17.06	1.48	CL40	Jct Rte 99	Sutter / Yuba County Line
70	R0.051	8.30	8.25	TA	Jct Rte 99	Sutter / Yuba County Line
99	0.00	E42.389	41.99	TA	Sacramento / Sutter County Line	Sutter / Butte County Line
113	0.00	E16.38	16.37	TA	Yolo / Sutter County Line	Jct Rte 99
Walton Ave			0.3	TA	State Route 20	Sunsweet
Pacific Ave			1.4	TA	Sysco	Riego Rd
Riego Rd			0.8	TA	State Route 99	Pacific Ave
Railroad Ave			*2.0*	*TA*	*Bouge Road*	*Oswald Rd*
Oswald Rd			*0.4*	*TA*	*State Route 99*	*Railroad Ave*

Sources: http://www.dot.ca.gov/hq/traffops/trucks/truckmap/index.htm December 5, 2007 and Sutter County DOT, January 2008.
Notes:
Segment Type
TA Terminal Access Route
CL40 40-foot KPRA, 65-foot overall length (KPRA = Kingpin-to-Rear Axle
Postmile Prefix
R First realignment
E Post Mile Equation
Italics = proposed

The accident history for roadway intersections between January 1, 2003 and March 31, 2007 were obtained from the High Incidence Intersection Report and the Intersection Collision Severity Summary provided by Sutter County's Department of Public Works. These Statewide Integrated Traffic Record System (SWITRS) reports do not include accident information for streets within the jurisdictions of the Cities of Yuba City and Live Oak and / or information on State highways. Table 3.2-10 ranks the 15 top collision intersections (collisions within 200 feet of the roadway intersection). Table 3.2-11 summarizes the accident types for the four+ year period for the same 15 top intersections (locations).

The intersection of Pleasant Grove Road and Riego Road has experienced a high of over 6 accidents per-annum. Over two collisions per year were recorded at 3 additional roadway intersections. A closer inspection of the individual intersection locations should be performed to identify potential problem areas, accompanied with suggested improvements for intersection controls and possible re-design.

Of the 121 collisions in unincorporated Sutter County in the 4+ year period, 5 involved a fatality. Over half (67) of the collisions were non-injury traffic accidents.

Table 3.2-10. High Incidence Intersection Report
(Number of collisions for the top 15 locations – Between 1/1/2003 and 6/30/2007)

Rank	Intersection	Total Collisions
1	Pleasant Grove Rd / Riego Rd	29
2	Pleasant Grove Rd / Sankey Rd	11
3	Pease Rd / Tierra Buena Rd	10
4	Natomas Rd / Riego Rd	9
5	Franklin Rd / George Washington Blvd	8
6	Oswald Rd / Township Rd	7
7	Butte House Rd / Humphrey Rd	6
8	Clark Rd / Broadway Rd	6
9	Columbia Dr / Bogue Rd	5
10	Franklin Rd / Humphrey Rd	5
11	Lemenager Rd / Acacia Ave - Lower Pass Rd	5
12	Natomas Rd / Howsley Rd	5
13	Pacific Ave / Riego Rd	5
14	Pleasant Grove Rd / Catlett Rd	5
15	Pleasant Grove Rd / Marcum Rd	5
Total		**121**

Source: Sutter County Public Works Department, January, 2008.

Table 3.2-11. Intersection Collision Severity Summary
(Number of collisions for the top 15 locations – Between 1/1/2003 and 6/30/2007)

Rank	Intersection	Fatal Collision	Injury Accident	Non-Injury	Total Collisions
1	Pleasant Grove Rd / Riego Rd	0	8	21	29
2	Pleasant Grove Rd / Sankey Rd	0	6	5	11
3	Pease Rd / Tierra Buena Rd	0	7	3	10
4	Natomas Rd / Riego Rd	1	3	5	9
5	Franklin Rd / George Washington Blvd	0	5	3	8
6	Oswald Rd / Township Rd	1	4	2	7
7	Butte House Rd / Humphrey Rd	1	2	3	6
8	Clark Rd / Broadway Rd	1	2	3	6
9	Columbia Dr / Bogue Rd	0	2	3	5
10	Franklin Rd / Humphrey Rd	1	1	3	5
11	Lemenager Rd / Acacia Ave - Lower Pass Rd	0	1	4	5
12	Natomas Rd / Howsley Rd	0	2	3	5
13	Pacific Ave / Riego Rd	0	0	5	5
14	Pleasant Grove Rd / Catlett Rd	0	3	2	5
15	Pleasant Grove Rd / Marcum Rd	0	3	2	5
Total		**5**	**49**	**67**	**121**

Source: Sutter County Public Works Department, January, 2008.

Future Planned Roadway Improvements

Caltrans

The latest available Caltrans Route Concept Report for SR 20 only calls for widening to six lanes in Yuba City by 2010. It ultimately calls for SR 20 to be a four lane expressway with a bypass around Yuba City.[4]

The Caltrans Draft Route Concept Report for SR 70 calls for improvements within Sutter County. On the segment between the SR 99 interchange and Yuba County line the 2027 concept facility is a four lane expressway.

The Caltrans SR 70 and SR 99 Corridor Study recommend that the segment of SR 70 between the Yuba County line and the SR 99 interchange should be improved to a four lane freeway.

The current Caltrans Route Concept Report for SR 99 calls for improvements throughout the corridor. On the segment between the Sacramento County line and the SR 70 interchange the 2024 concept facility is a six lane freeway, and the ultimate facility is an eight lane freeway. On the segment between the SR 70 interchange and the boundary of the Yuba City urban area the 2024 concept facility is a four lane expressway and the ultimate facility is a four lane freeway. On the segment between the southern boundary of the Yuba City urban area and SR 20 the 2024 concept facility is a six lane expressway north of Lincoln Road, and the ultimate facility is a six lane expressway. The four lane freeway segment between SR20 and Eager Road would remain unchanged. On the segment between Eager Road and the Butte County line the 2024 concept facility is a four lane expressway and the ultimate facility is a four lane expressway.

The Caltrans SR 70 and SR 99 Corridor Study recommends that for the segment of SR 99 between the SR 99 interchange and Bogue Road should be improved to a four lane expressway, the segment between Bogue Road and SR 20 should be improved to a six lane expressway, and the segment between the end of the freeway and the City of Live Oak should be improved to a four lane expressway.

Regional Metropolitan Transportation Plan

Sutter County is a member of the Sacramento Area Council of Governments (SACOG) for which a Regional Metropolitan Transportation Plan (RMP) was prepared in 2006. The SACOG region includes six counties and 22 cities. The six member counties are El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba Counties. The MTP addresses the regional transportation needs of the member jurisdictions and incorporates a variety of transit modes. The overall goal is to provide transportation services and facilities that will modify existing urban forms, shape future urban forms and otherwise influence land use change to make the most efficient and effective use of the region's transportation resources.

The Draft 2035 MTP has several planned roadway improvements in and adjacent to Sutter County. SR 99 would be widened to four lanes from Obanion Road to SR 70. SR 99 would also be widened to four lanes within the Live Oak City limits. Riego Road would be widened to four lanes from SR 99 to a point two miles west. Riego Road would be widened to six lanes from SR 70 – SR 99 to the Placer County line. Sankey Road would be widened to four lanes from Pleasant Grove Road to SR 70 – SR 99. Pacific Avenue would be widened to four lanes. The MTP improvements to Riego Road, Sankey Road, and Pacific Avenue are contingent on

4 Caltrans is currently updating the SR 20 Route Concept Report. Updated information will be used in all subsequent traffic analysis and reporting as it becomes available.

development in the South Sutter County area. There would also be several roadway improvements internal to Yuba City and new roads in the Live Oak annexation area.

Placer Parkway

The South Placer Regional Transportation Authority (SPRTA) and the Federal Highway Administration (FHWA), in cooperation with the California Department of Transportation (Caltrans), propose to select and preserve a corridor for the future construction of Placer Parkway—a new east-west roadway linking SR 65 and SR 70 - SR 99. Placer Parkway is intended to reduce anticipated congestion on both the local and regional transportation systems and advance economic development goals in southwestern Placer County and south Sutter County. Five corridor alternatives and a No-Build Alternative have been analyzed in the Draft Placer Parkway Corridor Preservation Tier 1 Environmental Impact Statement/Program Environmental Impact Report (dated July 29, 2007).

Sutter Pointe

Sutter Pointe is a proposed master-planned community, bounded to the south by the Sacramento/Sutter County line, to the east by Natomas Road, and to the west by Powerline Road. The Sutter Pointe project area consists of 7,500 acres of the 10,500-acre Sutter County Industrial-Commercial Reserve as designated in the 1996 General Plan. The proposed Sutter Pointe circulation system includes a hierarchy of roadways, a pedestrian and bikeway network, and public transit. Sutter Pointe proposes the following key roadway features:

- A grade-separated crossing over Highway 99, at Riego Road.
- A grade-separated crossing over Sankey Road (future Placer Parkway) west of Pacific Avenue.
- Future parallel roadways to SR 99/70 to provide for regional travel parallel to the State highway corridor.

The proposed Sutter Pointe Specific Plan is subject to the review, refinement, and approval of Sutter County. As a result, the above information should be considered conceptual and subject to change.

REGULATORY SETTING

Federal

Federal Highway Administration (FHWA)

FHWA is the agency of the U.S. Department of Transportation (DOT) responsible for the Federally-funded roadway system, including the interstate highway network and portions of the primary State highway network. FHWA funding is provided through the Safe, Accountable, Flexible, Efficiency Transportation Equity Act: A Legacy for Users (SAFETEA-LU). SAFETEA-LU can be used to fund local transportation improvement projects, such as projects to improve the efficiency of existing roadways, traffic signal coordination, bikeways, and transit system upgrades.

State

California Department of Transportation (Caltrans)

Caltrans is responsible for planning, designing, constructing, and maintaining all State highways. The jurisdictional interest of Caltrans extends to improvements to roadways at the interchange ramps serving area freeways. Any Federally-funded transportation improvements would be subject to review by Caltrans staff and the California Transportation Commission.

Local

SACOG is responsible for development of the State- and Federally-required Metropolitan Transportation Plan (MTP) every four years in coordination with 22 cities and six counties in the greater Sacramento area. It also incorporates the long-range plans of El Dorado and Placer Counties. Local projects must be included in the MTP in order to obtain State and federal funding. The current MTP 2025 and its complement 2006 MTP extends the horizon year to 2027. SACOG is developing a new plan, MTP 2035. For the first time, the MTP 2030 will pro-actively link land use, air quality, and transportation needs based on the SACOG Board-adopted 2050 Blueprint project, which encourages the use of smart growth principles in local jurisdictional planning.

As the designated metropolitan planning organization, SACOG is also responsible for maintaining a Federal Metropolitan Transportation Improvement Program (MTIP). Projects included in the MTIP are consistent with those in the MTP. The next update of the MTIP will be embedded in MTP 2035.

Designated truck routes within the urban area are governed by Chapter 1137 of Sutter County Ordinance Code.

California Vehicle Code (CVC Section 35701) requires County agencies to coordinate weight restrictions of roads which traverse between county lines.

3.2.2 Transit and Rail

INTRODUCTION

This section describes the transit and rail networks in Sutter County including existing services and facilities, and identifies future planned improvements. Information for this section was obtained from applicable reports and studies prepared by the Yuba-Sutter Transit Agency and AMTRAK.

SUMMARY OF KEY FINDINGS

- The Yuba-Sutter Transit Agency provides Sutter County residents and businesses with fixed route local transit service, three rural routes, and commuter service to Sacramento. Additionally, Yuba-Sutter Transit operates countywide demand responsive transit services for disabled and elderly residents.
- The closest rail passenger service is in Oroville (Butte County) which is a scheduled stop on the Coast Starlight, Seattle to Los Angeles, AMTRAK route. The Coast Starlight serves passengers with one northbound and one southbound train daily.

EXISTING CONDITIONS

Transit

Fixed route and demand responsive transit services are provided to the residents and businesses in Sutter County by the Yuba-Sutter Transit Agency. Yuba-Sutter Transit categorized their fixed route service as "local service" and "rural service."

Local Fixed Route Public Transit[5]

Sutter County is served by the Yuba-Sutter Transit's fixed route system. Yuba-Sutter Transit offers scheduled local fixed route service from 6:30 a.m. to 6:30 p.m. weekdays and from 8:30 a.m. to 5:30 p.m. on Saturdays. No service is available on Sundays. Six routes provide service to Yuba City, Marysville, Linda and Olivehurst. Buses operate every 30 to 60 minutes. Convenient timed transfers are available at Yuba College; the North Beale Road Transit Center; the Yuba County Government Center; Alturas and Shasta Streets; and, the Walton Terminal (Sam's Club / Sunsweet). All Yuba-Sutter Transit buses are equipped with bike racks.

Fares:

- Basic One-Way Fare – $1.00
- Senior (Age 62+) / Disabled Fare w/photo I.D. Card – $0.50
- Youth Fare (Age 5 - 12) – $0.50
- Children (Age 4 and under) – Free
- Transfers – Free
- Basic Monthly Pass – $30.00
- Senior / Disabled Monthly Pass – $15.00
- Youth (Age 5 - 18) Monthly Pass – $5.00 through Dec. 2007
- Discount Ticket Book ($12.00 value) – $10.00

The Sacramento Commuter Express offers frequent commute-hour service between Marysville / Yuba City and key stops in Downtown Sacramento. Commuter Express transit stops are located in Yuba City, Marysville, Linda and East Nicolaus; no reservations are required.

The Sacramento Midday Express offers late morning, noon and early afternoon service each weekday between Yuba City / Marysville and Downtown Sacramento. The Midday Express has transit stops in Yuba City, Marysville, Linda and East Nicolaus; reservations are not required.

Additionally, a combination of advance reservation and scheduled services are offered from selected rural cities and communities to the Marysville / Yuba City urban area where transfers can be made to other services.

5 Source: Yuba-Sutter Transit website: www.yubasuttertransit.com, accessed September 13, 2007.

Rural Fixed Route Public Transit[6]

Yuba-Sutter Transit provides rural transit service to Sutter County via three rural routes; the Live Oak Route, the Foothills Route and the Wheatland Route.

The Live Oak Route offers one round-trip every Monday, Wednesday and Friday from Live Oak to Yuba City and Marysville. Within Live Oak, three scheduled stops are available or eligible passengers will be picked up or dropped off at any address by advance reservation.

The Foothills Route offers two round-trips every Tuesday, Wednesday and Thursday from Challenge, Brownsville and Dobbins to Marysville and most points in between. Service is provided only by advance reservation.

The Wheatland Route offers one round-trip each Tuesday from Wheatland to Linda and Marysville. Within Wheatland, the bus will pick up and drop off at any address. Service is provided only by advance reservation.

Rural Route Fares:

- Basic One-Way Fare – $2.00
- Senior (Age 62+) / Disabled Fare w/photo I.D. Card – $1.00
- Youth Fare (Age 5 - 12) – $1.00
- Children (Age 4 and under) – Free
- Discount Ticket Books ($12.00 Value) – $10.00

Demand Responsive Transportation[7]

Dial-A-Ride service is designed to meet the needs of seniors and persons with qualifying disabilities, especially those who are unable to use the Yuba-Sutter Transit fixed-route system. General public passengers traveling to or from locations more than half a mile from a fixed route may also use Dial-A-Ride, but they are subject to being transferred to and from the fixed route system if they are traveling across the service area except during weekday evening service hours.

Dial-A-Ride offers curb-to-curb shared ride service to eligible passengers anywhere within the area shown in olive green on Figure 3.2-3. Dial-A-Ride service is available from 6:30 a.m. to 9:30 p.m. on weekdays and from 8:30 a.m. to 5:30 p.m. on Saturdays. No service is provided on Sundays.

Dial-A-Ride is Yuba-Sutter Transit's complimentary paratransit service under the Americans with Disabilities Act (ADA). Passengers with disabilities that prevent them from using Yuba-Sutter Transit's urban fixed route bus system may apply for ADA status to receive priority service on Dial-A-Ride. General public Dial-A-Ride passengers are subject to transfer to the fixed route system if they travel across the service area except during evening service hours. Transfers between the Dial-A-Ride and fixed route services are free.

Future Planned Transit Improvements

Currently, Yuba-Sutter Transit is updating their Short Range Transit Plan (SRTP). The updated SRTP is expected to be adopted in March 2008 with a draft released in February 2008. Additional information may be available for incorporation into the Sutter County General Plan

6 Yuba-Sutter Transit, www.yubasuttertransit.com, accessed September 13, 2007.

7 Yuba-Sutter Transit, www.yubasuttertransit.com, accessed September 13, 2007.

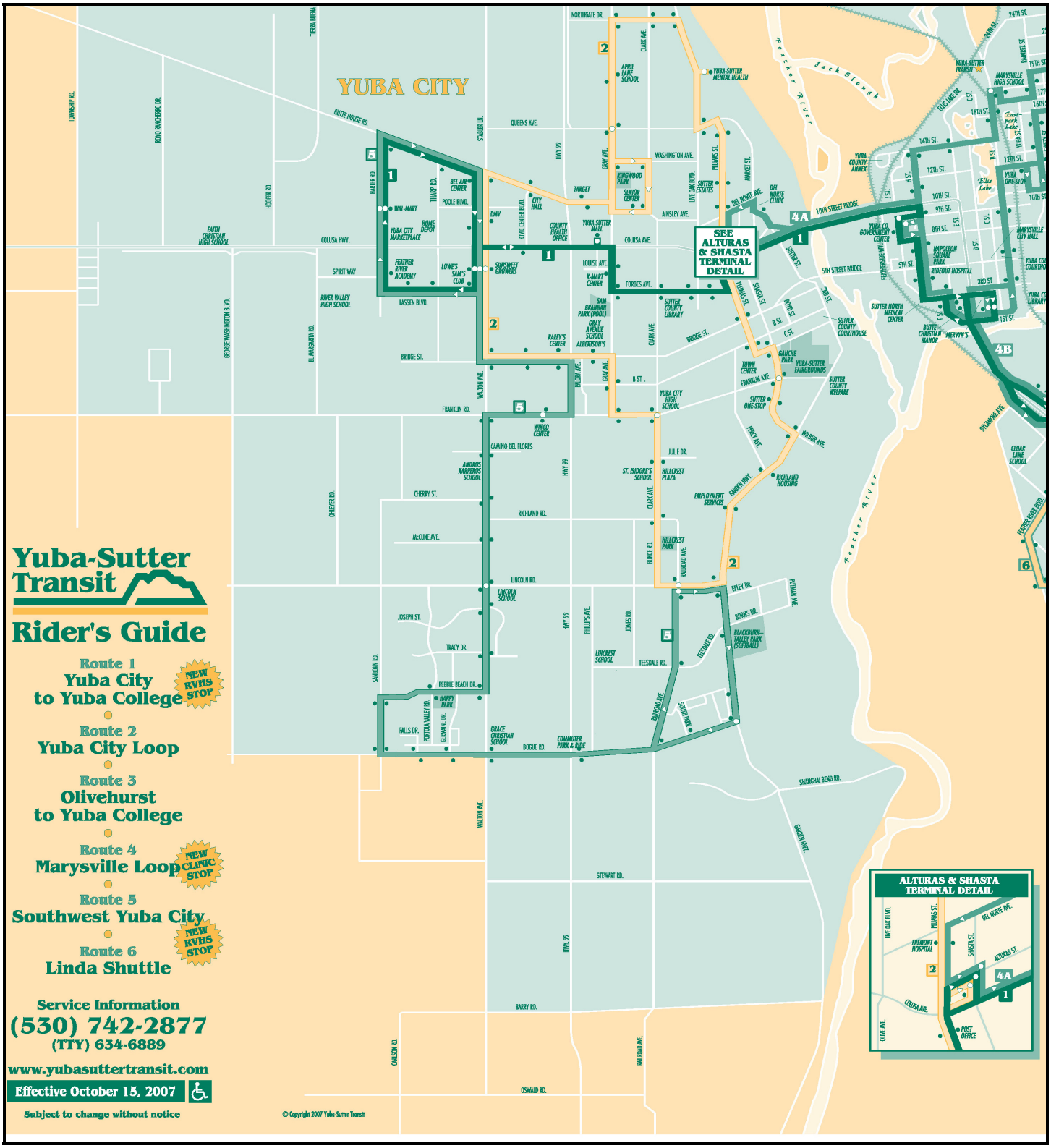


Figure 3.2-3 Yuba-Sutter Fixed Route Transit Map

Update from the February 2008 draft SRTP. There are some probable additional time of day services (schedule improvements) on the existing scheduled routes between Sutter County and downtown Sacramento. Due to funding constraints, there is limited additional transit service planned for unincorporated Sutter County.[8]

The proposed Sutter Pointe project is recognized in the 2008 SRTP Update. The level of transit service provided in the 5-year Transit Plan is still being determined and will depend upon the amount of development forecasted to be completed and occupied in the proposed Sutter Pointe area within the next 5 years.[9] This project is subject to the review, refinement, and approval of Sutter County.

The only dedicated park and ride facility in Yuba and Sutter Counties opened in August 1997 under the sponsorship of Yuba-Sutter Transit using federal and State revenues. Caltrans constructed this 88-space lot on the northeast corner of Bogue Road and Highway 99 south of Yuba City and they continue to own and maintain the facility. Planning for the expansion of this facility, which is now packed to overflowing every weekday, is now underway with federal Congestion Mitigation and Air Quality (CMAQ) funding secured by Yuba-Sutter Transit as the project's financial centerpiece. Caltrans will again be the lead agency for this project which is expected to at least double capacity while providing room for future expansion. This project is now projected for completion in 2009.[10]

The only dedicated park and ride facility in Yuba and Sutter Counties opened in August 1997 under the sponsorship of Yuba-Sutter Transit using federal and State revenues. Caltrans constructed this 88-space lot on the northeast corner of Bogue Road and Highway 99 south of Yuba City and they continue to own and maintain the facility. Planning for the expansion of this facility, which is now packed to overflowing every weekday, is now underway with federal Congestion Mitigation and Air Quality (CMAQ) funding secured by Yuba-Sutter Transit as the project's financial centerpiece. Caltrans will again be the lead agency for this project which is expected to at least double capacity while providing room for future expansion. This project is now projected for completion in 2009.[11]

Rail

Southern Pacific Railroad lines run through Sutter County east of Highway 70 from Sacramento County to Yuba City, and north of Yuba City to Butte County. The Rail lines are available for the transport of agricultural goods and other materials.

Rail Passenger service is only available in Oroville by way of the AMTRAK Coast Starlight train that runs from Los Angeles to Seattle with one stop daily in each direction or, Sacramento or Roseville for both the AMTRAK Coast Starlight and the Capitol Corridor that runs from Reno to San Jose with sixteen trains a day between Sacramento and Oakland. The long distance to the nearest train station makes this train service ineffective as a travel alternative for commuters.

No new rail lines are planned within Sutter County.

8 Keith Martin, Transit Manager, Yuba-Sutter Transit, personal communication, December 2, 2007.

9 Keith Martin, Transit Manager, Yuba-Sutter Transit, personal communication, December 2, 2007.

10 Yuba-Sutter Transit, www.yubasuttertransit.com/about.html, accessed December 2, 2007.

11 Yuba-Sutter Transit, www.yubasuttertransit.com/about.html, accessed December 2, 2007.

REGULATORY SETTING

California Public Utility Commission (PUC)

PUC is the State agency which regulates railroad, rail transit, and passenger transportation companies in California.

3.2.3 Bikeways

INTRODUCTION

This section describes the existing and planned bikeway system in Sutter County. Information for this section was obtained from the Yuba-Sutter Bikeway Master Plan and the SACOG Regional Bicycle, Pedestrian, and Trails Master Plan.

SUMMARY OF KEY FINDINGS

- There are currently 4.6 miles (7.4 km) of Class I bikeways, 10.6 miles (17.1 km) of Class II bikeways, and 0.7 miles (1.1 km) of Class III bikeways in unincorporated Sutter County. The existing bikeway system is somewhat limited and fragmented.
- The Yuba-Sutter Bikeway Master Plan identifies substantial improvements in bikeway connectivity, both regionally and locally.

EXISTING CONDITIONS

Sutter County adopted the Yuba-Sutter Bikeway Master Plan (YSBMP) in 1995 and approved an update in 2002. This Bikeway Plan was prepared for the Feather River Air Quality Management District and provides a comprehensive bikeway network for Sutter and Yuba Counties.

This bi-county plan includes:

- Bikeway goals and policies
- Existing conditions
- An analysis of demand
- Existing and proposed bikeway routes
- A cost and funding analysis
- An implementation strategy

Bikeways are generally categorized into three classes; Class I, II, and III. A Class I Bikeway (Multi-Use Path) [12] is defined as a path physically separated from motor vehicle traffic by open space or a barrier. Multi Use Paths are located either within a highway right-of-way or within an independent right-of-way, and are used by bicyclists, pedestrian, joggers, skaters and other non-motorized travelers. Because the availability of uninterrupted rights-of-way is limited, this type of facility is often difficult to locate and expensive to build relative to other types of bicycle and pedestrian facilities. Prime locations for the Multi Use Paths are areas such as power-line

12 Sacramento Area Council of Governments, *Regional Bicycle, Pedestrian and Trails Master Plan*, Final Draft Amendment, July 19, 2007.

easements, utility easements, canal banks, river levees, drainage easements, railroad or highway rights-of-way, or regional community parks.

A Class II Bikeway (Bike Lanes)[13] is a portion of a roadway that has been set aside by striping and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes are intended to promote an orderly flow of bicycle and vehicle traffic. This type of facility is established by using the appropriate striping, legends, and signs.

Class III Bikeways (Bike Routes)[14] are facilities shared with motor vehicle traffic. Bike routes must be of benefit to the bicyclist and offer a higher degree of service than adjacent streets. They provide for specific bicycle demand and may be used to connect discontinuous segments of Class I or Class II bikeways. If the pavement width is sufficient and traffic volume/speeds warrant, an edge line may be painted to further delineate the bike route. Bike routes are signed with the G-93 Bike Route marker, but no striping or legends are required.

Figure 3.2-4 shows the existing County bikeways and Table 3.2-12 describes these existing bikeways.

Table 3.2-12. Existing Bikeways Description (as of 2007)

Segment	Jurisdiction	Class	From	To	Length (feet)
Sutter Commuter Bikeway	Sutter County	I	Acacia Avenue	Hooper Road	24,300
Acacia Avenue	Sutter County	II	Sutter Union High School	Sutter Commuter Bikeway	5,800
P Street	Live Oak	II	Pennington Road	Fir Street	528
Phillips Road	Sutter County	II	Lincoln Road	Bogue Road	5,244
Franklin Road	Sutter County	II	Township Road	Walton Avenue	12,875
Teesdale Road	Sutter County	II	Phillips Road	1,700 e/o Phillips Road	1,696
Butte House Road	Sutter County	II	2,000 e/o Township Road	Tharp Road	10,024
Walton Avenue	Sutter County	II	Franklin Road	2,150' n/o Bogue Road	8,394
Lincoln Road	Sutter County	II	George Washington Blvd	1,200 e/o Walton Avenue	9,557
Butte House Road	Yuba City	II	Tharp Road	Gray Avenue	5,580
Stabler Lane	Yuba City	II	City Limits	500' e/o Butte House Road	6,334
Gray Avenue	Yuba City	II	Colusa Avenue	725' e/o Bridge Street	2,504
Gray Avenue	Yuba City	II	Bridge Street	Franklin Road	1,679
Washington Avenue	Yuba City	II	Onstatt Road	Live Oak Road	3,866
Queens Avenue	Yuba City	II	City Limits	Onstott Road	4,069
Teesdale Road	Yuba City	II	Railroad Avenue	Garden Highway	2,244
Clark Avenue	Yuba City	II	Franklin Road	Richland Road	3,284
B Street	Yuba City		Gray Avenue	Clark Avenue	1,485
Franklin Road	Yuba City	II	SR 99	Percy Avenue	5,259
				Total Feet of Class II	90,422
Walton Avenue	Sutter County	III	Bogue Road	2,150' n/o Bogue Road	2,151

Source: Yuba-Sutter Bikeway Master Plan, Final Report, Table 2, page 14, December 1995. Updated by resolution no. 02-066 on August 6, 2002.

13 Sacramento Area Council of Governments, *Regional Bicycle, Pedestrian and Trails Master Plan*, Final Draft Amendment, July 19, 2007.

14 Sacramento Area Council of Governments, *Regional Bicycle, Pedestrian and Trails Master Plan*, Final Draft Amendment, July 19, 2007.

Future Planned Bikeway Improvements

In its entirety the YSBMP proposed bikeway system includes approximately 395 miles (635 km) of bikeway facilities. The proposed facilities specifically within Sutter County include 3.7 miles (6.0 km) of Class I bikeways, 27.3 miles (43.9 km) of Class II bikeways and 171.9 miles (276.6 km) of Class III bikeways. The proposed system not only connects each city in Yuba and Sutter Counties, but provides regional connections to six other counties, including Butte, Colusa, Nevada, Placer, Sacramento and Yolo. Connections to multi-modal facilities are also identified along with the need for support facilities and programs. The Draft 2035 Metropolitan Transportation Plan has one planned bikeway improvement in Sutter County. Class II Bike Lanes will be added to El Margarita Road between SR 20 and Franklin Road.

The proposed Sutter Pointe Specific Plan calls for the construction of bike lanes and sidewalks to be completed in conjunction with roadway construction. Sutter Point proposes 34 miles of Class I Bike Paths and 18 miles of Class II bike lanes. This includes Class I bike paths along Riego Road and Sankey Road. Additionally, the proposed Sutter Pointe Plan identifies three pedestrian enhanced intersections along Riego Road east of SR 99/70. As previously noted, the proposed Sutter Pointe Specific Plan is subject to the review, refinement, and approval of Sutter County. As a result, the above information should be considered conceptual and subject to change.

REGULATORY SETTING

California Department of Transportation (Caltrans)

Caltrans sets requirements for the bicycle master plan and requires an adopted plan to eligible for State bicycle funding.

Sacramento Area Council of Governments (SACOG)

SACOG prepares the Regional Bicycle, Pedestrian, and Trails Master Plan, which includes facilities in Sutter County and sets priorities for funding.

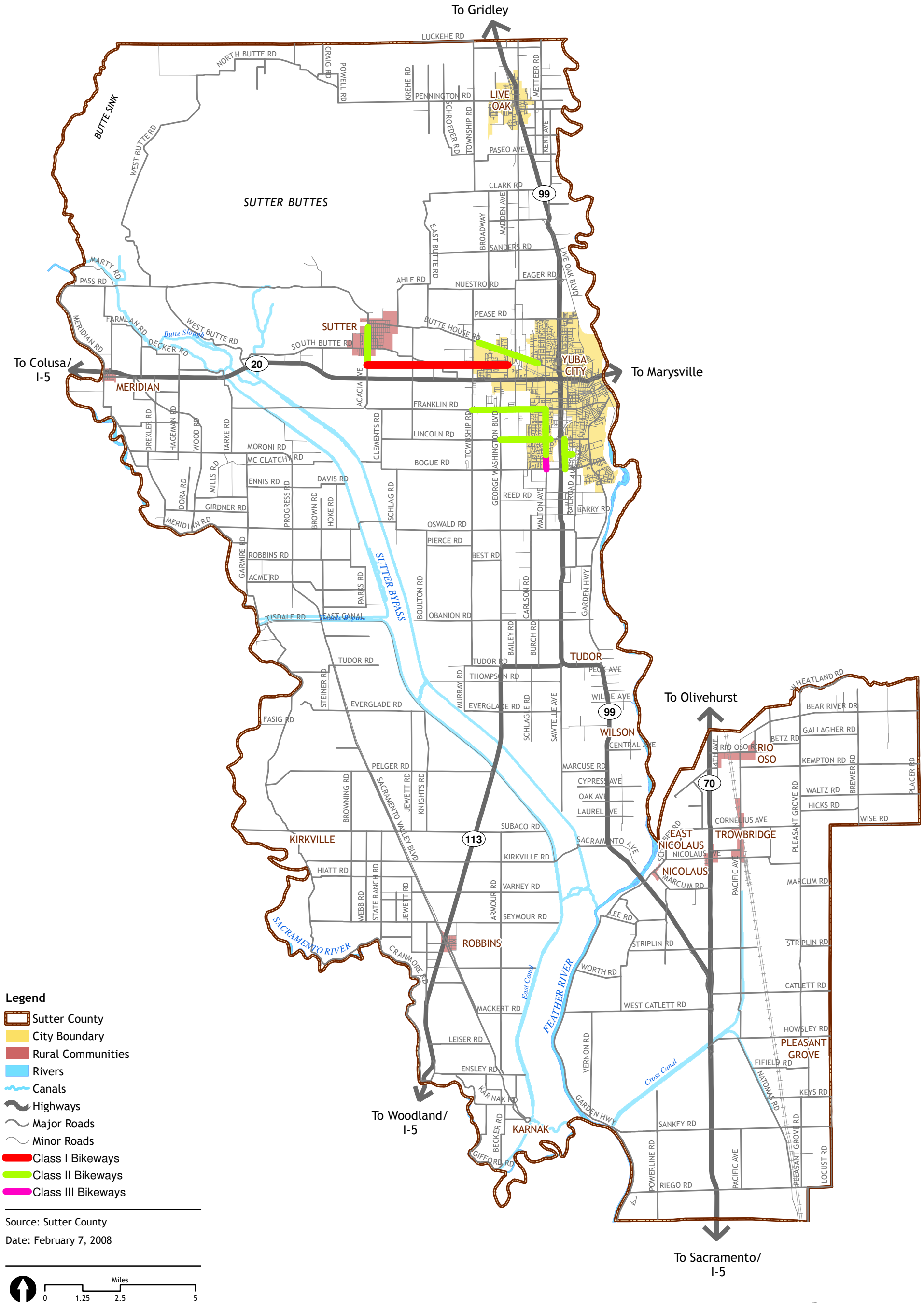
3.2.4 Air Travel and Airports

INTRODUCTION

This section describes the airports within and adjacent to Sutter County. Information for this section was obtained from the Sutter County Public Works Department, the Sacramento International Airport Master Plan, and the Annual Financial Report for the Sacramento County Airport System.

SUMMARY OF KEY FINDINGS

- Air transportation is provided to Sutter County via Sutter County Airport and Sacramento International Airport.



Legend

- Sutter County
- City Boundary
- Rural Communities
- Rivers
- Canals
- Highways
- Major Roads
- Minor Roads
- Class I Bikeways
- Class II Bikeways
- Class III Bikeways

Source: Sutter County

Date: February 7, 2008

Miles
0 1.25 2.5 5

PBS&J

SUTTER COUNTY EXISTING BIKEWAYS
Figure 3.2-4

EXISTING CONDITIONS

The two most relevant airports to Sutter County are the Sutter County Airport and the Sacramento International Airport. In addition, there are a number of small private air strips that serve agricultural purposes and private uses.

Sutter County Airport[15]

The Sutter County Airport is located on approximately 170 acres of land at 100 Airport Road, Yuba City, and is operated by the Sutter County Public Works Department. No commuter airlines utilize the Sutter County airport. Due to Sutter County's proximity and convenience to the Sacramento International Airport directly south of Sutter County, commercial service has not expanded into Sutter County.

The Sutter County airport has a single paved runway 3,040 feet in length and 75 feet wide. No control tower is located at this airport. A major portion of the airport operations are a result of civil aviation. The County adopted a master plan for airport operations in 1968.

Sacramento International Airport

Sacramento International Airport is located south of the Sutter County / Sacramento County border between the Sacramento River and Interstate 5. It began operations in 1967 and is served by fourteen major carriers and one commuter line.[16] There are more than 156 scheduled departures every day to many major U.S. cities and all major California cities. During fiscal year 2006, the airport accommodated approximately 129,000 operations (takeoffs and landings) on parallel runways that can accommodate up to 400,000 operations per year.[17]

Passenger traffic at the Sacramento International Airport is expected to increase over the coming years with the addition of new carriers, additional flights and the implementation of the Sacramento International Airport Master Plan and the Terminal Modernization Program, positioning the Airport to effectively accommodate the growth.[18]

REGULATORY SETTING

Federal

Federal Aviation Administration

The Federal Aviation Administration (FAA) is the Federal agency tasked with regulating civil aviation to promote safety, provide an air traffic control system for both military and civil aircraft, and respond to aircraft crash incidents. FAA regulations are mandated to ensure aircraft are suitable for flight, reduce the risk of crash hazards, and ensure that airports are sited and operated in a manner that poses the least possible risk to the public.

15 Sutter County, www.co.sutter.ca.us/doc/Government/depts/pw/county_airport, accessed November 29, 2007.

16 Sacramento International Airport, www.sacairports.org/int/about/index.html, and www.sacairports.org/int/about/history.html accessed December 4, 2007.

17 Sacramento County Airport System, "Comprehensive Annual Financial Report For the Sacramento County Airport System for the Fiscal Years Ended June 30, 2006 and 2005", page 7, November 2006.

18 Sacramento County Airport System, "Comprehensive Annual Financial Report For the Sacramento County Airport System for the Fiscal Years Ended June 30, 2006 and 2005", page 7, November 2006.

State

California Department of Transportation Division of Aeronautics

The California Department of Transportation (Caltrans) Division of Aeronautics performs many functions to promote aviation safety in California. The division uses the State Aeronautics Act, Public Utilities Code (PUC) Sections 21001 et seq. to provide policies that promote safety in aeronautics. Functions of the division include issuing permits, providing airport inspection and design regulations, planning to ensure consistency with Federal regulations, and providing grants to airports to improve safety.

3.3 COMMUNITY SERVICES AND FACILITIES

Sutter County is committed to sustaining the health and safety of its residents, labor force, and visitors. Protection from the risks of natural and man-made hazards, crime, and disease and provision of a safe and attractive community for all residents through the maintenance of parks, schools, and civic and cultural facilities are essential in establishing a sense of well-being for residents and attracting new businesses and quality jobs to the county.

3.3.1 Law Enforcement

INTRODUCTION

This section identifies the law enforcement service providers for Sutter County and describes facilities, staffing levels and equipment, service programs, crime statistics, and crime prevention programs.

Law enforcement and crime prevention are provided to Sutter County residents to uphold State, federal, and local laws, provide emergency assistance, and to protect people and property. As unincorporated Sutter County continues to grow, equipment and staffing to meet the added demand for law enforcement services will be an issue.

SUMMARY OF KEY FINDINGS

- The Sutter County Sheriff's Department provides police protection services within unincorporated Sutter County and the City of Live Oak.
- California Highway Patrol (CHP) provides traffic enforcement on all highways in the county and all roadways in the unincorporated county area.
- The Yuba City Police Department provides police protection within the City of Yuba City, but not to all incorporated areas currently within the city limits.
- The Sutter County Sheriff's Department is authorized to staff 58 sworn deputies, 54 correctional officers, and 34 civilian staff. Correctional officers do not have peace officer powers (i.e., do not make arrests, etc.), and work exclusively in the jail or as court bailiffs. As of January 1, 2008, the Department has 51 sworn deputies, 47 sworn correctional officers, and 33 civilian staff.
- The Sutter County Sheriff Department's response times for 2006 county priority I calls average 8 minutes 11 seconds, while county priority II calls average 9 minutes 54 seconds.[1] The Sheriff's department currently has no response time standards.
- While population continues to increase in Sutter County, over the last three years, the reported crimes in the county have dropped in numbers.
- The rise in rural crimes such as metal theft; illegal dumping; vandalism; methamphetamine labs; and thefts of farm equipment, chemicals, livestock, and crops highlights the need for rural crime prevention.

1 Denney, Jim, Sheriff, Sutter County Sheriffs Department, personal communication, September 14, 2007.

- Yuba City Police Department will gradually assume service for the Walton/Happy Park region and the recent annexation of a majority of the Tierra Buena area.
- The Sutter County Sheriff Department has indicated that the current Sutter County jail facility is in need of a building expansion. The current County jail has a capacity of 352 inmates, and between spring 2007 and fall 2007, the jail consistently housed over 300 inmates.
- As more growth occurs in the incorporated City of Live Oak, increased facilities and officers will be needed to meet service demands.

EXISTING CONDITIONS

The Sutter County Sheriff's Department has the responsibility for providing law enforcement services to the unincorporated county area as well as being contracted to provide service to the City of Live Oak. The CHP provides traffic enforcement on all highways and roadways in the unincorporated area. Additional law enforcement services are provided to the county through the District Attorney's office. Yuba City Police Department provides all law enforcement services in the incorporated City of Yuba City.

Sutter County Sheriff's Department

There is one Sherriff dispatch center and one sub-station located in Sutter County that provide service to the unincorporated county area, as well as the City of Live Oak. The dispatch center is located on Civic Center Boulevard at the Sutter County offices in Yuba City. This location contains the County Sheriff's headquarters and a dispatch office that serves as the hub of all dispatch activity for both sheriff and fire services for Sutter County. The Sheriff's Department also has a sub-station located on O Street in the City of Live Oak. The Live Oak Sub-Station does not have its own dispatch center; rather all calls are routed through the dispatch center in Yuba City.

The City of Live Oak currently contracts with the Sutter County Sheriff's Office for law enforcement officers to service approximately 8,100 Live Oak residents. The contract area includes the Live Oak city limits and the surrounding rural area. The boundaries are encompassed by the county line on the north, Feather River on the east, Paseo Road to the south, and Township Road to the west. The patrol services are provided by County Sheriff's Department staff made up of 7 patrol deputies, 1 patrol sergeant, and 1 lieutenant assigned to the substation located next to the fire station on the corner of Fir Street and O Street in Live Oak.

In 2000, an agreement was reached (Master Tax Agreement) with the City of Yuba City to provide law enforcement for portions of the unincorporated county area south of Yuba City and the Tierra Buena area. The agreement stated that Yuba City would take over areas that were annexed into the city, but still patrolled by the Sheriff's Department. Effective January 1, 2008, Yuba City has agreed to assume all law enforcement duties from Franklin Road north to Pease Road.

Staffing

The Sutter County Sheriff's Department is authorized to staff 58 sworn deputies, 54 correctional officers, and 34 civilian staff. Correctional officers do not have peace officer powers (do not make arrest, etc), and work exclusively in the jail or as court bailiffs. As of January 1, 2008, the Department has 51 sworn deputies, 47 sworn correctional officers, and 33 civilian staff. The

County Sheriff's Department adopted officer-to-residential ratio is 1.1 sworn officer per 1,000 persons and 0.06 support personnel per 1,000 persons (ratio based on population including incorporated areas of Sutter County).[2] When computing officer to citizen ratio's only fully sworn deputies are accounted for in the computation. As of 2008, the current population-to-officer ratio is approximately 1.6 sworn officers per 1,000 persons for the Sheriff's Department service area, which includes unincorporated County area and the City of Live Oak. The Department is well within the officer-to-residential goal for the county.

Sheriff Divisions

Patrol Division

The Patrol Division is led by the patrol captain who is responsible for the budget, personnel, and special units. These units consist of the Boat Patrol, Live Oak Contract, Search and Rescue, Dive Team, Swift Water Rescue Team, Canine, Special Enforcement Detail Team (SED), Reserves, Cadets, mounted Posse, and the Citizen Volunteers.

The Patrol Division has a total staff of 44 composed of 35 deputies, six sergeants, two lieutenants and one captain. Eight Patrol Division deputies, one sergeant, and one lieutenant are stationed at the City of Live Oak office to serve and patrol the surrounding areas.

Sutter County Sheriff's Department also utilizes two levels of reserve deputes in various divisions, but predominantly in the Patrol Division – level one and level two. There are currently four level one reserve deputies and 22 level two reserve deputies serving in the county. Level one reserve deputies are assigned to solo patrols, while level two reserve deputies are supervised by a full time deputy. All reserve deputes are required to maintain their skills through monthly meetings, training, and work hours.

With shifts scheduled around the clock, the patrol division provides protection and service every day of the year. Responses to emergency calls are prioritized according to urgency, with priority I and II being the most urgent calls in need of response. The Sutter County Sherriff's Department response times for 2006 county priority I calls averaged 8 minutes 11 seconds, while county priority II calls averaged 9 minutes 54 seconds.[3] While there is no codified response time standard, the Sheriff's Department has a response time goal of 7 minutes or less on priority I calls.

School Resource Officers (SRO)

County Sherriff's officers patrol the schools in the county on a continuous rotation cycle. Sutter County currently has two deputies assigned as School Resource Officers (SRO) during the school year. The program places law enforcement officers in schools with the goal of creating and maintaining a safe and secure learning environment for students, teachers, and staff. SROs represent a proactive strategy designed to bring prevention and intervention into the schools.

River Patrol

The River Boat and All Terrain Vehicle (ATV) Patrol is another area serviced by 2 sheriff deputies along with 1 sergeant on a half time basis. The Sutter County Sheriff's Department routinely patrols approximately 10 miles of the Feather River bottoms during the spring, summer, and fall months with the use of the ATV patrol unit. The goal of the unit is to ensure the

2 Denney Jim, Sheriff, Sutter County Sheriffs Department, personal communication, September 14, 2007.
3 Denney Jim, Sheriff, Sutter County Sheriffs Department, personal communication, September 14, 2007.

public's safety while they use the river bottoms. The ATV deputies patrol the area enforcing State and county regulations.

Swift Water Rescue Team (S.W.A.R.T)

The Swift Water Rescue Team became fully functional after the 1997 flood. The Swift Water Rescue Team works in conjunction with the Sutter County Sheriff's Department Boat Patrol and local fire departments that also have a Swift Water Rescue Team. The Swift Water Rescue Team is trained in emergency boat rescue, removing people from homes who have become flood victims and aiding other agencies in the retrieval of animals.

K-9 Patrol

The Sutter County Sheriff's Department maintains a Canine Unit that was established in 1969. The County currently has six canine teams. Four of the teams operate out of the Department's main office, while one team is assigned to the Live Oak Sub-Station and one team operates out of the Net-5 investigation division. All of the officer protection dogs are cross trained as narcotics dogs and respond to incidents including felonies and jail incidents, and when called upon, the Canine Unit is also available to outside agencies.

Detective Division

The Detective Division is mainly responsible for felony investigations, coroner investigations, internal investigations, and any public administration cases. The Detective Division has specialties which range from computer voice stress analyzer, firearms and forensic ballistics, identi-kit, finger print identification, sex crimes, and criminal intelligence. The Division commander oversees a staff of two detective sergeants, four detectives, one evidence officer, and two narcotic enforcement team detectives.

Support Division

The 25 sworn and non-sworn personnel in the Support Division service the Dispatch Center, Records Division, Civil Division, and Training. Some of the responsibilities of the Support Division include (but are not limited to) radio communication, emergency medical dispatching, specialized and technical clerical duties, warrants, live-scan fingerprinting, processing of civil papers, concealed weapons permits, and other safety permits. The Support Division is also responsible for enforcing and upholding court orders for real or personal property, warrants, writs, bank levees, as well as preparing and entering civil judgments for distribution of services.

Other Sheriff Teams and Programs

Other specialized teams and programs provide additional services to Sutter County residents as part of the Sheriffs Department law enforcement agency.

Dive Team

The Dive Team is a select group of officers trained in underwater search, rescue, and recovery. Visibility is limited in the rivers and waterways of the county and divers are trained annually in dive techniques and crime scene procedures.

Special Enforcement Detail Team (SED)

The role of the Special Enforcement Detail (SED) Team is to respond to and handle critical incidents, with the goal of resolving the incident without injury or the loss of life. The SED Team

is comprised of 10 to 12 deputies including team commanders, team leaders, assistant team leaders, and four hostage negotiators. Special training includes basic SWAT, use of chemical agents, non lethal force munitions and firearms, diversionary devices, negotiation, and special weapons training.

Aero-Squadron

The Aero-Squadron (YSSAS) is a volunteer non-profit organization dedicated to providing aerial support to Yuba and Sutter County Sheriff's Departments. Some of the YSSAS tasks have included search and rescue, aerial observation, and emergency transportation of Sheriff's Department personnel.

County Crime Statistics

For reporting purposes, criminal offenses are divided into two major groups: (1) Part I crimes, and (2) Part II crimes. The Federal Bureau of Investigations (FBI) defines Part I crimes as violent in nature and Part II crimes as property crimes. Aggravated assault, forcible rape, murder, and robbery are classified as violent, while arson, burglary, larceny-theft, and motor vehicle theft are classified as property crimes. Part I crimes receive the highest level of importance when received by the dispatching officer and attended to immediately by law enforcement services.

Part I crimes have not risen significantly in the Sheriffs service areas (including the City of Live Oak) in spite of a marked increase in population in the county. Arrests as a percent of reports have decreased since 1997, from 62 to 28 percent according to statistics provided by the Sutter County Sheriff's Department. Reported Part I crimes that occurred in the Sheriff's jurisdiction in 2006 were 1,481 compared to 1,572 crimes reported in 2005. Table 3.3-1 gives a breakdown of the reported Part I and II crimes for the unincorporated county area during 2005. Even with the increase in population, 2006 crime figures fell below 1994 crime figures with 1,496 Part I crimes reported. Table 3.3-2 gives an overview of reported crimes for Sutter County over the past 3 years. Reported crimes have dropped in numbers, while the countywide population continues to increase. Drops in crime statistics for the Sutter County and Live Oak have been attributed to the new proactive preventative approach program implemented by the Sheriff's Department that works with community members to stop crime before it occurs.

Table 3.3-1. 2005 Unincorporated Sutter County Crime Statistics

Classification	Crimes	Totals
Part I crimes	Homicide	0
	Forcible Rape	10
	Robbery	13
	Aggravated Assault	128
	Burglary	372
Part II crimes	Motor Vehicle Theft	89
	Larceny Theft Over $400	211
	Larceny Theft $400 and Under	424
	Arson	7

Source: California department of Justice, Office of the Attorney general, and criminal Justice Profiles, http://ag.ca.gov/, accessed March 7, 2007.

Table 3.3-2. Sutter County Crime Statistics

	2003	2004	2005
Violent Crimes	340	354	326
Property Crimes	1,856	1,800	1,524
Larceny Theft	2,258	2,121	1,920
Arson	22	36	16
Total	**4,476**	**4,311**	**3,786**

Source: California department of Justice, Office of the Attorney general, and criminal Justice Profiles, http://ag.ca.gov/, accessed March 7, 2007.

Sutter County's total prison bookings between July 2006 and July 2007 were logged at 4,879 for both incorporated and unincorporated areas. With an average of 14 bookings per day, 58 percent of the bookings were logged as felony charges and 42 percent were misdemeanor charges.

Crime Prevention

The Rural Crime Prevention Program through the California Farm Bureau Federation aims to improve the lines of communication between local law enforcement agencies and the agricultural community. The rise in rural crimes such as metal theft; illegal dumping; vandalism; methamphetamine labs; and thefts of farm equipment, chemicals, livestock, and crops highlights the need for rural crime prevention.

The Sheriffs Department is taking a proactive approach to crime prevention through a departmental change from "reactive" to "proactive" patrolling and interaction before a crime occurs. Deputies are assigned county areas and are encouraged to get to know the people in those areas. Together, they will use available resources to proactively solve problems. The "proactive" law enforcement philosophy has effectively reduced Part I crimes, bringing them below 1991 levels.

Homeland Security

The Sheriff's Department is a partner in the Sutter Regional Homeland Security Task Force and provides a link to federal homeland security programs.

California Highway Patrol

The California Highway Patrol (CHP) has 1 office in the City of Yuba City, which serves Sutter and Yuba Counties, as well as portions of Butte, Plumas, and Sierra Counties. The office is staffed with 29 officers, 4 sergeants, and 1 captain that assist with law enforcement, traffic control, accident investigation, and hazardous spills. The CHP has a mutual aid agreement with the Sutter County Sheriff's Department to respond with backup units as needed. All dispatch calls are routed through the Chico CHP dispatch center.

Yuba City Police

The City of Yuba City is currently divided into 4 primary patrol areas or beats patrolled by 36 police officers. Supervisory officers, crime scene investigators, and traffic enforcement patrols have full City coverage. The Yuba City Police Department is supervised by the police captain with the support of 3 lieutenants and 5 sergeants. With the addition of the Walton/Happy Park region and the recent annexation of a majority of the Tierra Buena area, 2 additional City police beats will be added as the Yuba City Police Department gradually assumes service for these segments of the community from the Sutter County Sheriff's Office.

Judicial

Criminal Justice includes the Sutter County Probation Department, and Sutter County Courts, along with the District Attorney's office. The District Attorney's office prosecutes on behalf of the people of Sutter County, all individuals, both adult and juvenile, accused of felonies, misdemeanors, and infractions occurring in the county. The District Attorney's office is located on 2nd Street in Yuba City. The County courthouse offices are split into 2 locations with Courthouse West housing the administrative and criminal trial and jury processing and Courthouse East housing civil suits, small claims, and human resources. Both sections of the Courthouse are located on Second Street in Yuba City.

Incarceration

The Incarceration Department is part of the County Probation Department and is divided into 4 basic units: Juvenile Services, Adult Services, Administrative Services, and Prevention Services. The Adult Services and Juvenile Services include supervision and investigation. Prevention Services include probation officers assigned to Andros Karperos and Gray Avenue Middle Schools, Feather River Academy and Positive Attendance with Yuba City Unified School District (YCUSD). Other specialized programs include an Adult Drug Court, Proposition 36 Supervision, the Family Intervention Team, and the Stepping Stones Aftercare Program for minors committed to the Maxine Singer Youth Guidance Center.

Adult Facilities

The Sutter County Jail Commander and a Lieutenant oversee personnel consisting of 5 correctional sergeants, 47 correctional officers, 6 jail nurses, and 1 outside work release coordinator. The jail personnel perform several specialty assignments in addition to maintaining the care and custody of the inmates. These specialty assignments consist of civil officer, transportation, court bailiff, jail reserve program, and hostage negotiations.

The Sutter County Main Jail is located at 1077 Civic Center Boulevard in Yuba City. The main portion of the jail was built in 1977 and has had several construction modifications since then. The Sheriffs Department has indicated that the current County jail facility is in need of a building expansion.[4] The current County jail has a capacity of 352 inmates, and between spring 2007 and fall 2007, the jail consistently housed over 300 inmates. The average inmate population is 286 inmates, with approximately 87 percent males and 13 percent females.

Juvenile Facilities

The Yuba-Sutter Juvenile Hall is a bi-county facility serving both Yuba and Sutter Counties. The facility is located on 14th Street in the City of Marysville. The Juvenile Courts, Juvenile Justice Commissions, and Juvenile Probation Departments of both counties govern this facility. The Yuba-Sutter Juvenile Hall is a 45 bed detention facility for offenders under 18 years of age. Comprehensive correctional service programs, educational, and mental health services are provided to residents.

In addition to the detention center for correctional services, the Camp Singer Youth Guidance Center is located at this site. Camp Singer, or Boot Camp, is for low-risk detainee. The Maxine Singer Youth Guidance Center is a 12 bed Boot Camp program for female offenders. Comprehensive services and substance abuse counseling is provided to residents. Community

4 Jim Denney, Sheriff-Coroner, Sutter County Board of Supervisors meeting minutes 2/05/07.

services work projects are undertaken and the Wards work closely with local schools and civic groups. Specialized program elements include small engine repair, a construction technology class, anger management, and family services.

Private Facilities

The Leo Chesney Correctional Facility (LCCF), located on Apricot Street in the City of Live Oak is a privately owned and operated minimum security women's prison. It is currently under extensive construction. The facility is designed to house 220 inmates. The staff consists of one facility director, one program director, one food services director, correctional officers, one social worker, and one teacher. LCCF receives 10 to 20 new inmates per week which classifies it as a Level 1 and Level 2 minimum security facility.

REGULATORY CONTEXT

Federal, State and Local

There are no federal, Sate, or local policies that are directly applicable to police services within the county.

3.3.2 Fire Protection and Emergency Services

INTRODUCTION

This section provides information on the existing fire and emergency services within the county. Current staffing, equipment, response times, and adopted standards for these services are described along with their ability to meet the needs of Sutter County. Information for this section was obtained from the Yuba City Fire Department website, the current Grand Jury Report, and communication with staff from the Sutter County Fire Department.

Fire protection is a fundamental safety component of the services provided by the County to area residents minimizing the loss of life from fires. With continued growth in both the incorporated and unincorporated county areas, additional facilities and staffing will play a vital role in maintaining adequate levels of service in Sutter County.

SUMMARY OF KEY FINDINGS

- Fire protection and emergency services are provided by 4 County Service Areas (CSA) and 2 independent Fire Protection Districts.
- CSA's C, D, and F are overseen by Sutter County Fire Chief who allocates funds to the service areas.
- The CSA-G is under Sutter County Fire Department's jurisdiction but has been contracted back to the City of Yuba City along with funding allocations to cover all fire services within CSA-G.
- Meridian and the Sutter Basin are independent fire protection districts, have separate funding, and are not overseen by the Sutter County Fire Chief.
- New development and community growth has increased the number of calls for service in recent years.

- Response times in the urban areas of Live Oak and the community of Sutter averages less than 5 minutes. Response times for other service areas and district are not regularly maintained due to the volunteer status of area fire station staff.
- Currently, funding for County service districts generated from general revenue, property taxes, and a special fire tax that is allocated by the Fire Chief through annual budget, but in fact, has not been enough to cover staffing, new facilities, or maintenance.
- The Meridian and Sutter Basin independent fire districts receive no funds from Sutter County and are funded solely by community property taxes and fundraisers.

EXISTING CONDITIONS

Fire protection and emergency services are provided by 4 County Service Areas (CSA) and 2 independent Fire Protection Districts, as illustrated on Figure 3.3-1. The 4 CSA's are governed by the County Board of Supervisors and directed by the Fire Chief and include CSA-C, CSA-D, CSA-F, and CSA-G. The other 2 districts serving Sutter County include Meridian Fire Protection District, and Sutter Basin Fire Protection District. Both districts have their own independent governing boards. The fire districts in Sutter County are also equipped to provide medical aid at the basic life support level with the ability to perform emergency cardiac shock (defibrillation).

The Sutter County Fire Chief and 2 captains oversee operations and service to approximately 360 square miles within the largest CSAs C, D, and F. CSA-G is operated by the Yuba City Fire Department. The Sutter County Fire Chief is also responsible for all budgetary allocations and future funding mechanisms for all service areas except for CSA-G, which is funded through Yuba City Fire Department. In addition, Meridian and the Sutter Basin are independent fire protection districts and have separate funding not overseen by the Sutter County Fire Chief. The facilities and staffing at each CSA and Protection District is described in more detail below.

Many of the fire stations in the county utilize volunteer firefighters as the primary staff or to supplement staffing as needed. Volunteer firefighters are a very important part of delivering fire and emergency services, as they supplement the limited number of career firefighters. Unpaid volunteers receive the same training as career firefighters and come primarily from the local community, Yuba Community College, and Butte Community College Fire Academy.

New development and community growth has increased the number of calls for service in recent years. As presented in Table 3.3-3, in 2006, CSA-F received a total of 1,934 calls, up from previous years. Response time in the urban areas of Live Oak and Sutter averages less than 5 minutes.[5] Response times in the rural areas and the all-volunteer departments vary. The emergency dispatch center for all fire service areas, except Yuba City and Sutter Basin (Robbins), is located at the Sutter County Sheriff's office. Yuba City Fire Department personnel are dispatched by the Yuba City Police Department and Yolo County receives emergency calls and dispatches Robbins personnel. Fire personnel receive calls by mobile and portable radios on dedicated frequencies.

5 Sutter, County of. Grand Jury 2007 Report, February 2007.

Table 3.3-3. Fire Calls, 2006

	Number of Calls
CSA-C	178
CSA-D	237
CSA-F	1,934
CSA-G	6,120
Meridian Fire Protection District	N/A
Sutter Basin Fire Protection District	85-100

Source: Yager Dan, Fire Chief, Sutter County Fire Department, personal communication, September 18, 2007.

CSA-C

CSA-C contains the rural areas bordered by the Bear River/Yuba County line on the north and the Feather River on the west. CSA-C includes the communities of Nicolaus, East Nicolaus, and Rio Oso. Two stations are located in the CSA-C, and include the East Nicolause Fire Station number 85 and the Rio Oso Station number 85-2, as described below. The day to day operations are overseen by the volunteer Fire Chiefs at each of the two stations. Due to the predominantly volunteer firefighting staff, average response times are not regularly maintained for the service area. The Insurance Services Office (ISO) rating for all of the stations in CSA-C is 8 for structures within 5 miles of a station and 10 for structures farther than 5 miles from a station. One seasonal firefighter covers both CSA-C and CSA-D for approximately one month during harvest season. This firefighter is hired by CSA-F.

East Nicolaus Fire Station Number 85

The East Nicolaus Fire Station is located on Nicolaus Avenue and shares a staff of 13 to 14 volunteer firefighters with the Rio Oso Sub-Station. During harvest season (roughly one month out of the year) an additional seasonal firefighter is transferred from CSA-F to CSA-C to cover the high fire season. The station houses four fire station vehicles maintained by staff.

Rio Oso Station Number 85-2

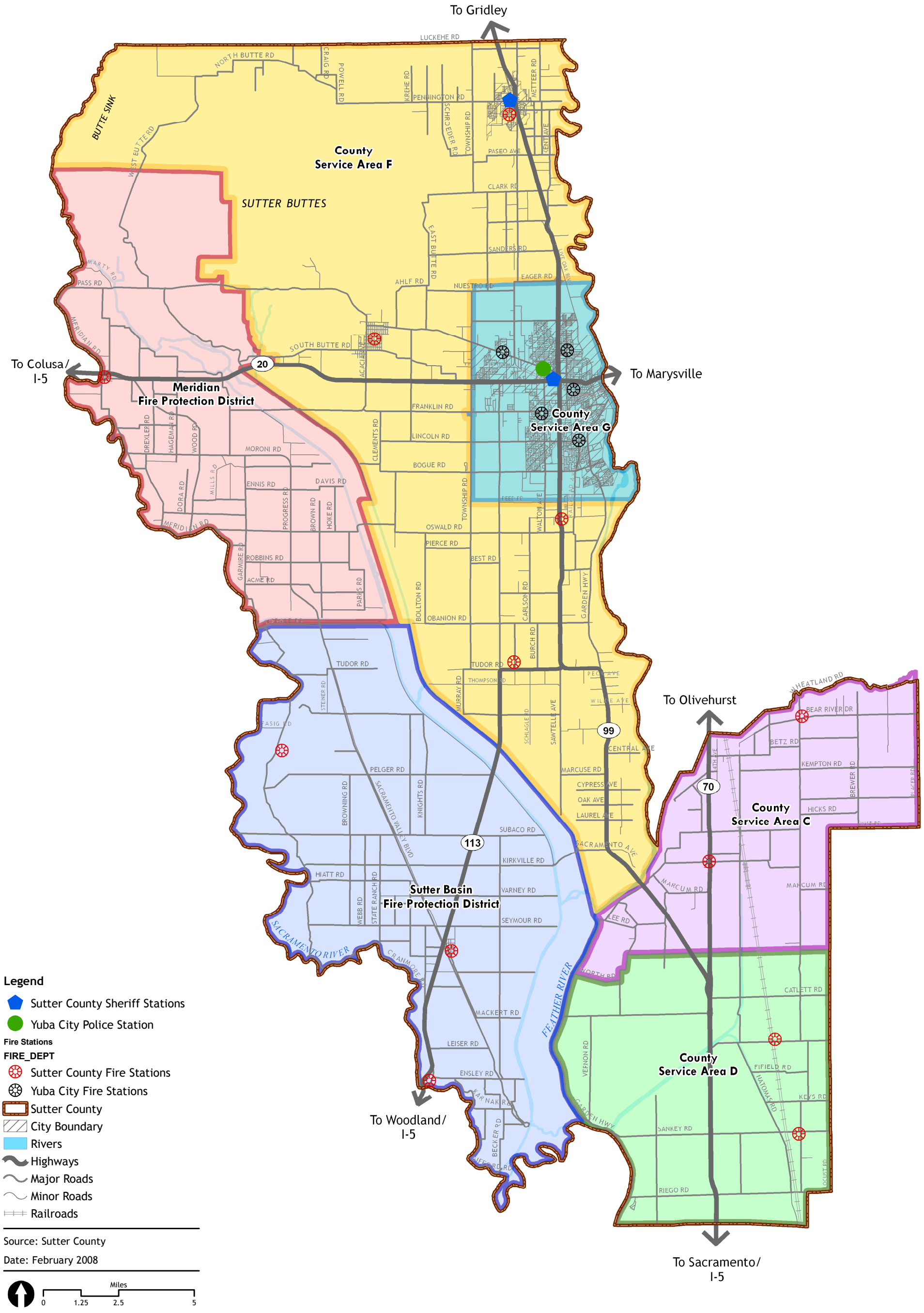
The Rio Oso Station is a sub-station of the East Nicolaus Fire Department and shares the volunteer firefighting staff with the East Nicolaus Fire Station.

CSA-D

CSA-D provides service to the rural area north of the Sacramento County line, between Placer County and the Feather River. Two stations are located in CSA-D, and include the Pleasant Grove Fire Station number 9 and the Pleasant Grove Fire Station number 9-2, as described below. The day to day operations are overseen by the volunteer Fire Chiefs. Due to the predominantly volunteer firefighting staff average response times are not regularly calculated for the service area. The ISO Rating for all of the stations in CSA-D is 8 for structures within 5 miles of a station and 10 for structures farther than 5 miles from a station.

Pleasant Grove Fire Station Number 9

Pleasant Grove Fire Station Number 9 is located on Howsley Road in the community of Pleasant Grove. It is a volunteer station staffed by 18 volunteers and one seasonal firefighter that is utilized by CSA-C and CSA-D covering the one month of harvest season. The station houses five fire station vehicles on site.



Legend

- Sutter County Sheriff Stations
- Yuba City Police Station

Fire Stations

FIRE_DEPT

- Sutter County Fire Stations
- Yuba City Fire Stations
- Sutter County
- City Boundary
- Rivers
- Highways
- Major Roads
- Minor Roads
- Railroads

Source: Sutter County

Date: February 2008

Miles
0 1.25 2.5 5

PBS&J

LAW ENFORCEMENT AND FIRE PROTECTION
Figure 3.3-1

Pleasant Grove Fire Station Number 9-2

Pleasant Grove Fire Station Number 9-2 is the second fire station in the Pleasant Grove community located on Sankey Road. The station shares volunteer staff with the Pleasant Grove Fire Station Number 9 and houses 4 fire station vehicles on site.

CSA-F

CSA-F includes three stations – Live Oak Fire Station, Sutter Fire Station, and Oswald-Tudor Fire Station. The Service Area covers rural and urban areas in the northern portion of the county and south of Yuba City. Each station is staffed with 3 Lieutenants; 1 Fire Apparatus Engineer; and approximately 12 volunteer fire fighters. Four seasonal firefighters are hired during "fire season" and shared between the three CSA-F stations. Seasonal firefighters are hired to augment the Career Staff during "fire season," when the calls for service typically increase. Recruitment and retention of volunteer staff has been difficult in this Service Area and a Reserve Firefighter Program is being developed for the Live Oak station to improve volunteer staffing and retention.

The Sutter County Fire Chief directly oversees CSA-F maintaining data for the service area. In 2006 CSA-F had and average response times of 7 minutes and 57 seconds within the service area.[6]

Live Oak Fire Station Number 5

The City of Live Oak contracts with Sutter County for fire services. Live Oak Station response times in the urban areas of the City average less than 5 minutes. The Live Oak stations ISO is rated at a 3 and 4 when the call is located within 5 miles of the station. When calls are outside of the municipal water system but sill within 5 miles of a station the ISO drops to a 5. The ISO ratings are higher in the incorporated areas because of the available water supply and water pressure provided by the municipal water systems. If the housing is located farther than 5 miles from a station the ISO is at 8 and if it is a commercial structure the rating drops to 9.

The Live Oak Fire Station Number 5 is located on Fir Street attached to the Sheriff's substation, in the City of Live Oak. The station houses a total of 9 fire station vehicles and is staffed with 3 Lieutenants and 1 Fire Apparatus Engineer. There are no firefighters stationed at the Live Oak Fire Station Number 5; however, a volunteer fire fighting crew of approximately 12 services the area along with four seasonal firefighters that are divided between the three CSA-F stations.

Sutter Fire Station Number 6

The Sutter Fire Station Number 6 provides services to the Sutter community and supports other stations as needed. This station is staffed with 3 Lieutenants and 1 Fire Apparatus Engineer. There are no firefighters stationed at the Sutter Fire Station Number 6; however, a volunteer fire fighting crew of approximately 12 services the area along with four seasonal firefighters that are divided between the three CSA-F stations.

In addition, the Sutter County Emergency Operations Center is located at the Sutter Station, and chosen for its geographical location within the county. The Sutter Station's ISO is 3 when 1,000 feet from a fire hydrant and 5 if it is 5 miles away from a station and over 1,000 feet from a fire hydrant. The ISO for structures farther than 5 miles from a station is 10. There are 6 fire

6 Yager Dan, Fire Chief, Sutter County Fire Department, personal communication, September 18, 2007.

station vehicles housed at this station with specialized equipment for both hazardous materials and specialized rescue. The Sutter County Fire Department has a Hazardous Materials Response Team with equipment and personnel trained to mitigate hazardous materials releases. Other services provided include technical rescue capabilities and public education programs promoting fire safety at all local elementary schools. The Sutter Station response times averages less than 5 minutes.

Oswald-Tudor Fire Station Number 8

The Oswald-Tudor Fire Station Number 8 is located on Barry Road, south of Yuba City. This station is staffed with 3 Lieutenants and 1 Fire Apparatus Engineer. There are no firefighters stationed at the Oswald-Tudor Fire Station Number 8; however, a volunteer fire fighting crew of approximately 12 services the area along with four seasonal firefighters that are divided between the three CSA-F stations.

The Oswald-Tudor Fire Station has the distinction of housing Sutter County's "Hazmat" (hazardous materials) response vehicle due to its central geographical location within the county. The station also houses five fire station vehicles on site. The Oswald Tudor ISO Rating is 5 for structures within 5 miles of a station and 9 for structures farther than 5 miles from a station. The Oswald-Tudor Fire Station also has a sub-station located on Bailey Road, south of the Oswald-Tudor Fire Station. This station has one fire engine and the ISO rating for this district also applies to within 5 miles of this station.

CSA-G

In 2001, the Walton Fire Protection District merged with the Yuba City Fire Department to form the CSA-G, which now encompasses the City of Yuba City and the protection areas surrounding the City beyond the sphere of influence boundaries. The CSA-G is under Sutter County Fire Department's jurisdiction but has been contracted back to Yuba City along with funding allocations to cover all fire services within CSA-G. The day to day operations are overseen by fire captains. The merged CSA-G serves a combined city/county service area of approximately 30 square miles and 66,000 residents. Because of the mostly volunteer firefighting staff in the unincorporated areas the CSA's, average response times are not regularly maintained.

With the CSA-G merger Yuba City Fire Department took over responsibility for Fire Station Number 4 (211 S. Walton Ave.) and Number 7 (2855 Butte House Rd.) that had previously serviced the unincorporated areas around Yuba City. Other Yuba City stations included in the recently merged service district are Clark Avenue Station Number 1, Gray Avenue Station Number 2, and the Lincoln Road Station Number 3.

Walton Avenue Station Number 4

The Walton Avenue Fire Station Number 4 level of service has begun being adversely affected by recent development in the area and is being looked at for possible relocation to a site west of Ohlever Road, south of Franklin Road in Yuba City. The station is staffed full time, 24 hours a day, with 3 fulltime firefighters that rotate in from the overall district firefighting staff of 49. The station currently houses a total of 8 fire station vehicles on site.

Tierra Buena Fire Station Number 7

The Tierra Buena Fire Station Number 7 is located on Butte House Road in the community of Tierra Buena and is staffed with 2 full time firefighters and additional volunteer staff. The station currently houses 4 fire station vehicles.

Meridian Fire Protection District

The Meridian Fire District is an independent district covering approximately 93 square miles providing fire protection to areas bounded by the Sacramento River, Tisdale Weir, Sutter By-pass and CSA-F. One fire station is located within this district.

The Meridian Fire Station Number 65

The Meridian Fire Station Number 65 is located in the community of Meridian and is a part time station staffed with 1 paid firefighter during the week. The station is supplemented with 18 or more volunteer firefighters during high fire season. Seven fire station vehicles are housed on site for use in the service area.

Sutter Basin Fire Protection District

Robbins-Sutter Basin Fire Station Number 1, 2, and 3

The Robbins-Sutter Basin Fire Protection District is an independent district governed by a 3-member board. The Fire Department staff consists of 19 volunteers, 4 of whom are Emergency Medical Technicians. Staff provides support to the Pepper Street Station (Number 1) located in Robbins, the South Knights Road Station (Number 2) located just outside Robbins, and the Cranmore Road Station (Number 3) located between Robbins and Knights Landing. The Pepper Street Station houses 3 vehicles and the other stations each house 1 vehicle. All dispatch to the Sutter Basin Fire Protection District is routed through the Yolo County dispatch center to the area fire stations. The District has approximately 900 residents with anywhere from 85 to100 emergency calls received and dispatched through Yolo County per year.[7]

Mutual Aid

Mutual Aid agreements are established between all of the CSDs and Fire Protection Districts to address any major fire incident within both the incorporated and unincorporated areas of Sutter County. The internal mutual aid agreement provides for automatic sharing of emergency resources between adjacent agencies. Sutter County and its fire departments depend heavily on volunteer firefighters and mutual aid. In addition, the Sutter County Fire Department has established mutual aid agreements with neighboring Yuba and Yolo Counties to assist as needed during major fire incidents. These agreements allow them to draw personnel and/or equipment from either County, as necessary.

Sutter County is also part of a statewide master mutual aid agreement. When possible, the County will provide emergency services anywhere in the state for such events as forest fires during fire season.

Funding

Increased residential development and subsequent added population in the county have increased service needs with no subsequent increase in staff or funding for new or updated facilities. Currently, funding for County fire departments is generated from general revenue property taxes and a special fire tax that is allocated by the Fire Chief through the annual budget; however, additional funding mechanisms have not been developed. Additional funds for CSA-F are received from the City of Live Oak under the current contract between the City of

7 Yager Dan, Fire Chief, Sutter County Fire Department, personal communication, September 18, 2007.

Live Oak and the County Fire Department. Funds are used to maintain and update fire safety and emergency response equipment. Maintenance for all County fire vehicles and equipment is performed by the appropriate County department or contracted out if the required maintenance cannot be completed in-house.

It should be noted that the independent fire districts such as Meridian and Robbins receives no funds from Sutter County and are funded solely by community property taxes and fundraisers.

REGULATORY CONTEXT

Federal

There are no federal regulations related to fire protection services that apply to the Planning Area.

State

California Fire Code

The California Fire Code contains specialized regulations related to construction, maintenance, and use of buildings in relation to fire and safety. The extent of the code coverage pertains to fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions to aid fire responders, industrial processes, and other fire-safety requirements for new and existing buildings.

California Health and Safety Code

Sate fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code, include 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.

Local

The Building and Fire Division of the County of Sutter is a part of the Community Services Department and is charged with the enforcement of both the Uniform Building Code and the Uniform Fire Code for the purpose of public health and safety.

There are currently no local standards for equipment, staffing, or levels of fire service in the county. Station IOS standards are designated and outlined in the preceding sections.

3.3.3 Schools

INTRODUCTION

This section provides an overview of the school districts which serve Sutter County and includes a description of existing and planned facilities as well as enrollment and capacity of existing facilities. Information from this section is based on state education data and communication with staff at several of the school district offices.

Sutter County educational opportunities are an important component to overall vitality of the region. The potential for an increased skilled workforce is directly proportional to educational opportunities available to area residents. It is important to understand the capacity of existing and planned school facilities to be able to assess future needs.

SUMMARY OF KEY FINDINGS

- Sutter County is served by 13 different public school districts at the elementary, middle school, and high school level. Included in the total is the Woodland Unified School District that provides school services to a portion of southern Sutter County.
- In 2007, Sutter County had an enrollment total of approximately 18,727 K-12 students.[8]
- Sutter County schools employ approximately 870 full time teachers in the 32 schools.
- Sutter County students come from a diverse ethnic background with 46 percent of White Non-Hispanic ethnicity, 31 percent Hispanic, and 13 percent of Asian.
- More than 1/3 of the schools within Yuba City School District are operating with enrollment above capacity, while all the schools within Sutter Union High School District are operating at or above capacity.
- Many of the school districts in the southern part of the county are experiencing increasing enrollment and are at or over capacity for the school facilities. In contrast many of the schools in the northern half of the county are experiencing declining enrollment and are allowing children from neighboring counties and areas to enroll in the schools.
- Only 1/2 of the schools in the county have a two-way emergency communication system.
- The 2007-2008 Grand Jury Report found that there is no countywide policy for individual schools to develop an emergency plan dealing with an immediate levee failure or other emergency.

EXISTING CONDITIONS

Over 17,000 students are enrolled in the Sutter County public school system making it the principal provider of primary, secondary, and high school (K-12) education in the County. The County has several private educational institutions which serve school age children and the County also provides for higher educational degrees from private technical/vocational and community college institutions. Among the County's 49,071 residents, 73 percent hold a high school diploma or higher and 15 percent hold a bachelor's degree or higher.[9]

A majority of Sutter County's population is in proximity to the County's two incorporated cities – City of Live Oak and City of Yuba City. With much of the population residing around these two cities, the County's school district education facilities are primarily located within these

8 California Department of Education, Educational Demographics Office (CBEDS, assign05 8/18/06, public schools 8/4/06, sfib0506 8/22/06).

9 U.S. Census Bureau, Census 2000, SF-3, DP-2.

incorporated areas. For the purpose of this document, any schools within Sutter County school districts will be referred to as Sutter County schools even if they are located within the incorporated areas of the county.

Sutter County Schools Overview

Sutter County's public school system is comprised of 12 individual school districts under the lead of the Sutter County Superintendents Office which provides financial oversight and administering countywide educational programs. The 12 Sutter County public school districts are made up of 8 elementary school districts, 2 high school districts and, 2 joint elementary/high school unified districts. In addition, Sutter County has a joint jurisdiction program with the Yolo County School District to provide public education programs and facilities to children in the Knights Landing area located in the lower southwestern corner of Sutter County. County school districts range in size from 77 students in the Meridian Elementary District to Yuba City Unified's 21 schools with an enrollment of over 13,000 students. Figure 3.3-2 provides current district boundaries and school locations for Sutter County.

Facilities

Sutter County's educational facilities are comprised of 23 elementary schools, 3 middle schools, and 6 high schools with a total 2007 enrollment of approximately 18,727 students.[10] Table 3.3-4 shows the school districts serving the County, 2006/2007 school year enrollment totals, and capacities with district growth rates. Currently, none of the school districts have plans for any new school facilities; however, additional portable buildings and continued maintenance to existing buildings and school facility sites occur on an ongoing basis as enrollment changes.

Table 3.3-4. School District Enrollment Figures, 2007

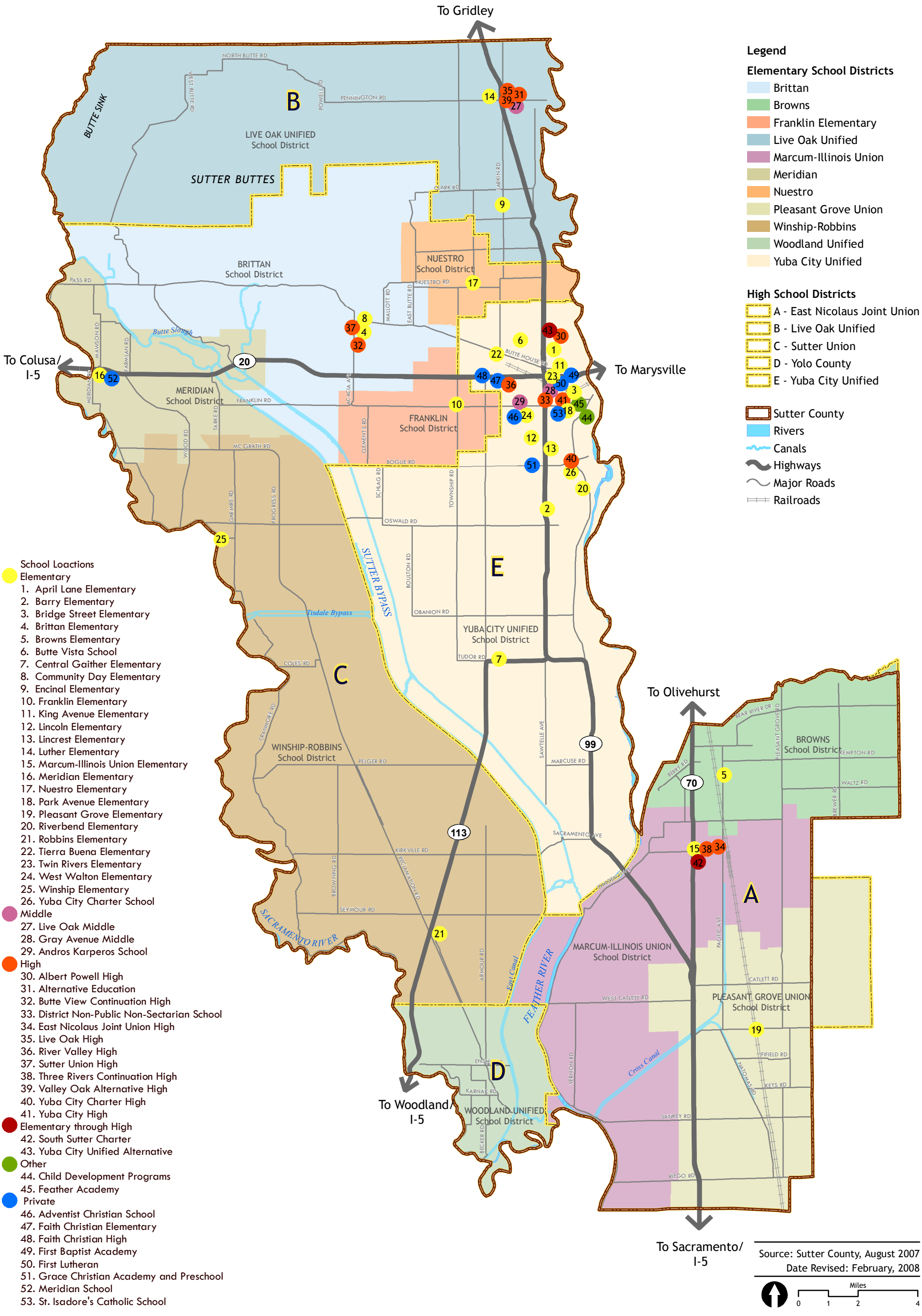
District Boundaries	Current Enrollment	Estimated Enrollment Capacity	Average Percent Growth
Brittan Elementary	570	650	-0.73%
Browns Elementary	130	200	-1.33%
East Nicolaus High	332	500	2.03%
Franklin Elementary	414	430	2.30%
Live Oak Unified	1,876	2,950	-0.07%
Marcum-Illinois Union	956	N/A	7.34%
Meridian Elementary	77	175	6.06%
Nuestro Elementary	259	150	2.87%
Pleasant Grove Joint Union	155	200	-0.32%
Sutter Union High	775	780	3.03%
Winship-Robbins Elementary	123	190	23.76%
Yuba City Unified	13,060	14,276	1.80%
Total	**18,727**	**20,501**	**2.43%[1]**

Source: California Department of Education, Educational Demographics Office (CBEDS, assign05 8/18/06, public schools 8/4/06, sfib0506 8/22/06).
Sutter County School Districts, correspondence 9/26/07- 11/20/07.
[1]Average percent growth total calculated excluding highest and lowest outliers.

10 California Department of Education, Educational Demographics Office (CBEDS, assign05 8/18/06, public schools 8/4/06, sfib0506 8/22/06).

SUTTER COUNTY
General Plan Update

SUTTER COUNTY
GENERAL PLAN UPDATE



Legend

Elementary School Districts
- Brittan
- Browns
- Franklin Elementary
- Live Oak Unified
- Marcum-Illinois Union
- Meridian
- Nuestro
- Pleasant Grove Union
- Winship-Robbins
- Woodland Unified
- Yuba City Unified

High School Districts
- A - East Nicolaus Joint Union
- B - Live Oak Unified
- C - Sutter Union
- D - Yolo County
- E - Yuba City Unified

- Sutter County
- Rivers
- Canals
- Highways
- Major Roads
- Railroads

School Loactions

Elementary
1. April Lane Elementary
2. Barry Elementary
3. Bridge Street Elementary
4. Brittan Elementary
5. Browns Elementary
6. Butte Vista School
7. Central Gaither Elementary
8. Community Day Elementary
9. Encinal Elementary
10. Franklin Elementary
11. King Avenue Elementary
12. Lincoln Elementary
13. Lincrest Elementary
14. Luther Elementary
15. Marcum-Illinois Union Elementary
16. Meridian Elementary
17. Nuestro Elementary
18. Park Avenue Elementary
19. Pleasant Grove Elementary
20. Riverbend Elementary
21. Robbins Elementary
22. Tierra Buena Elementary
23. Twin Rivers Elementary
24. West Walton Elementary
25. Winship Elementary
26. Yuba City Charter School

Middle
27. Live Oak Middle
28. Gray Avenue Middle
29. Andros Karperos School

High
30. Albert Powell High
31. Alternative Education
32. Butte View Continuation High
33. District Non-Public Non-Sectarian School
34. East Nicolaus Joint Union High
35. Live Oak High
36. River Valley High
37. Sutter Union High
38. Three Rivers Continuation High
39. Valley Oak Alternative High
40. Yuba City Charter High
41. Yuba City High

Elementary through High
42. South Sutter Charter
43. Yuba City Unified Alternative

Other
44. Child Development Programs
45. Feather Academy

Private
46. Adventist Christian School
47. Faith Christian Elementary
48. Faith Christian High
49. First Baptist Academy
50. First Lutheran
51. Grace Christian Academy and Preschool
52. Meridian School
53. St. Isadore's Catholic School

Source: Sutter County, August 2007
Date Revised: February, 2008

Miles
0 1 2 4

PBS&J

SCHOOL LOCATIONS
Figure 3.3-2

Sutter County schools employ approximately 870 full time teachers in the 32 schools. Table 3.3-5 provides a breakdown of area schools with number of teachers and average teacher student ratios for each school type. Area schools maintain an average student to teacher ratio across all school districts of approximately 20.4 students to every 1 teacher with special education students receiving more one on one teacher interaction than K-12 students.

Table 3.3-5. Sutter County Schools by Type, 2005-06

	Number of Schools	Full-Time Equivalent (FTE) Teachers[1]	Pupil-Teacher Ratio[2]
Elementary	23	472.0	19.6
Middle	3	126.0	20.4
High School	6	199.8	24.3
K-12	2	7.7	34.2
Alternative	3	15.6	23.7
Special Education	1	33.2	6.5
Continuation	4	15.0	16.1
Community Day	1	0.0	0.0
Total	**43**	**869.3**	**20.4**

Source: California Department of Education, Educational Demographics Office (CBEDS, assign05 8/18/06, public schools 8/4/06, sfib0506 8/22/06).
[1] FTE teacher counts include those assigned to a particular type of school; district and county office of education teachers not associated with a school are excluded.
[2] The Pupil-Teacher Ratio is enrollment divided by the number of full-time equivalent teachers. Because some teachers are not assigned to a classroom, the Pupil-Teacher Ratio is usually smaller than the average class size.

Enrollment

Although some individual schools and districts are experiencing decline in student enrollment, Sutter County schools as a whole have had a steady increase in student enrollment as illustrated on Figure 3.3-A. Enrollment in the county for the 2005 to 2006 school year show the highest number of students being enrolled at the high school level, as illustrated on Figure 3.3-B. The second highest enrollment level is occurring in the kindergarten and first grade elementary education in the county.

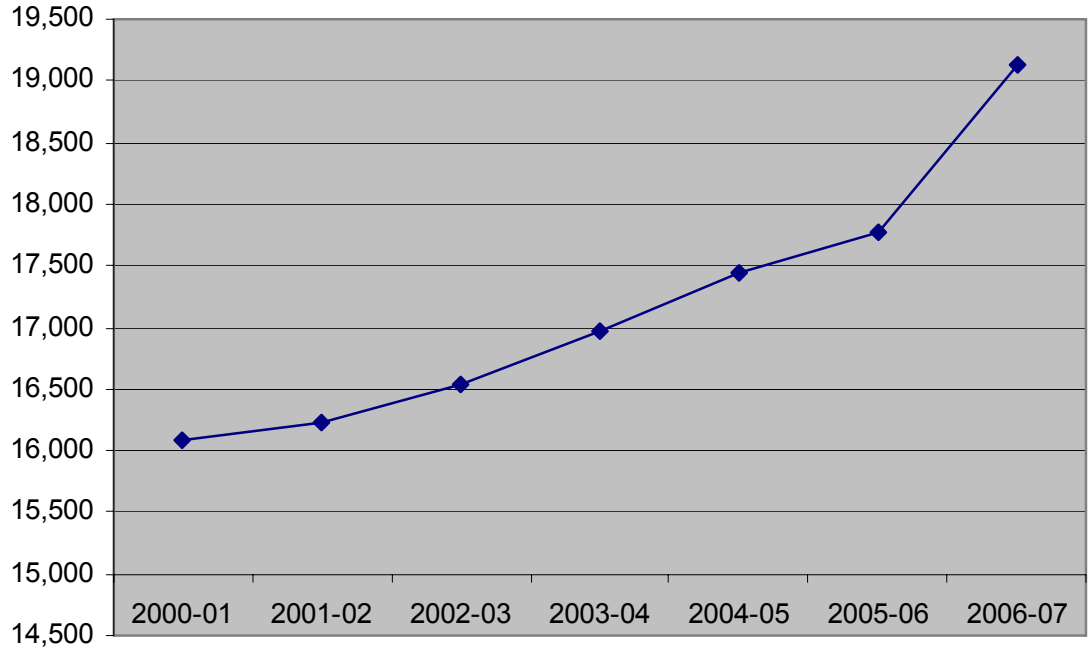
Student Makeup

The student population, as seen on Figure 3.3-B, is relatively evenly distributed between the grade levels with slightly less students in the senior year of high school. Sutter County students come from a diverse ethnic background with 46 percent of White Non-Hispanic ethnicity, 31 percent Hispanic, and 13 percent of Asian ethnicity (Figure 3.3-C).

School Districts

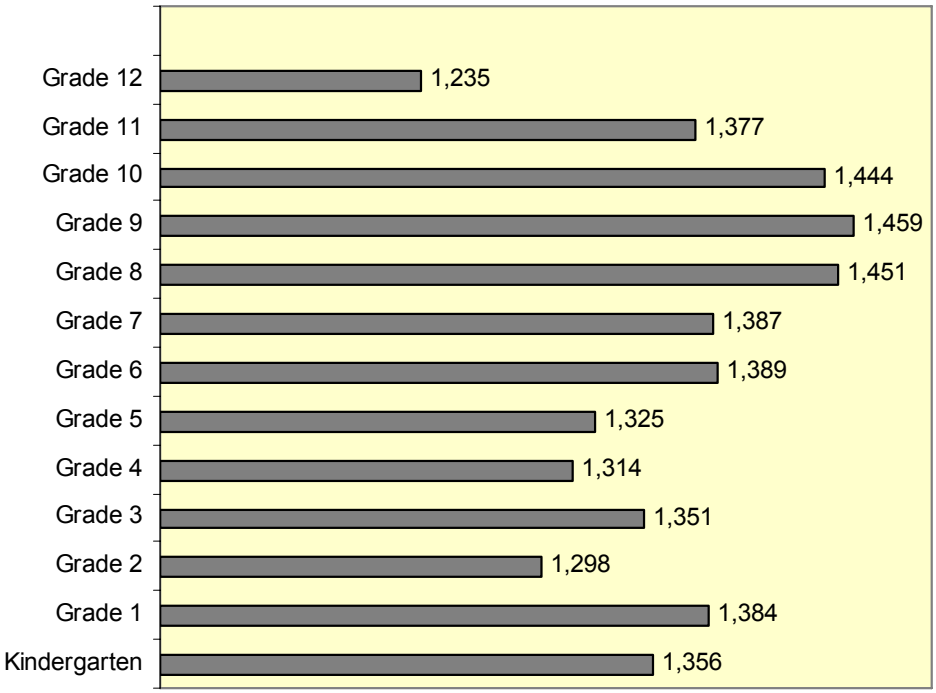
Each school district provides services to students in designated geographic areas. Table 3.3-6 identifies and provides summary information for the individual school districts that service Sutter County. For the purpose of Sutter County school capacity, each facility was accessed for approximate enrollment capacity based on existing facilities. The discussion that follows provides additional details for each of the school districts which serve Sutter County students.

Figure 3.3-A. Sutter County Enrollment Trends



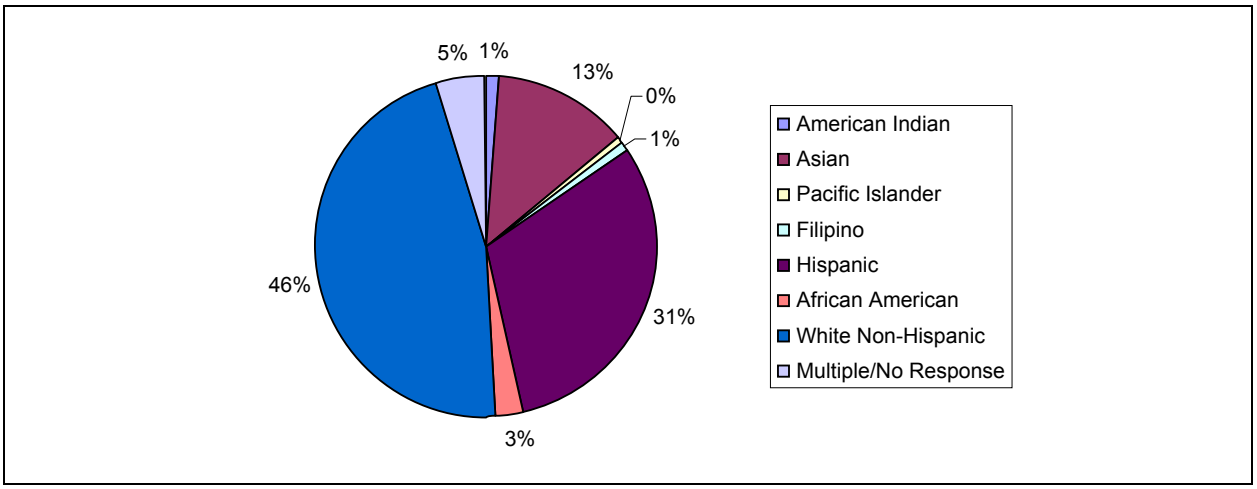
Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

Figure 3.3-B. Enrollment by Grade Sutter County, 2005-06



Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

Figure 3.3-C. Students by Ethnicity Sutter County, 2005-06



Source: California Department of Education, Educational Demographics Office (CBEDS, sifade05 8/23/06, sifb0506 8/22/06).

Table 3.3-6. School Districts Servicing Sutter County

School District	Schools	Grades Served	Location	Enrollment	Capacity
Brittan Elementary	Brittan Elementary School	K-8	2340 Pepper Street, Sutter	559	650
	Community Day Elementary School	K-8	2340 Pepper Street, Sutter	11	Portion of Brittan Elementary School capacity
Browns Elementary	Browns Elementary	K-8	1248 Pacific Avenue, Rio Oso	130	200
East Nicolaus Joint Union High	Three Rivers Continuation High School	10-12	2378 Nicolaus Avenue, Nicolaus	15	50
	East Nicolaus High	9-12	2454 Nicolaus Avenue, East Nicolaus	317	450
Franklin Elementary	Franklin Elementary	K-8	332 North Township Road, Yuba City	414	430
Live Oak Unified	Alternative Education	9-12	2207 Pennington Road, Live Oak	21	N/A
	Encinal Elementary	K-8	6484 Larkin Road, Live Oak	85	500
	Luther Elementary	K-4	10123 Connecticut Avenue, Live Oak	629	500
	Live Oak Middle School	5-8	2082 Pennington Road, Live Oak	571	750
	Live Oak High School	9-12	2351 Pennington Road, Live Oak	547	1,200
	Valley Oak Continuation High	10-12	2207 Pennington Road, Live Oak	23	N/A

Table 3.3-6. School Districts Servicing Sutter County

School District	Schools	Grades Served	Location	Enrollment	Capacity
Marcum-Illinois Union Elementary	Marcum-Illinois union Elementary	K-8	2452 El Centro Boulevard, East Nicolaus	141	N/A
	South Sutter Charter	K-12		815	Independent Study Only
Meridian Elementary	Meridian Elementary	K-8	15898 Central Street, Meridian	77	175
Nuestro Elementary	Nuestro Elementary	K-8	3934 Broadway Road, Live Oak	129	150
	California Virtual Academy	K-8	N/A	130	Independent Study Only
Pleasant Grove Joint Union	Pleasant Grove Elementary	K-8	3075 Howsley Road, Pleasant Grove	155	200
Sutter Union High	Butte View Continuation High School	9-12	2044 Elm Street, Sutter	23	30
	Sutter Union High School	9-12	2665 Acacia Street, Sutter	752	750
Winship-Robbins	Robbins Elementary School	K-8	4700 Robbins Circle, Robbins	89	120
	Winship Elementary	K-8	4305 South Meridian Road, Meridian	34	70
Yuba City Unified	Albert Powell Continuation High School	10-12	1875 Clark Avenue, Yuba City	198	N/A
	Andros Karperos Middle	6-8	1666 Camino De Flores, Yuba City	1,032	900
	April Lane Elementary School	K-5	800 April Lane, Yuba City	571	625
	Barry Elementary School	K-8	1255 Barry Road, Yuba City	821	800
	Bridge Street Elementary School	K-5	500 Bridge Street, Yuba City	441	600
	Butte Vista Elementary School	K-7	2195 Blevin Road, Yuba City	923	950
	Central Gaither Elementary School	K-8	8403 Bailey Road, Yuba City	252	250
	Gray Avenue Intermediate School	6-8	808 Gray Avenue, Yuba City	908	900
	King Avenue Elementary School	K-5	630 King Avenue, Yuba City	384	600
	Lincoln Elementary School	K-5	1582 Lincoln Road, Yuba City	676	650
	Lincrest Elementary School	K-5	1400 Phillips Road, Yuba City	779	700
	Park Avenue Elementary	K-5	100 Morton Street, Yuba City	606	625
	River Valley High School	9-12	801 El Margarita Road, Yuba City	1,251	1800
	Riverbend Elementary	K-8	301 Stewart Road,	741	1000

Table 3.3-6. School Districts Servicing Sutter County

School District	Schools	Grades Served	Location	Enrollment	Capacity
	School		Yuba City		
	Tierra Buena Elementary	K-8	1794 Villa Avenue, Yuba City	756	750
	Twin Rivers Charter School	K-8	840 Cooper Avenue, Yuba City	263	N/A
	West Walton Elementary School	K-5	1700 Camino De Flores, Yuba City	612	650
	Yuba City Charter School	K-12	613A Bogue Road, Yuba City	175	340
	Yuba City Charter High School	7-12	613A Bogue Road, Yuba City	89	136
	Yuba City High School	9-12	850 B Street, Yuba City	2,187	2000
	Yuba City Unified Alternative	K-12	1877 Clark Avenue, Yuba City	132	Independent Study Only
	District Non-Public Non-Sectarian School	9-12	750 Palora Avenue, Yuba City	4	Independent Study Only
Woodland Unified School District	Grafton Elementary School	K-12	9544 Mill Street Knights Landing (Yolo County)	25	200

Source: California Department of Education, Educational Demographics Office (CBEDS, sifade05 8/23/06, sifb0506 8/22/06) and Sutter County School Districts Correspondence 10/25/07.

Brittan Elementary School District

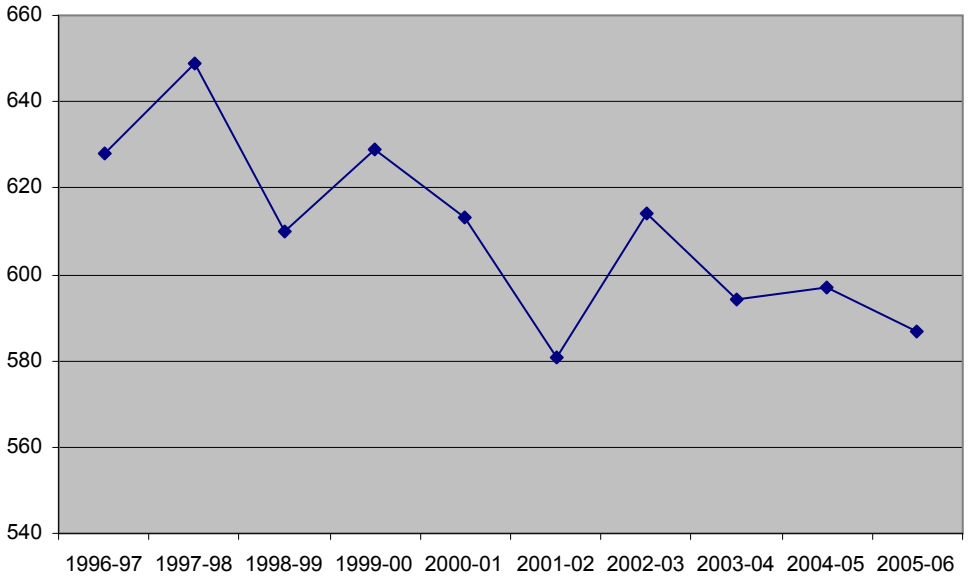
Brittan Elementary School District is approximately 63 square miles in size and provides elementary (K-8) education to the community of Sutter and surrounding areas. The District has one elementary school located on Pepper Street in the community of Sutter. The 2007 District enrollment is currently below capacity with 559 students.[11] Brittan Elementary Schools overall facility capacity is 650 students. Technology provisions are above state and county averages with 3.2 students per computer.

In previous years, the School District has had to provide additional portable classrooms to accommodate new students; however, recent enrollment trends, as provided on Figure 3.3-D, show average growth in enrollment over the last 9 school years at -0.73 percent. The School District has lost over 100 enrolled students in the last 3 school years and has offset the declining enrollment with transfer agreements to enroll students from neighboring districts and counties. The Brittan Elementary School Districts committee set goals for the 2008 school year to achieve the fallowing tasks:

- Maintain the fiscal integrity of the District while making adjustments for declining enrollment.
- Develop a plan to manage the increasing cost of Special Education.

11 California Department of Education, Educational Demographics Unit. http://dq.cde.ca.gov/dataquest/content.asp, accessed 9/27/07.

Figure 3.3-D. Brittan Elementary School District Enrollment Trends



Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

- Complete the Community Day School project and the Preschool, and if funded, the gym.

The Community Day School is located at the same site as Brittan Elementary and provides continuation and special education for K-8 grade students. The Community Day School had 11 students enrolled during the 2006-07 school year. The school's capacity is a portion of the total Brittan Elementary capacity of 650 students.

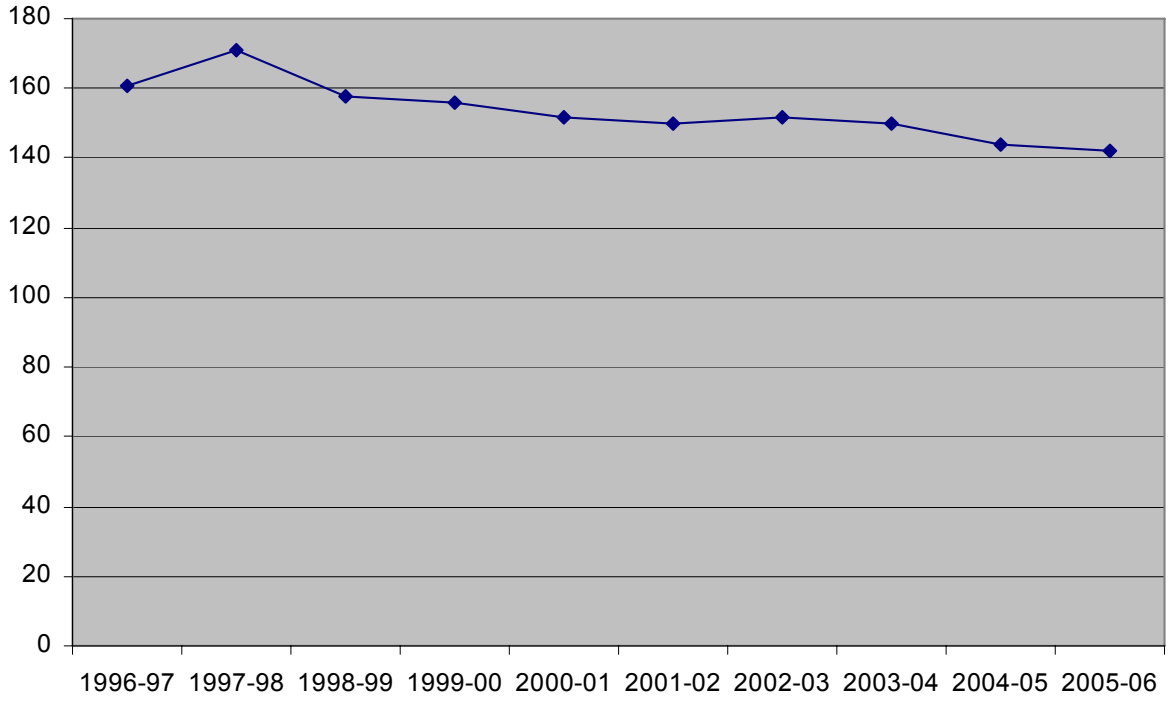
Browns Elementary School District

Browns Elementary School District provides primary and secondary (K-8) education to the farming community of Rio Oso and the surrounding 35 square miles of rural area. The District contains 1 school facility that has an average student to teacher ratio of 17.8, with 4.2 students per computer, slightly below the Sutter County average. The enrollment for Browns Elementary in the 2006-07 school year was 130 students, with school facility capacity at approximately 200 students. Enrollment in the District has not had positive growth over the last 9 years with an average decline of -1.33 percent as shown on Figure 3.3-E.

East Nicolaus Joint Union High School District

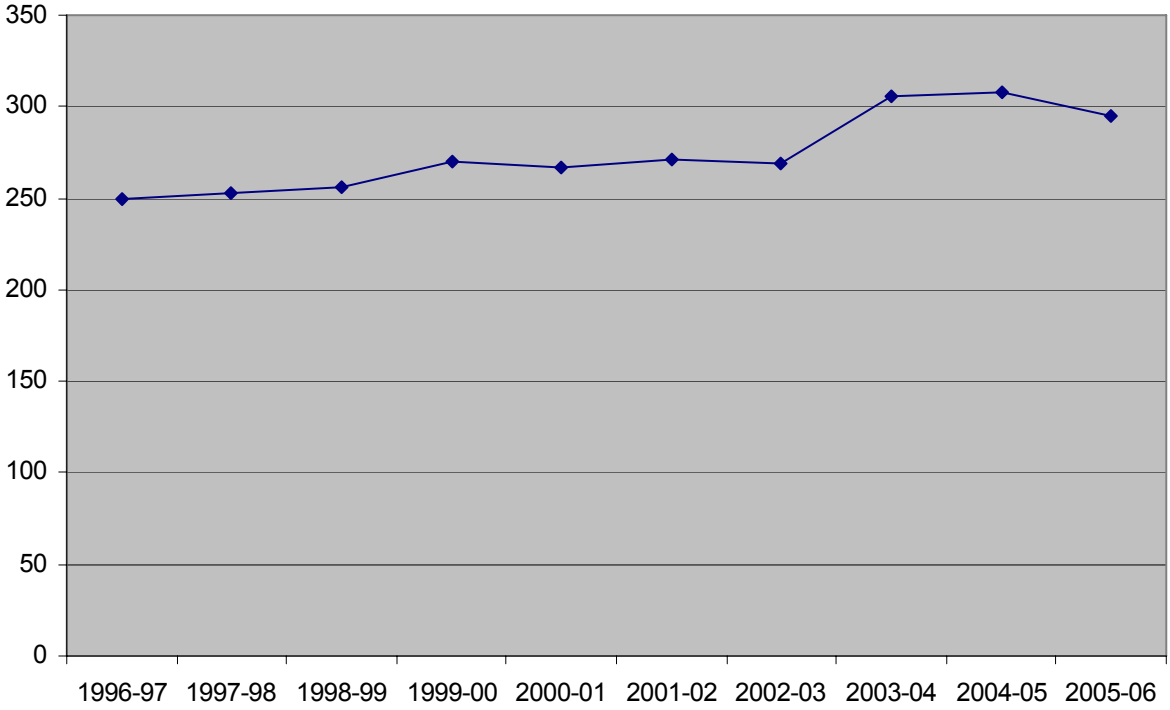
East Nicolaus Joint Union High School District provides education to 332 students from the communities of Rio Oso, Nicolaus, East Nicolaus, Trowbridge, and Pleasant Grove. The approximate 152 square mile district contains 1 high school with an enrollment of 317 students and 1 continuation school with an enrollment of 15 students for the 2006-07 school year. Average student to teacher ratio is 19.5, with 2.8 students per computer. Students from Browns, Marcum-Illinois, and Pleasant Grove Elementary School Districts continue to East Nicolaus High School for secondary education. With the influx of students from surrounding elementary school districts, the East Nicolaus High School District has had a positive average trend in enrolment with 2.03 percent enrollment growth, as seen on Figure 3.3-F.

Figure 3.3-E. Brown Elementary School District Enrollment Trends



Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

Figure 3.3-F. East Nicolaus Joint Union High School District Enrollment Trends

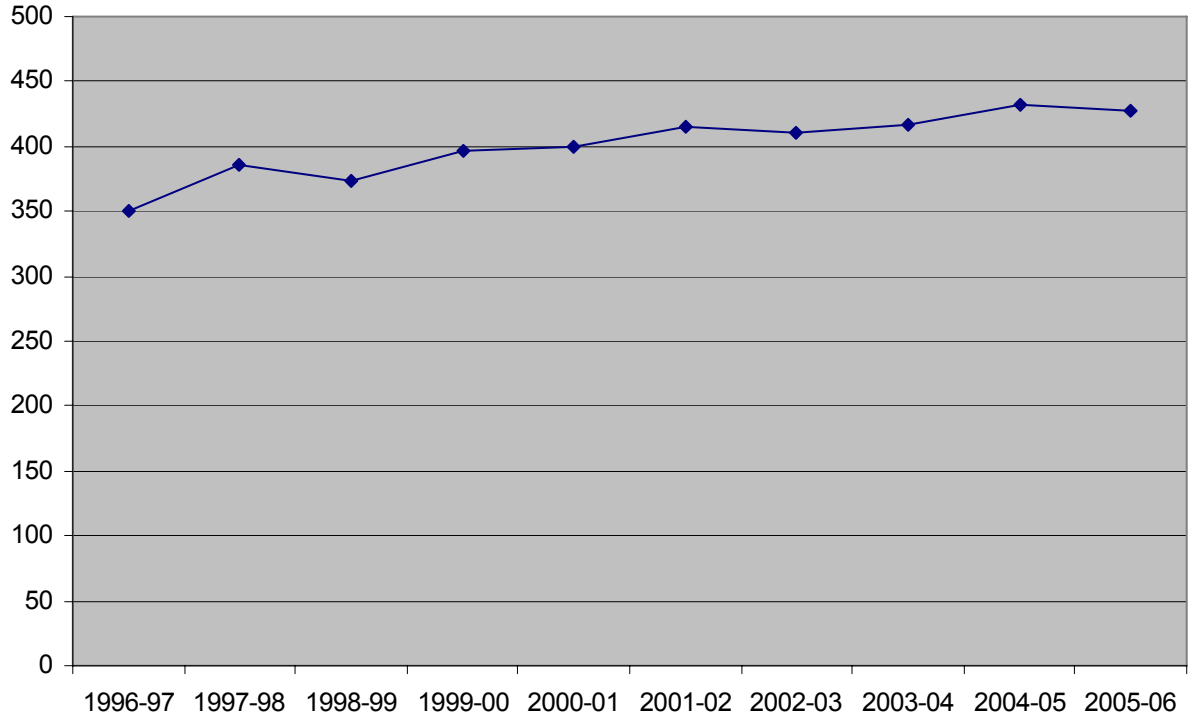


Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

Franklin Elementary School District

Franklin Elementary School District provided elementary (K-8) education to 414 students in the 2006-07 school year, with a facility capacity of 430 students from the area west-southwest of Yuba City. The District has been experiencing a positive growth rate over the last 9 years with a 2.30 percent enrollment growth trend, as seen on Figure 3.3-G. Franklin Elementary School is close to capacity; however, no new buildings are proposed for additional capacity at this time. The teacher to student ratio is 21.7 students for every teacher, with 6.7 students per computer, slightly higher than state and county averages. The District is approximately 15 square miles in size and students attend Sutter Union High School District for continuing secondary education.

Figure 3.3-G. Franklin Elementary School District Enrollment Trends



Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

Live Oak Unified School District

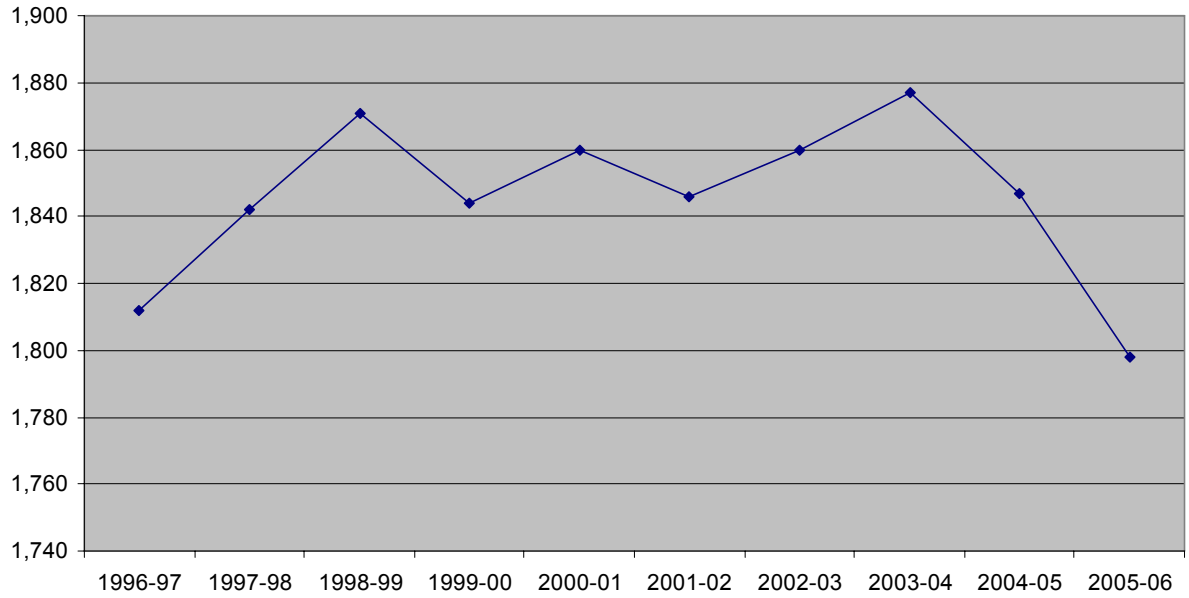
The Live Oak Unified School District provides elementary and secondary education to 1,876 students from the City of Live Oak and the northerly portion of Sutter County. The District is approximately 90 square miles in size and operates 6 schools, as shown in Table 3.3-7. The Live Oak schools include Luther Elementary (K-4) with an enrollment of 629, Encinal Elementary (K-4) with an enrollment of 85, Live Oak Middle School (5-8) with an enrollment of 571, Valley Oak Continuation (8-12) with an enrollment of 23, Live Oak Alternative (independent study K-12) with an enrollment of 21, and Live Oak High School (9-12) with an enrollment of 547. The average enrollment has declined by 0.07 percent over the last 9 years as seen on Figure 3.3-H. The average teacher to student ratio for the District is 21.4, with the average students to computer ratio below county and state averages.

Table 3.3-7. Schools by Type Live Oak Unified School District, 2005-06

	Number of Schools	Enrollment	Pupil-Teacher Ratio[2]
Elementary	2	688	19.7
Middle	1	571	22.1
High School	1	547	25.0
Alternative	1	21	7.0
Continuation	1	23	15.0
Total	**6**	**1,876**	**21.4**

Source: California Department of Education, Educational Demographics Office (CBEDS, assign05 8/18/06, public schools 8/4/06, sfib0506 8/22/06).

Figure 3.3-H. Live Oak Unified School District Enrollment Trends



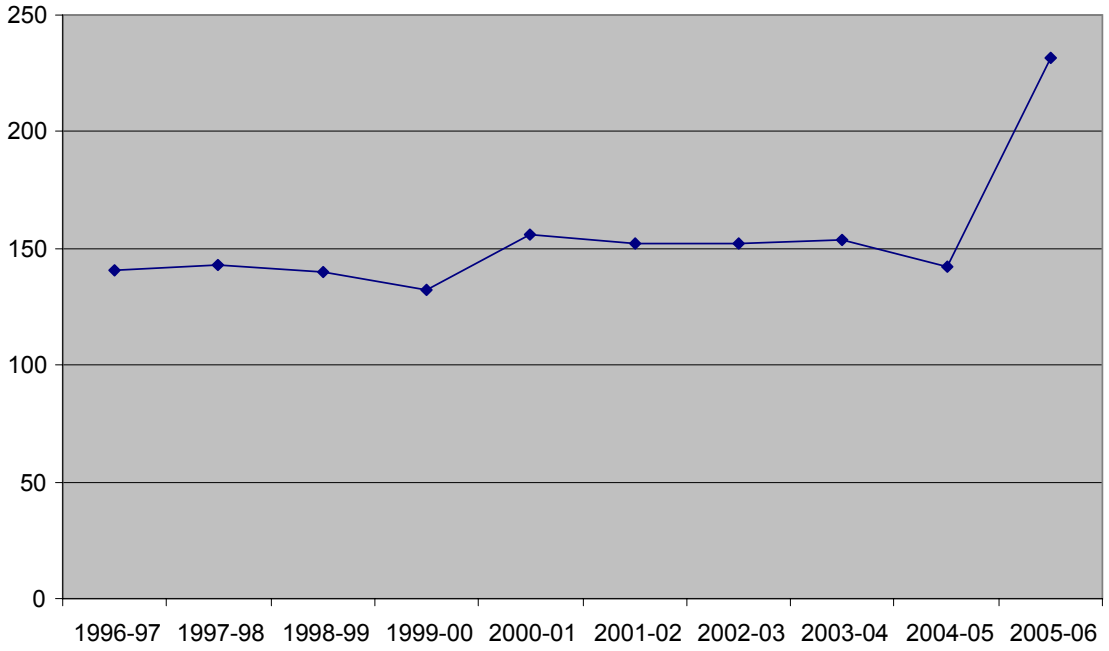
Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

Marcum-Illinois Union School District

Marcum-Illinois Elementary School District provides elementary education through 2 school facilities located in East Nicolaus. In the 2006-07 school year, the District served 956 students from the communities of Nicolaus, East Nicolaus, Trowbridge, and Rio Ramaza covering approximately 61 square miles. The District includes the South Sutter Charter School with 815 enrolled students and Marcum-Illinois Elementary with 141 enrolled for the 2006-07 year.

Marcum Illinois Union Elementary School located on El Centro Boulevard (Highway 70) in Nicolaus has a teacher to student ratio at 21.1, with a higher student to computer ratio than the county and state at 6.2. The District has experienced heavy growth in the last year and had an average enrollment growth rate of 7.3 percent over the past 9 years, as illustrated on Figure 3.3-I. Current capacity numbers are not available; however, the school facility has been expanded by 2 additional class rooms along with expansions to the multipurpose room. Students attend East Nicolaus High School for their secondary education.

Figure 3.3-I. Marcum-Illinois Union School District Enrollment Trends



Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

South Sutter charter school offers teacher guided independent study to 815 students as of 2006-07 in Sutter and surrounding counties. The charter school's offices are located on the Marcum Illinois Union Elementary School grounds with individual education taking place in student's homes.

Other services available at Marcum Illinois Union Elementary School include a state subsidized preschool program that offers 2 classes a day for 3- and 4-year old children. Marcum also offers a free after school program for school age students.

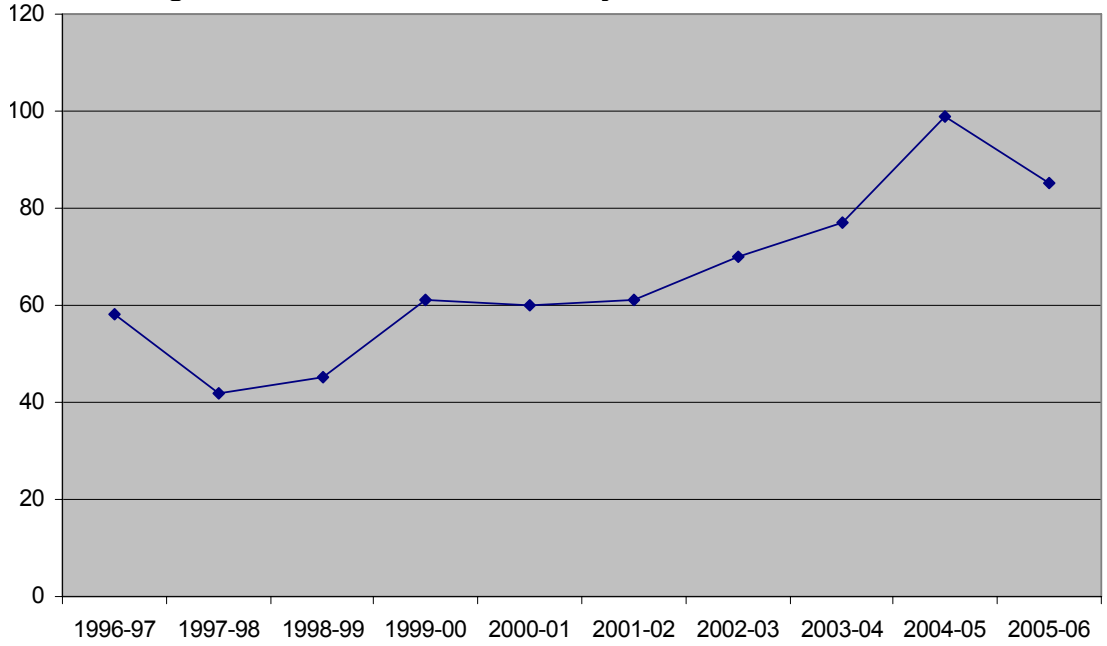
Meridian Elementary School District

With approximately 22 square miles, the Meridian Elementary School District provides elementary (K-8) education to the community of Meridian and the surrounding area. The District operates a single school with an enrollment of 77 students and has a facility capacity of approximately 175 students. The school's teacher student ratio is 20.2 with a student to computer ratio of 8.5. The District has experienced growth, with average enrollment at 6 percent over the last 9 years; however, only 4 of the 7 class rooms at the school are currently being used for classes. Figure 3.3-J shows the student enrollment trend in the Meridian Elementary School District over the 10 years. Following eighth grade, Meridian students attend middle school and high school in the Sutter Union High School District.

Nuestro Elementary School District

Nuestro Elementary School District provides elementary (K-8) education to students from the approximately 11 square miles of unincorporated area between the cities of Yuba City and Live Oak. The District has 2 schools with an overall 2005-06 District enrollment of 259 students. The Nuestro Elementary School has 129 enrolled students in the 2005-06 school year and the

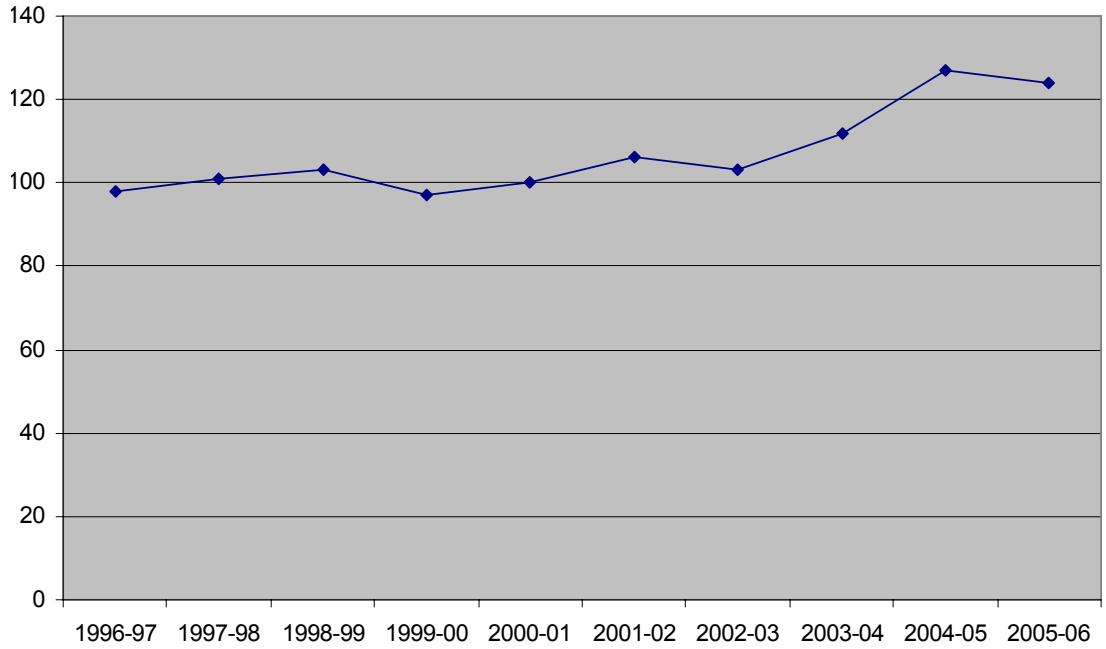
Figure 3.3-J. Meridian Elementary School District Enrollment Trends



Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

California Virtual Academy provides independent study to 130 students. The average teacher to student ratio for the District is 17.7, with a student to computer ratio of 5.6. As illustrated on Figure 3.3-K, the District has experienced a positive growth rate over the past several years, with nearly 3 percent average enrollment growth over the last 9 years. Secondary education is provided by the Sutter Union High School District.

Figure 3.3-K. Nuestro Elementary School District Enrollment Trends

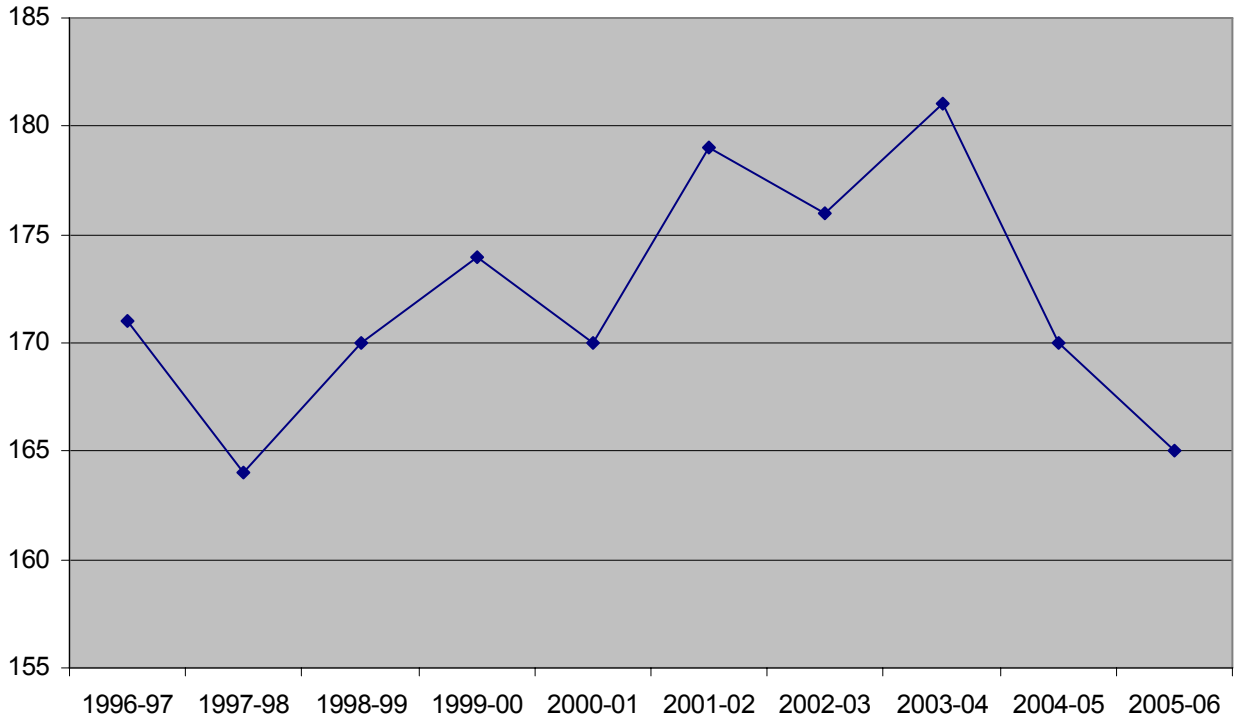


Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

Pleasant Grove Joint Union School District

The Pleasant Grove Joint Union School District is approximately 56 square miles in size and provides elementary (K-8) education to the residents in the community of Pleasant Grove and the surrounding area of southeast Sutter County as well as a portion of western Placer County. Enrollment for 2006-07 school year was 155 students, with a facility capacity of 200 students. The school's student to teacher ratio is 20.6, with an excellent student to computer ratio of 1.9. The District has experienced an average growth rate of 32 percent over the last 9 years, as seen on Figure 3.3-L. Secondary education is provided by East Nicolaus Union High School District.

Figure 3.3-L. Pleasant Grove Joint Union School District Enrollment Trends

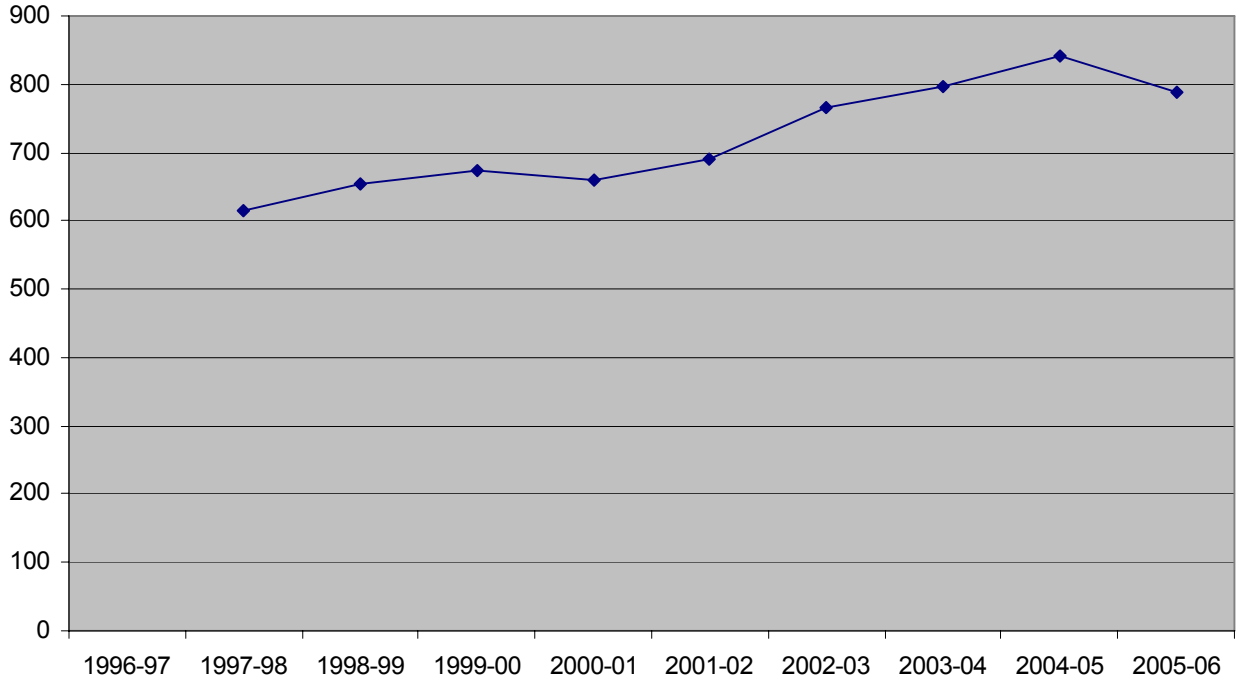


Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

Sutter Union High School District

Sutter Union High School District provides secondary education to the residents of Sutter and the surrounding 151 square miles including Brittan, Franklin, Meridian, Nuestro, and Winship Elementary School Districts. Enrollment for the District was 775 for the 2005-06 school year, with Sutter High School's enrollment at 752 students and Butte View Continuation High School with an enrollment of 23 students. The average teacher student ratio for the District is 24.3, with a 3.1 student to computer ratio for Sutter High and 1.3 for Butte View. The District has experienced some growth in enrollment, with a 3 percent average as seen on Figure 3.3-M. The slight decline in the 2005-06 year is due to a new school facility that was built by the Yuba City Unified School District, which is in close proximity to Sutter High School. This new school facility was desired, as future growth in the District is anticipated to continue.

Figure 3.3-M. Sutter Union High School District Enrollment Trends



Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

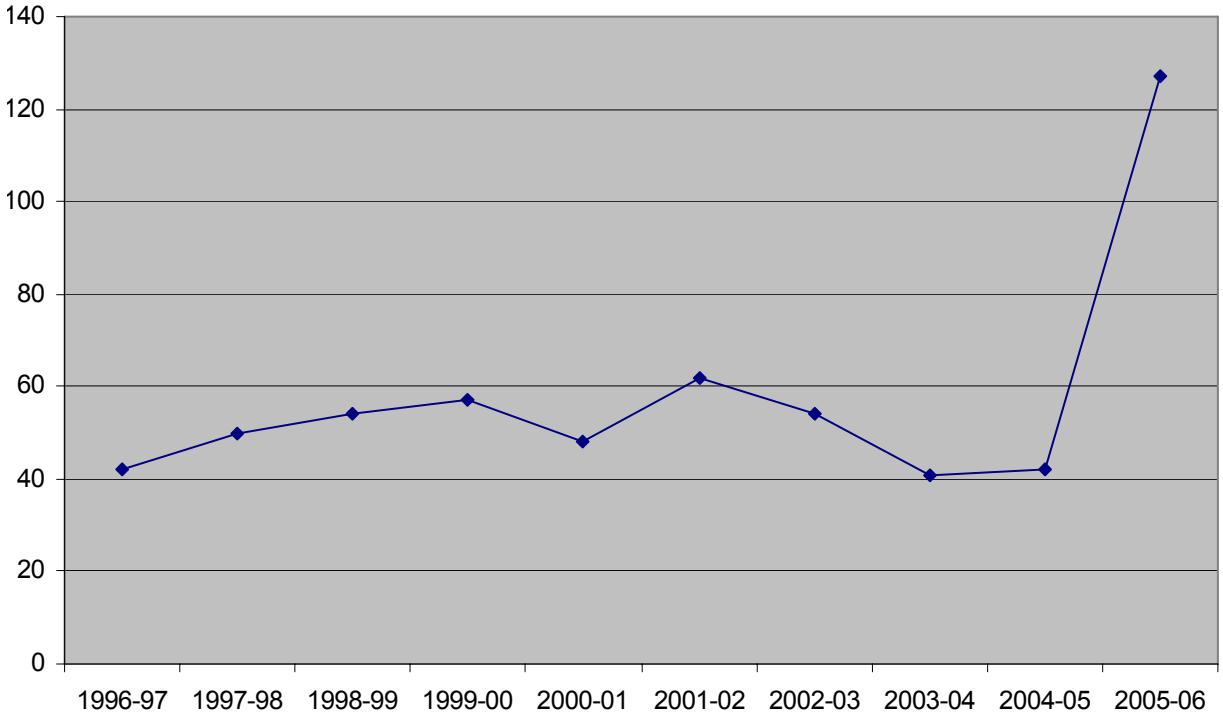
In response to the anticipated growth Sutter Union High School District is planning a second bond measure in 2008 to meet the financial need of the new facilities. The Sutter Union High School District Master Plan estimates the student population to grow to 1,500 students in the next 15 years. To accommodate the future growth, the Master Plan calls for a new cafeteria, gymnasium, library, permanent classrooms, an on-site agriculture complex, and an on site continuation high school. The District has purchased 30 acres to the west of the current high school campus for future expansion.

Winship-Robbins Elementary School District

The Winship-Robbins Elementary School District provides elementary (K-8) education to the residents encompassing a 40 square mile area of western Sutter County, south of the community of Meridian. There are currently 2 school facilities servicing the area, with the 2006-07 enrollments at 123 students.

Robbins Elementary School has an enrollment of 89 students, with a facility capacity of 120 students, while Winship Elementary School is at 34 students for the 2006-07 school year, with a facility capacity of 70 students. The District has an average student to teacher ratio of 15.9, with and average of 3.6 students per computer. Overall District growth for the past 9 years averages nearly 25 percent due to the recent annexation. Figure 3.3-N illiterates the sudden spike in student enrollment accruing in 2005. The Winship Elementary School District annexed the Robbins Elementary School attendance area from Yuba City Unified School District, which caused this increase in enrollment.

Figure 3.3-N. Winship-Robbins Elementary School District Enrollment Trends



Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

Yuba City Unified School District

The Yuba City Unified School District provides elementary and secondary education to residents of Yuba City, Tierra Buena, and a large area of the unincorporated county area extending south, including the community of Robbins, and covering an area of approximately 200 square miles. The District operates 21 schools, as outlined in Table 3.3-8, with a total enrollment of 13,060 for the 2005-06 year.

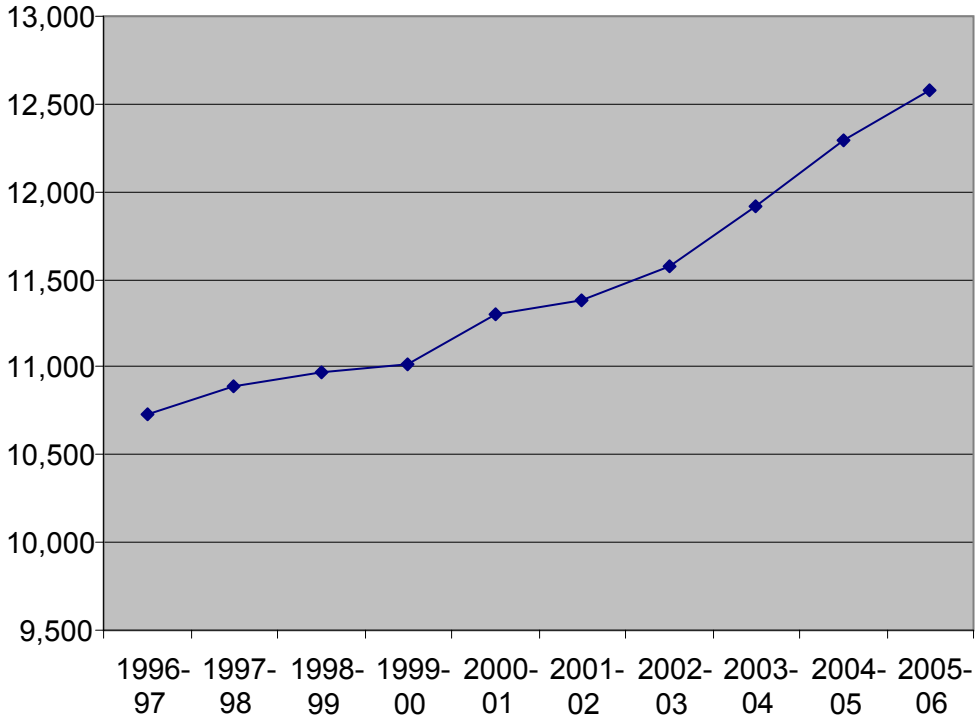
Table 3.3-8. Schools by Type Yuba City Unified School District, 2006-07

	School Type	Computer to Student Ratio	Enrollment	Full-Time Equivalent Teachers[1]	Pupil-Teacher Ratio[2]
Elementary	12	6.5	7,562	346.0	19.5
Middle	2	6.3	1,940	101.8	20.0
High School	3	3.1	3438	132.4	24.7
Alternative[1]	3	29.6	663	11.6	37.0
Continuation	1	2.5	198	10.4	18.7
Total/Average	**21**	**9.6**	**13,801**	**602.2**	**20.9**

Source: California Department of Education, Educational Demographics Office (CBEDS, assign05 8/18/06, public schools 8/4/06, sfib0506 8/22/06).
[1]Includes charter schools.

The District employs approximately 206 full-time teachers with an average teacher to student ratio of 20.9 and an overall student to computer ratio of 9.6, as shown on Figure 3.3-O. The Yuba City Unified School District has experienced rapid growth with 1.80 percent enrollment growth over the past 9 years.

Figure 3.3-O. Yuba City School District Enrollment Trends



Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

Many of the school districts in the southern part of the county, including the Yuba City Unified School District, are experiencing increasing enrollment, and are at, or over school facility capacity, and as a result, have had to build new schools and bring in portable classrooms to limit overcrowding.

Woodland Unified School District

As depicted on Figure 3.3-2, a portion of the Woodland Unified School District overlaps into the southern portion of Sutter County near the community of Knights Landing at the Yolo/Sutter County border. Approximately 20 to 25 students from Sutter County attend Grafton Elementary School in the Woodland Unified School District. The school's total enrollment currently is 123 students. According to state data, enrollment has grown an average of 2 percent since 2000.

Planned Facilities

Many of the County's public schools and/or districts that are at or over capacity have room for portables on site that can increase the enrollment capacity. Currently, none of the school districts have plans for new school facilities due to budgetary constraints. Future expansions for areas such as East Nicolaus Joint Union High School District and the Sutter Union High School District will be looked at as development occurs and enrollments increase. Development fees will account for some of the school facilities funding that will be used in these high growth areas.

Private School Facilities

Several private schools are located in Sutter County providing various levels of primary, secondary, and high school education. Most of the private schools are located in Yuba City and

draw from a larger geographical area including outlying counties. The approximate total enrollment for Sutter County private schools is at 955 students for the 2005-06 school year. Table 3.3-9 documents existing Sutter County private schools and their affiliation, location, enrollment, and grade levels served at each educational institution.

Table 3.3-9. Private School Enrollment Figures

School Name	Location	Grade Levels	Current Enrollment
Christian Outreach Fellowship	Live Oak	1-12	14
St. Isidore Catholic School	Yuba City	K-8	154
Yuba City Adventist Christian School	Yuba City	K-8	33
Faith Christian Elementary	Yuba City	K-6	190
Faith Christian High	Yuba City	7-12	168
First Baptist Academy	Yuba City	K-8	19
First Lutheran Elementary	Yuba City	K-8	152
Grace Christian Academy/Pre-School	Yuba City	K-8	180
Covenant Christian	Yuba City	K-12	37
Basics and Beyond	Yuba City	K-2	n/a
California International School	Yuba City	K-12	8
Total			**955**

Source: California Department of Education, Educational Demographics Office (CBEDS, assign05 8/18/06, schools 8/4/06, sfib0506 8/22/06).

Higher Education

The closest community college for Sutter County residents is Yuba Community College, located east of Sutter County in Marysville; although a satellite campus facility is slated to open in Sutter County in the coming years. Butte Community College, to the north, is also in the surrounding Sutter County area, while the University of California, Davis main campus is south of Sutter County, UC Davis does provide agricultural extension services within Sutter County.

A new 50,000 square foot Sutter County educational outreach facility, which was part of the Measure "J" Facilities Bond, was approved by the Yuba Community College District voters in November of 2006. The $31 million designated for Sutter County will fund the construction of an outreach facility that will house 10 to15 contemporary classrooms and district offices. This facility will greatly expand Sutter County students' access to 2- and some 4-year degree coursework. As of 2000, Sutter County had 4,072 college or graduate school students.

County Programs and Services

The Sutter County Superintendent of Schools Office also provides funding for countywide programs for special needs students that cannot be met on an individual district level.

Through cooperative agreements with the County school districts, the Sutter County Superintendent of Schools Office provides direct service instructional programs to nearly 9,500 students annually through infant programs, special education, vocational/occupational programs, outdoor science, and alternative education.[12] These programs are operated at the

12 Sutter County Superintendent of Schools, website http://www.sutter.k12.ca.us/, accessed October 2, 2007.

countywide level to provide specialized educational services beyond any one district boundary for more efficiency in economy and scale.

Within the Superintendent of Schools Office is the Educational Services Department, which oversees curriculum, staff development, Student Attendance Review Board (SARB), Peer Assistance and Review (PAR), Alternative Education programs, Intervention and Prevention Programs (IPP), School Assistance & Intervention Teams (SAIT), Beginning Teacher Support and Assessment (BTSA), Woodleaf Outdoor School, and any state and federal programs for the Sutter County Superintendent of Schools Office.

The Sutter County Superintendent of Schools Office also facilitates the Special Education Local Plan Area (SELPA), which is made up of local education agencies (LEAs) within the county boundaries including all school districts, the Yuba City Charter School, and the Sutter County Superintendent of Schools. The goal of SELPA is to support a collaborative effort to provide support to all special education students, teaching staff, families and parents.

Specialized programs and services provided in Sutter County are described below.

Tri-County Regional Occupational Program (ROP)

The Tri-County ROP offers career technical training courses to high school students and adults. These courses provide vocational training in Colusa, Sutter, and Yuba Counties. Several schools in Sutter County participate in the vocational training program including East Nicolaus High School, Live Oak High School, River Valley High School, Sutter High School, Yuba City High School, and Sutter County Superintendent of Schools.

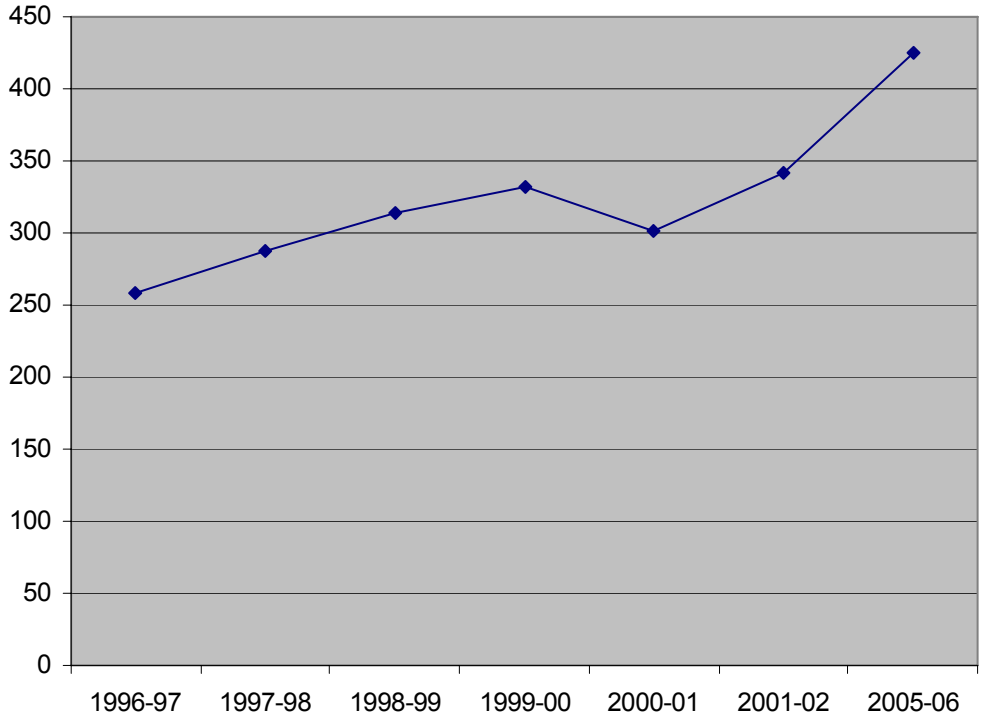
Woodleaf Outdoor Education Program

The Woodleaf Outdoor education program serves over 6,000 students annually from 8 counties. The program runs from September through November and February through May. The highly regarded five-day-a-week school program works to promote a sense of responsibility for the natural environment and the community around us through education, self confidence, and teamwork.

Special Education Programs

Through Sutter County's special education and alternative school program, the County provides a wide range of educational settings to help students that cannot otherwise function in the public schools. For the 2005-06 school year, 425 students were enrolled in the districtwide programs. The Special Education Program had 217 students enrolled for the 2005-06 school year, with a 6.5 teacher to student ratio. The student to computer ratio was 5.9 for the same year, slightly above state averages that provide more computers to students. Growth in special education programs is determined by the growth in the schools in the county. It is hard to predict what percentage of students moving into the county will need special education services. Special education classes are normally held on district sites, thus building and development will go along with district needs and projections. The enrollment trends illustrated on Figure 3.3-P show a steadily increasing need for these specialized programs to meet the growing needs of Sutter County students.

Figure 3.3-P. Special Education School District Enrollment Trends



Source: California Department of Education, Educational Demographics Office (CBEDS, sifb0506 8/22/06).

Feather River Academy

This alternative academy specifically serves students who have issues functioning within a standard educational setting. The school program had 208 students and 21.7 students per teacher for the 2005-06 school year. The teachers provide a curriculum for both in-class and independent study covering grades 7-12. Students who enter this program have been expelled by their local school districts, referred by the Probation Department, and/or referred by the School Attendance Review Board (SARB). The program also works with students who are homeless or voluntarily referred by a parent or guardian figure.

Infant Program

The infant program provides educational services for Yuba and Sutter Counties to infant and toddlers with severe disabilities up to three years of age. The goal of the program is to provide appropriate educational interventions, which may include language and speech, occupational therapy, direct and indirect teacher support, and nurse intervention.

Preschool Intervention Program

Special education services are provided through the Preschool Intervention Program to children age 3 to 5 years old who do not require intensive education. Speech, language, and special education services are provided to eligible students in individual or small group settings at the Preschool Intervention Program classroom, as well as at Head Start and State Preschool/Children's Centers throughout Sutter County.

Multiple Handicapped (M.H.) Program

The M.H. Program provides services to students who have multiple severe disabilities. Some may have medical needs. This program is designed to address the development of communication, mobility, social, and independent daily living skills.

Severely Handicapped (S.H.) Program

The S.H. Program provides services to students who have severe developmental disabilities. This program focuses on the development of functional skills in the areas of self-help, independent living, vocational, recreational, and communication.

Emotional Disturbance (E.D.) Program

The E.D. Program is designed to help children that are not functioning successfully in a regular school setting due to an emotional disturbance. With the help of this program the children receive one on one support and education in a therapeutic environment with a staff trained to meet the educational needs of children with an emotional disturbance.

Deaf and Hard of Hearing (D/HH) Program

Through the D/HH Program for the deaf and hard of hearing a specialized teaching staff works with students to provide education specific to their needs. This program focuses on the development of language, communication, academic achievement, and social skills.

Non-categorical (N.C.) Program

If a student is not performing up to public school academic standards, but does not fall under one of the 13 handicap conditions covered by the other specialty programs, the student can enroll in the N.C. Program. This program focuses on the development of language, communication, academic, and social skills.

Resource Specialist Program (R.S.P.) Program

Designed to provide services to students who have specific learning disabilities, the R.S.P. Program offers specialized instruction for part of the school day and modified curriculum materials in order to maintain within the school curriculum.

Language and Speech Services Program

Students with language and speech disabilities related to articulation, receptive and/or expressive language, or fluency and voice are provided therapy through the Language and Speech Services Program. Services are provided at the school sites and in conjunction with any of the other county operated programs.

Psychological Services Program

The Psychological Services Program provides assessment, counseling, and the development of behavior plans for students who are being assessed for special education services and to those who are currently identified with a handicapping condition.

School Emergency Response

According to the Sutter County Superintendent of Schools, Sutter County presently has two-way communication in place for emergency situations in approximately only 1/2 of the schools. The Sutter County Office of Emergency Services grant is scheduled to be received in September of 2007 and is due to augment some of the budgetary need for the emergency service.

While each school district has some form of emergency plan, no countywide uniform emergency plan and communication system exist. A 2007-2008 Grand Jury report recommends the completion and implementation of the two-way emergency communication system in light of increased school violence nationwide. The Report also found that there is no countywide policy for individual schools to develop a plan dealing with an immediate levee failure or other emergency. According to the County Multi-Hazard Mitigation Plan, levee failure is one of Sutter County's most likely emergencies to occur. Currently, both the superintendent of schools and the individual district schools use the Rising River Emergency Plan, which does not address the immediacy of an unforeseen levee failure and emergency plan for County schools.

The Grand Jury report goes on to recommend:

> *That the Grand Jury reviews the emergency response by school districts and law enforcement, and subsequent emergency plan updates. Relying solely on the Sutter County rising river emergency plan does not address what actions school officials/principals should take at their respective sites should an immediate levee failure or other emergency occur while school is in session. The Sutter County Superintendent of Schools Office and district superintendents and principals within the county, in cooperation with the Office of Emergency Services, must establish individual school emergency plans for those schools most likely to be impacted/inundated in the event of an unanticipated levee failure.*

Other Programs

The Sutter County Head Start is a nonprofit organization that works in conjunction with local schools to provide support to low income and at risk children and families in the county. Sutter County Head Start has several programs that including early childhood education, parenting workshops, health education, medical checkups, job training, and mother infant programs. With the influx of migratory workforce in the county, Head Start has two Migrant Centers located in Live Oak and Yuba City that provide bilingual services to families from May to October during agricultural harvesting seasons.

Funding

State Sources

The major State funding program for providing permanent school facilities is the School Facility Program (SFP), created by the passage of Senate Bill (SB) 50 and Proposition 1A in 1998 and administered by the State Office of New Public School Construction. With the adoption of Proposition 55 in March 2004, an additional $2.44 billion in funding became available for the Critically Overcrowded Schools (COS) program.[13]

13 State Allocation Board, *Annual Report 2003-2004*, page 26, www.documents.dgs.ca.gov/opsc/pdfresrs_info/AR_2003-04.pdf, accessed January 4, 2005.

Levels of developer fee contribution are determined by the State Allocation Board and increase annually. Current State statutes dictate that school districts have the authority to levy fees (known as statutory or Level I fees) on new development. Because these Level I fees often do not generate sufficient funding for new schools, some districts use fees (known as Level II fees) to generate 1/2 the cost of providing new school facilities. Use of Level II fees assumes that the State will provide the other half of the cost of new schools through the issuance of general obligation bonds. In the event that the State does not have funding available, participating districts have the option to temporarily increase the fees (then known as Level III fees) on new residential development to try and meet their needs. The district must, however, refund these funds when general obligation funds from the State do become available. It should also be noted that some income for school districts is obtained through the State lottery but cannot be used for funding construction projects due to the fluctuating funding levels available through this means.

Local Sources

Local funding sources include both non-revenue and revenue monies. Non-revenue funds include certificates of participation and other mechanisms typically in the form of loans. Revenue funds are generated from several sources including the District's general fund, money from the sale of unused school sites, general obligation funds, redevelopment agreement funds, developer fees, and others.

The Sutter County Superintendent of Schools Office is fiscally independent of the County government and manages a yearly budget of $23 million through a variety of funding sources including principal apportionment, grants, and fees charged to the individual districts.[14]

REGULATORY CONTEXT

Federal

There are no specific federal regulations related to school facilities within the Policy Area.

State

California Code of Regulations

The California Code of Regulations, Title 5 Education Code, governs all aspects of education within the State.

Proposition 1A/Senate Bill 50

Proposition 1A/SB 50 (Chapter 407, Statutes of 1998) is a school construction measure authorizing the expenditure of State bonds totaling $9.2 billion through 2002, primarily for modernization and rehabilitation of older school facilities and construction of new school facilities. $2.5 billion is for higher education facilities and $6.7 billion is for K-12 facilities.

Proposition 1A/SB 50 implemented significant fee reforms by amending the laws governing developer fees and school mitigation:

14 Sutter, County of. Grand Jury 2007 Report, February 2007.

- It establishes the base (statutory) amount (indexed for inflation) of allowable developer fees at $1.93 per square foot for residential construction and $0.31 per square foot for commercial construction.
- It prohibits school districts, cities, and counties from imposing school impact mitigation fees or other requirements in excess of or in addition to those provided in the statute.
- It also suspends for a period of at least 8 years (2006) a series of court decisions allowing cities and counties to deny or condition development approvals on grounds of inadequate school facilities when acting on certain types of entitlements.

Proposition 1A/SB 50 prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "legislative or adjudicative act involving the planning, use, or development of real property" (Government Code 65996(b)). In addition, a local agency cannot require participation in a Mello-Roos for school facilities; however, the statutory fee is reduced by the amount of any voluntary participation in a Mello-Roos.

Satisfaction of the Proposition 1A/SB 50 statutory requirements by a developer is deemed to be "full and complete mitigation." The law identifies certain circumstances under which the statutory fee can be exceeded, including preparation and adoption of a "needs analysis," eligibility for State funding, and satisfaction of 2 of 4 requirements (post-January 1, 2000) identified in the law including year-round enrollment, general obligation bond measure on the ballot over the last 4 years that received 50 percent plus one of the votes cast, 20 percent of the classes in portable classrooms, or specified outstanding debt.

Assuming a district qualifies for exceeding the statutory fee, the law establishes ultimate fee caps of 50 percent of costs where the State makes a 50 percent match, or 100 percent of costs where the State match is unavailable. District certification of payment of the applicable fee is required before the City or County can issue the building permit.

Proposition 55

Proposition 55 is a school construction measure passed in 2004 authorizing the sale of approximately $12.3 billion in bonds to fund qualified K-12 education facilities to relieve overcrowding and to repair older schools. Funds target areas of the greatest need and must be spent according to strict accountability measures. These bonds will be used only for eligible projects. Approximately $10 billion will be allocated to K-12 schools, with the remaining $2.3 billion allocated to higher education facilities.

Department of Education Standards

The California Department of Education published the Guide to School Site Analysis and Development to establish a valid technique for determining acreage for new school development. Rather than assigning a strict student/acreage ratio, this guide provides flexible formulas that permit each district to tailor its ratios as necessary to accommodate its individual conditions. The Department of Education also recommends that a site utilization study be prepared for the site, based on these formulas.

Local

There are no specific local regulations related to school facilities within Sutter County.

3.3.4 Parks and Recreation

INTRODUCTION

This section describes existing park facilities, recreational opportunities, and open space areas available to residents and visitors of Sutter County. In addition, this section briefly describes private park facilities and park located within incorporated areas of Sutter County that are utilized by county residents. County adopted park standards and facility maintenance is also discussed.

Parks play an important role in connecting residents to the surrounding community areas and each other through organized recreation events, civic gatherings, and other outdoor sporting activities.

SUMMARY OF KEY FINDINGS

- Approximately 15,947 acres of wildlife areas in Sutter County provide refuge for thousands of migratory birds along the Pacific Flyway.
- The Feather and Sacramento rivers provide water recreation, which make up a large portion of the County's recreational facilities.
- Other recreational facilities offer areas available for organized sports including four multi-purpose park areas (one contains a community center and pool), three area baseball diamonds, three area golf courses, and the Sutter County rifle range.
- Under a 1995 Yuba/Sutter County joint cooperation agreement, a blueprint for a 395-mile bi-county bikeway system was formed that connects the cities in Yuba and Sutter Counties with regional destinations.
- Sutter County's current park ratio is 309 acres of parkland per 1,000 persons. This parkland ratio drops to approximately 1 acre of community and neighborhood parkland per 1,000 persons when wildlife areas are excluded.

EXISTING CONDITIONS

Numerous parks and recreation facilities are located within Sutter County and include State wildlife areas for hunting, fishing, hiking; river recreation areas for boating, picnicking, and fishing; parks for recreation and community events; and sports facilities for baseball, soccer and golf. Existing County recreational facilities are described in Table 3.3-10.

Sutter County Park Facilities

Although Sutter County does not have a park and recreation service district, the County Board of Supervisors assigned the Public Works/Support Service Committee to provide advice on existing park services and expansions in the following ways:[15]

- advise the Board as to those policies and practices which offer opportunities for a full range of recreational activities;

15 Sutter County General Plan, Background Report, November 25, 1996.

Table 3.3-10. Sutter County Parks and Recreation Areas

	Name	Acres	Amenities	Location
State Wildlife Areas	Butte Slough	178	None	South of Pass Road, and west of West Butte Road
	Feather River	2,265	fishing, hunting, and other recreational uses	East of Garden Highway, at the end of Star Bend Road; east and west of Hwy. 99 on Sacramento Ave., north of Nicolaus and the Feather River
	Gray Lodge	Portion in Sutter Co. 371.42	Birding, educational tours, hunting and fishing permitted in some areas	Accessible from Almond Orchard Rd., off of North Butte Rd.
	Sutter By-Pass	3,766	Hunting, birding, nature Observation	Length of the By-Pass from Highway 20 to Nelson Slough
	Butte Sink	733	Duck hunting clubs, no public access	West of West Butte Rd. and north of Pass Rd. to the Butte Co. line
County River Recreation Areas	Live Oak Riverfront Park & Recreation Area	11.5	camping, RV spaces, boat launch, fishing, day use, group facilities, picnic areas, restrooms	East end of Pennington Road on the Feather River
	Tisdale Boat Launch *(under construction)*	2.4	Boat launch and parking	Tisdale Weir, east bank of the Sacramento River
	Boyd's Pump	5	Boat launch, dock, paved parking	On the Feather River, east of Garden Highway, south of Oswald Ave.
	Yuba City Boat Ramp	3	Boat launch fishing, docks, and general parking Additional privately operated facilities include: camping, RV parking, and day use picnic area	Over the levee at 2nd Street (near Sutter Co. airport) on the Feather River
	Feather River Parkway	61	Undeveloped	From south of the Yuba City Boat Ramp to north of Shanghai Bend
County Sports Facilities	South Sutter Recreation Association facility	10.12	Swimming pool and community center	Palm Street in the rural community of East Nicolaus
	South Sutter Baseball and Softball	1.49	Little league fields	Palm Street in the rural community of East Nicolaus
	Sutter Youth Organization facility (leased to Sutter Youth Organization Inc.)	3.67	Community center, swimming pool, picnic facilities, little league field	Corner of Butte House Road and Acacia Street
	Peach Bowl Little League Field (leased to a private facility operator)	3.49	Three little league fields	Second St. in Yuba City, next to Sutter Co. airport

Table 3.3-10. Sutter County Parks and Recreation Areas

	Name	Acres	Amenities	Location
	Live Oak Swimming Pool (through joint-use agreement)		A community swimming pool, little league and softball fields are located adjacent to the pool	In the City of Live Oak west of Hwy. 99 on Pennington Road.
	Nuestro School Playground (through joint-use agreement)		Play fields and age appropriate play structures	Broadway Road in the City of Live Oak
	Robbins School Athletic Fields (through joint-use agreement)	3.8	Community Park and play fields	Adjacent to Robbins School in the Community of Robbins
Private Recreation Areas and Sports Facilities	Twin Cities Rod and Gun Club	4.77	Outdoor shooting range	Second St. in Yuba City, next to Sutter Co. airport
	Lake Minden	157	Private RV campground and resort facility with man made lake	Marcum Road at Powerline Road south of Nicolaus
	Rio Ramaza	12.53	Boat dock, boat launch. camping and RV area	Garden Highway north of Riego Road along the Sacramento River
	Robbins Little League Field and Community Center		Little league field and community center	Community of Robbins
	Verona Marina	5.5	Fishing, boat launch, picnic area, RV area	Garden Highway at Vernon Road, along the Sacramento River
	Lovey's Landing	1.89	Boat launch, RV hookups, day camping, gas and oil, restaurant, store, and river docks	North of Meridian on the Levee Road along the Sacramento River
	Verona Joe's	5.01	Restaurant, fishing, boating, picnic, RV campground and river docks	South of Cross Canal at Sankey Road, along the Sacramento River
	South Ridge Golf Course	200+	18 hole golf course, group event facility, restaurants, bathrooms	South Butte Rd., west of Wyncoop Rd.
	Mallard Lake Golf Course	41	9 hole golf course, driving range, and miniature golf	Highway 99, south of Oswald Rd.
	Rio La Paz Golf Course	135+	18 hole golf course, club house, restaurant	Southwest of Nicolaus, south side of Lee Road and east side of Garden Highway
	Sutter Buttes	50,560	Middle Mountain Foundation docent led hikes	Northern section of Sutter County
Other	Sutter Commuter Bikeway	6.1 miles in length	Paved bicycle and walking path	From Acacia Ave. in Sutter to Hooper Road in Yuba City

Source: Sutter County, 2007.

- encourage development of natural resource areas for recreational activities;
- make recommendations for coordinated regional processes for park and recreational planning, acquisition, funding, and development;
- encourage the planned development of parkways, bike paths, off-road vehicle travel areas, wildlife preserves, picnic and camping facilities, and special facilities accommodating such leisure-time activities as golf, zoological attractions, historical areas, arboretums, and similar facilities;
- make recommendations on the development of future park and recreation capital improvement programs and the assignment of priority ratings thereto with the classifications: urgent projects, necessary projects, desirable projects, and deferrable projects;
- recommend policy positions to the Board of Supervisors on pending legislation affecting County park and recreation systems and its policies and procedures; and
- review, evaluate, and recommend updates of the County's Park and Recreation Element of its General Plan.

Facility Maintenance

The Public Works Department is responsible for administrative services to the County Airport, Facilities Maintenance, Parks and Recreation, street lighting and landscape districts, and several special districts. Under the direction of the Public Works Department, Facilities Management is responsible for the building and grounds maintenance of County buildings and parks including custodial services for County properties. The staff is responsible for landscape maintenance, custodial, minor remodeling, and facility maintenance. In a quadrant with a park assessment boundary, park maintenance may be expanded to include replacement and/or purchase of new park equipment and the replacement and/or purchase of new vegetation when necessary.

Facility Standards

The 1996 Sutter County General Plan included a goal of maintaining a ratio of 10 acres of parkland per 1,000 persons. As of 2007, Sutter County had a parkland ratio of 309 acres of parkland per 1,000 persons. This parkland ratio drops to approximately 1 acre of community and neighborhood parkland per 1,000 persons when wildlife areas are excluded. However, most of the populations within the unincorporated areas of the county reside in close proximity to Live Oak or Yuba City and use park facilities in these two incorporated cities.

Neighborhood parks in Sutter County serve dual purposes as local park areas serving residents within a 1/2 mile, while also serving area residents within a 2- to 3-mile radius. While most of the community parks are located in the City of Yuba City, some of them are within easy access of unincorporated county areas. With a little over 20 acres, the West Walton Park, Holly Tree Park, Harter Park, and Happy Park provide adjacent unincorporated County residents active recreation facilities in Yuba City. See Figure 3.3-2 School Location in Section 3.3.3, Schools, for the location of school facilities in the county.

Park Fees

Although there are no officially established County park districts, park funding is allocated according to five designated "quadrants" within the county. Money for parks is collected through

developer impact fees and is then used within the quadrant it was collected to develop new parks after forming a park assessment district. Currently, the County has 2 park assessment boundaries.

Yuba City and Live Oak Park Facilities

Much of Sutter County's population is clustered around the two incorporated cities of Yuba City and Live Oak, with most of the active park facilities that include recreational facilities located in these incorporated cities.

City recreation departments in Live Oak and Yuba City provide residents within the unincorporated county area access to swimming, softball, and other organized recreational activities. The area's YMCA facility is located in Yuba City and also provides activities and summer camps for children.

Sports Facilities

Area sports facilities offer a variety of recreational options including grass play fields, baseball diamonds, golf courses, and the Sutter County rifle range. In addition, picnic and play areas accompany many of the facilities. Sutter County residents enjoy four little league baseball facilities including the Peach Bowl little league field, South Sutter Recreation Association facility, Sutter Youth Organization facility and adjacent community center, as well as the Robbins Little League Field and Community Center. Most of the sports facilities in the County are privately owned and operated, however the Sutter Youth Organization facility and the Peach Bowl Little League field are both leased to private operators by the County. Additionally, the Live Oak swimming pools as well as the Nuesto and Robbins school play fields have been approved through a joint use agreement as community recreational facilities.

River Recreation Areas

Sutter County contains numerous recreational areas along the Feather and Sacramento Rivers. Several area river parks provide boat launch, restroom, picnicking and camping facilities. The Donahue Road Park and the Tisdale Boat Ramp provide public access to the Sacramento River recreation areas. Along the Feather River, Boyd's Pump, Feather River parkway, Yuba City Boat Ramp, Riverfront Park, and Live Oak Park and Recreation Area provide public access to the river with amenities. Several private river parks also provide access to the rivers including Verna Joe's Place, Lovey's Landing, Rio Ramaza, and Verona Marina with camping, boating, and other amenities described in Table 3.1-10.

State Wildlife Areas

California's Central Valley has long been recognized as an important waterfowl wintering area because of its ample food supply and mild temperatures. More than 60 percent of the waterfowl that utilize the Pacific Flyway winter somewhere in California. There are approximately 15,947 acres of wildlife areas in Sutter County. There are 5 State wildlife areas and 1 state park located within Sutter County (Table 3.1-10). All of the wildlife areas are managed by the California Department of Fish and Game (CDFG). The goal of CDFG is to aid in the restoration of North America's waterfowl population through its continued maintenance and expansion of wildlife areas throughout California. The 1 state park in the county is managed by the California State Parks Department. Most of the wildlife areas are preserved for passive recreational opportunities such as bird watching and hiking; however, some of the areas allow seasonal hunting of water fowl such as the Butte Slough Wildlife Area.

Sutter County contains 5 state-run wildlife recreation areas countywide and 1 state park located in the northern section of the county in the Sutter Buttes, as described below.

Butte Slough Wildlife Area

Upper Butte Basin includes the Butte Slough Wildlife Area that provides important wintering waterfowl habitat. The Butte Slough Wildlife Area is a 178 acre facility located a few miles north of the Sutter Buttes in the Butte Basin south of Pass Road, west of West Butte Road. Hunting programs are run on all 3 units of the Butte Slough Wildlife Area. It is comprised of the Little Dry Creek Management Unit, Howard Slough Management Unit, and the Llano Seco Management Unit.

Feather River Wildlife Area

The Feather River Wildlife Area is the second largest wildlife area in Sutter County at 2,265 acres. It contains 5 management units. The 439-acre Abbot Lake Management Unit is located east of Garden Highway at the end and on the north side of Star Bend Road. The 662-acre Lake of the Woods Management Unit is only accessible by boat via the Star Bend Fishing Access and Boat Ramp located on the Feather River Boulevard in Yuba County. Nelson Slough Management Unit occupies 751 acres north of Nicolaus and the Feather River on Sacramento Avenue. The O'Connor Lakes Management Unit is a 471-acre area east of Garden Highway, at the end of Star Bend Road on the south side. Finally, the Star Bend Management Unit is the smallest unit with only 50 acres is located east of Garden Highway, at the end of Star Bend Road on the south side.

Gray Lodge Wildlife Area

An approximate 371-acre portion of the Gray Lodge Wildlife Area is located in the northern part of the County and is Sutter County's largest wildlife area. This wildlife area is known as a world renowned Pacific Flyway bird refuge and it is accessible from Gridley Road in Butte County.

Sutter By-Pass Wildlife Area

The Sutter By-Pass Wildlife Area is composed of long fingers of land covering 3,766 acres running the length of the floodwater by-pass from Highway 20 to Nelson Slough. The area is accessible just south of Sutter County where Reclamation Rd. crosses Tisdale Weir.

The Sutter By-Pass is a flood control corridor, part of the Sacramento Flood Control Project that is approximately 3/4 mile wide and is bordered by two parallel channels. The Sutter Bypass collects flood overflow water from the Sacramento River after passing through Butte Slough and the Butte Sink wildlife areas.

Butte Sink Wildlife Conservation Area

The Butte Sink Wildlife Conservation Area is 18,000 acres and is owned by the U.S. Fish and Wildlife Service (USFWS). This Conservation Area was established in 1980 to protect wetlands for wintering fowl. Much of the land consists of conservation easements, which require landowners to maintain the wetlands on their property. The actual refuge consists of 733 acres.

Butte Sink's 18,000 acre Wildlife Management Area has the highest concentration of waterfowl per acre in the world. Located in the northern portion of Sutter County, it includes the Butte Sink National Wildlife Refuge and 10,311 acres of conservation easements acquired on adjacent private lands not open to the public. The landscape is flat, bordered by the Sierra Nevada and Coast ranges, and surrounded by intensive agriculture (primarily rice and nut orchards).

Sutter Buttes – Peace Valley State Park

In 2003 the California State Parks Department purchased approximately 1,800 acres on the north side of the Sutter Buttes, known as Peace Valley. This property has not yet been developed for park use and is not open to the general public.

Private Facilities

Several area recreational opportunities are not maintained by the County, but offer a regional tourist pull to Sutter County including such locations as private golf courses, Lake Minden, and the Sutter Buttes.

Privately maintained golf courses provide first class golfing opportunities to area residents. Private Sutter County golf courses include Rio La Paz 18-hole course, the South Ridge 18-hole course, and the Mallard Lake 9-hole course and driving range.

Lake Minden offers RV camping and recreation facilities around a man-made lake located just south of the community of Nicolaus.

The Sutter Buttes, located at the northern portion of the county, is a prominent mountain range. The Sutter Buttes make up roughly 13 percent of the county land covering almost 79 square miles with elevations from approximately 80 to 2,117 feet. Although most of the mountain range is privately owned, much of the land has been placed in a land trust under the care of the Middle Mountain Foundation. The Foundation has created learning opportunities within the Sutter Buttes through guided hikes for the public or schools.

Yuba-Sutter Bikeway

In joint cooperation, Yuba and Sutter Counties in 1995 completed a master plan outlining the blueprint for a bi-county bikeway system that includes both on-street and off-street facilities throughout the 2 counties. The bikeway includes approximately 395 miles of bikeway facilities connecting the cities in Yuba and Sutter Counties with regional destinations in neighboring Butte, Colusa, Nevada, Placer, Sacramento, and Yolo Counties. The proposed facilities specifically within Sutter County include 3.7 miles of Class I bikeways, 27.3 miles of Class II bikeways, and 171.9 miles of Class III bikeways. The bikeway system connects county residents to multi-modal facilities that service the larger region.

REGULATORY CONTEXT

Federal

There are no specific federal regulations related to park facilities in Sutter County.

State

State Public Park Preservation Act

Under the Public Resource Code, cities and counties may not acquire any real property that is in use as a public park for any non-park use unless compensation or land, or both, are provided to replace the parkland acquired. This provides no net loss of parkland and facilities.

State Street and Highway Code

The State Street and Highway Code assists in providing equestrian and hiking trails within the right-of-way of County roads, streets, and highways.

Local

There are no specific local regulations related to park facilities in Sutter County.

3.3.5 General Government, Civic, and Cultural Facilities

INTRODUCTION

This section presents an overview of the general government structure, civic facilities, and resources available in Sutter County. Public recreational facilities such as parks are discussed separately in Section 3.3.4. Information for this section is based on communication with City staff and various websites associated with cultural amenities within Sutter County.

Sutter County offers a variety of civic amenities for all sectors of the population. Civic and cultural facilities provide area residents with resources and information that connect residents to the community around them.

SUMMARY OF KEY FINDINGS

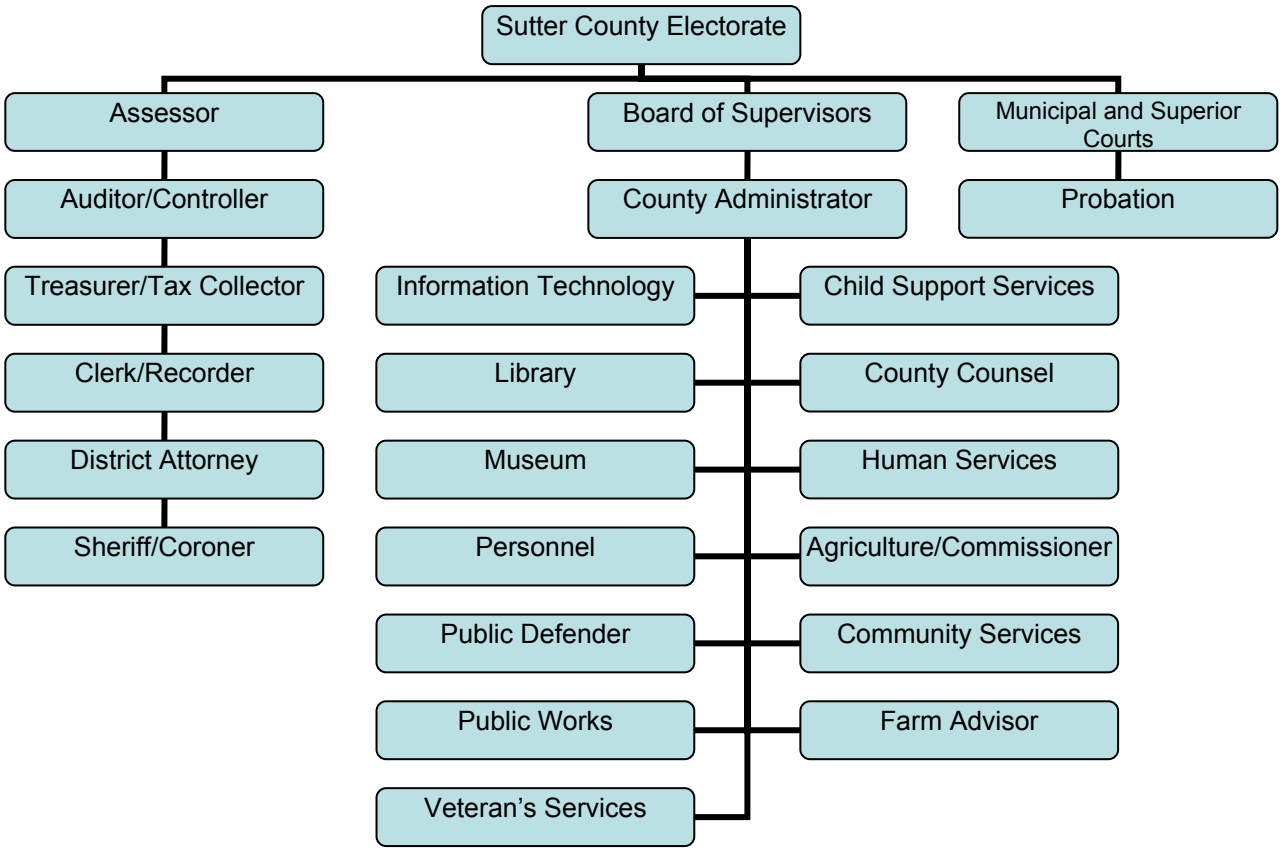
- Members of the Board of Supervisors are elected to represent the citizens in one of the five supervisory districts in the County.
- The Planning Commission acts in an advisory role to the Board of Supervisors on projects such as general plan amendments and rezones and in an approving role for use permits and land divisions.
- The County departments consist of the Community Service Department, Public Works Department, Agriculture Department, Child Support Services Department, Human Services Department, Personnel Department, Information Technology Department, Sheriff/Coroner, Probation, Municipal and Superior Courts, District Attorney, County Clerk/Recorder, County Counsel, Public Defender, Libraries, and Museums. The bi-County agencies/services and departments include Veteran's Services and the Farm Advisor.
- The County Library maintains five public library locations.
- As of 2007, Sutter County libraries do not have per capita standards to define adequate levels of library space or holdings.

EXISTING CONDITIONS

The Sutter County general government structure provides residents with elected and appointed officials and a variety of departments and services that focus on specific areas pertaining to health and human services, facilities, and public works, as well as building and planning needs, as shown on Figure 3.3-3.

Sutter County, with the help of area cities, also provides its residents with a diverse array of local civic and cultural amenities form history museums to the County fair facilities.

Figure 3.3-3
Sutter County Governmental Structure



County Officials

County officials are elected or appointed and consist of the Board of Supervisors, Planning Commission, officers, judges, and department heads, as described below.

Board of Supervisors (BOS)

Members of the BOS are elected to represent the citizens in 1 of the 5 supervisory districts in the county. The BOS serves as the legislative body for Sutter County and provides policy direction for all branches of County government in response to the needs of the people of Sutter County. The BOS appoints the Chief Administrative Officer, the Planning Commission, and most of the County department heads.

The 5 supervisors are elected to the BOS for a 4-year term that overlaps with voters electing a representative in Districts 1, 4, and 5 during presidential election years and Districts 2 and 3 in State general election years. The 5 District boundaries are redrawn after each U.S. Census count to have approximately the same population in each supervisory district to ensure equal representation.

Board members, in partnership with County staff, work to ensure the delivery of services and programs essential to the residents of Sutter County. The BOS set policy for the County and its operation within guidelines established by State and federal laws and regulations. In planning and zoning matters, the BOS vote on recommendations from the Planning Commission to establish policies, enact ordinances and resolutions, adopt the budget, levy taxes, and approve

formal contracts and agreements. The BOS also serves as the governing body for several special districts which provide water, sewer, and fire suppression services in the unincorporated county area.

All meetings of the BOS are open to the public and can be viewed on public television in the Yuba City area or by requesting a previously taped meeting.

Planning Commission (PC)

The PC acts in an advisory role to the BOS on projects such as general plan amendments and rezones, and in an approving role for use permits and land divisions.

The Commission consists of 7 members that can serve a maximum of 8 consecutive years. Five members are appointed by the BOS representing each of the Supervisory Districts. The remaining two seats are filled by a planning commissioner from the cities of Live Oak and Yuba City.

County Administrator

The County Administrator is appointed by the BOS to be accountable for the day-to-day management of all County departments. As outlined in State Statute and County Ordinance, the County Administrator provides staff support to the Board by conducting research and providing policy recommendations, submitting an annual budget, monitoring the fiscal condition and overall effectiveness of County programs and generally seeing that Board policy is carried out through the county's various departments.

Assessor

The County Assessor is elected to oversee the annual assessment of property values that determine the legal assessment rolls, mandated by the state, from which local property taxes are derived. Once the Assessor has determined and assembled property value information, the information is then provided to the County Auditor/Controller, who applies tax rates, and then turned over to the County Treasurer/Tax Collector, who issues tax bills. The three departments together comprise the overall Property Tax Administration function for the County.

Auditor/Controller

The elected Auditor/Controller, is the chief accounting officer, maintaining fiscal records for the County and special districts controlled by the Board, with emphasis on internal control, economy and efficiency within all departments. The traditional auditor functions include auditing special districts, auditing treasury cash and investments, accounting for payments and receipts, budget control, financial reporting, payroll and cost accounting. In addition, the position oversees control accounts for self-governed special districts and school districts depositing money with the County Treasurer.

Agricultural Commissioner

Appointed by the Board of Supervisors for a four-year term, the County Agricultural Commissioner is responsible for the local administration of certain state and local laws and regulations which protect the environment, public health and safety, agriculture, and consumer. The Agricultural Commissioner is also the County Sealer of Weights and Measures and the Director of Underground Storage of Hazardous Materials.

Treasurer/Tax Collector

The Treasurer/Tax Collector is an elected official responsible for safeguarding public funds, cash management, investment of pooled funds, and providing full accountability for County funds. The position also gives direction to the Office of Revenue Collection.

Boards and Committees

Sutter County's Boards and Committees provide a way for the public to volunteer and participate in the County's decision-making process on numerous issues, from parks to health and human services.

County Committees include Agriculture/Public Protection and General Government Committee, Public Works/Support Services Committee, Airport Committee, Fish and Game Advisory Committee, Gilsizer County Drainage District, Health Committee, and In-Home Supportive Services Public Authority. Two of these committees – Agriculture/Public Protection and General Government Committee and Public Works/Support Services Committee – are made up of only two BOS members, which act as the liaison between County departments and the BOS.

County Services and Departments

Numerous Sutter County departments are available to residents, as discussed below.

Community Service Department

In 1994 the Community Services Department was created by consolidating Animal Control, Planning, Fire Services, Emergency Services, Building Inspection, and Environmental Health programs under one department. The Department is divided into two categories of services: (1) permitting services (land use, planning, construction, food facility/other environmental health, and animal control), and (2) emergency services.

Planning Division

The Planning Division deals with issues pertaining to current and advanced planning functions which are related to the administering of policies found in the County General Plan, the zoning code, the subdivision ordinance, the California Environmental Quality Act, and the preparation of policy documents that guide the physical development of the County. The Planning Division provides support to the County Planning Commission in addition to serving as staff to the Local Agency Formation Commission (LAFCO).

Animal Care and Control

The Animal Care and Control Program provide protection to animals and residents of Sutter County, City of Live Oak, and the City of Yuba City. The services include animal licensing, pet adoption, animal bite investigation, and quarantine.

Building Inspection Division

The Building Inspection Division works closely with the planning and code enforcement programs and is responsible for administering the building, electrical, plumbing, and zoning codes adopted by the County as control measures for public safety. The Building Inspection Division checks plans, issues construction permits, and inspects buildings and structures at all stages of construction alteration, and repair for safety and conformity with State and local codes.

Code Enforcement

Code Enforcement is responsible for inspection, investigation and enforcement of violations involving building, housing, zoning, sanitation, and other related codes, ordinances, and regulations. Code Enforcement works closely with Building Inspection and County Fire to assure the safety of construction and structures within the County. Code Enforcement issues citations, assists in structure condemning cases and public hearings, and testifies in court.

Environmental Health Division

The Environmental Health Division's primary aim is to protect and enhance the public's health through the control of potentially harmful materials, organisms, energies, and conditions in the environment. The Division's primary responsibilities include: onsite sewage disposal, water wells, monitoring wells, small water systems, land use planning, retail food facilities, public swimming pools, and code compliance. Environmental Health also serves as the Certified Unified Program Agency (CUPA) for the County in dealing with hazardous materials.

Fire

The Fire Chief administers the fire protection programs and activities of the five fire districts and acts as the liaison between the County and local fire organizations.

Emergency Services

The Emergency Services manager heads the County Office of Emergency Services (OES). The Emergency Services Program is responsible for planning; response and recovery activities associated with natural and man-made emergencies and disasters throughout the County; and coordination of those activities with Local Agencies, State OES, and the Federal Emergency Management Agency (FEMA). Public disaster preparedness information is also provided to citizens through the OES webpage information and links.

Public Works Department

The Public Works Department is responsible for the operation of a large number of programs. Administrative services are provided to the County Airport, Facilities Maintenance, Central Services, County Fleet, Fish and Game, Parks and Recreation, Purchasing, Road Department, Water Agency, street lighting and landscape districts, and several special districts.

General Services

General Services is responsible for the organization and overall management of Central Services, Facilities Management, Fleet Management, and Purchasing Divisions of Public Works.

Water Resources Division

County Water Resources is responsible for number of programs including drainage, including various drainage zones of benefit, storm water quality and, floodplain administration for the National Flood Insurance Program.

Agriculture Department

The Agricultural Department is mandated to promote and protect the agricultural industry; the environment; and the public through enforcement of local, State, and federal laws and

regulations. It is also responsible for the protection of agricultural worker health and safety. The Division of Weights and Measures is charged with assuring equity in the marketplace by inspecting commercial weighing and measuring devices. While the Environmental Health Division is the CUPA for Sutter County, the County Agricultural Department serves as a Participating Agency (PA) for reviewing Hazardous Materials Business Plans for agricultural businesses, hazardous waste generators, and above ground storage tanks for agricultural users. The Agricultural Department implements the underground storage tank (UST) program for all underground storage tank facilities in the County.

Child Support Services Department

The mission of the Department of Child Support Services is to enhance the quality of life for children and families in Sutter County by providing child support establishment and enforcement services to ensure that both parents share the obligation to support their children. Services include establishing paternity, child support and medical coverage; locating non-custodial parents and their assets to enforce courts orders; collecting and distributing child and spousal support payments; maintaining accounts of payments owed and received; modifying court orders when appropriate; and enforcing child support court orders.

Human Services Department

The Human Services Department is comprised of 3 operating divisions and a Public Authority staff. The Department is responsible for managing the prevention and containment of infectious disease, improvement of public health, the evaluation and treatment of psychiatric disorders and substance abuse, and general medical problems. The Human Services Department also provides public assistance eligibility determination for various programs.

Welfare Division

The Welfare Division oversees Social Services to Children and Elderly Adults, Employment Services, Food Stamps, eligibility for state and federal aid programs (TANF), and the Sutter County Conservators Office.

Public Health and Clinical Services Division

The Public Health and Clinical Services Division provides outpatient medical clinic services, laboratory services, and disease prevention programs. This Division also administers the Women Infant and Children Nutrition programs for Sutter County.

Children and Families Commission

The Children and Families Commission's mission is to provide a comprehensive system of information, programs, and services that supports all Sutter County children and their families and help to ensure that each child enters school healthy and ready to learn.

Mental Health Division

The Mental Health Division serves both Sutter and Yuba Counties and provides Mental Health and Substance Abuse Treatment and Prevention programs.

Public Authority

The Public Authority works in conjunction with Sutter County's In Home Supportive Program to provide personal care-domestic services to those who are elderly and/or disabled, allowing the

person to remain safely in their own homes. The Public Authority maintains a list of certified homecare providers that are matched to clients needs.

Personnel Department

The Personnel Department handles all human resources tasks for County staff providing the services pertaining to labor relations, recruitment and selection, classification and salary administration, administration of personnel rules and regulations, deferred compensation, unemployment insurance, and risk management.

Information Technology Department

The County's Information Technology Department (IT) provides comprehensive maintenance to the information infrastructure including hardware, connectivity, and communication equipment for all County offices. The IT Department also provides software, training, and research and development support for County staff.

Bi-County Agencies/Services & Departments

There are a number of bi-county agencies that have been established through memorandums of understanding (MOU) between Sutter and Yuba Counties. This arrangement allows the counties to address regional issues that affect both jurisdictions through shared resources.

Veteran's Services

The Veteran's Services office is funded by both Sutter and Yuba Counties, with Yuba County acting as a lead agency. The office staff helps veterans, survivors, and dependents obtain benefits by providing information and assistance with U.S. Department of Veterans Affairs (VA) and the California Department of Veterans Affairs (CDVA) claims.

Farm Advisor

The Farm Advisors is a bi-county agency with Sutter County administering the program; however, the lead agency is the University of California, Davis Cooperative Extension. The emphasis of the program is on agricultural research and education, 4-H youth development activities, farm and home economic information, and the master gardener program.

County Judicial Services & Departments

Sheriff/Coroner

A detailed description of the Sheriff's Department's duties and responsibilities are discussed in Section 3.3.1, Law Enforcement.

Probation

The Probation Department provides mandated and discretionary probation services to the adult and juvenile courts of the County. The Department is divided into 4 basic units: (1) Juvenile Services, (2) Adult Services, (3) Administrative Services, and (4) Youth and Adult Services. The services provided by the Department include investigations, sentence recommendation, supervision of persons placed on probation, custody mediation, domestic violence diversion, truancy, and child custody investigation. The Probation Department operates under the direction of the Probation Officer who is appointed by the presiding judge of the Juvenile Court.

Juvenile Hall

The Yuba-Sutter Juvenile Hall is a 45 bed detention facility for offenders under 18 years of age. Comprehensive correctional service programs, educational and mental health services are provided to residents. The Maxine Singer Youth Guidance Center is a 12 bed Boot Camp program for male offenders. Comprehensive services and substance abuse counseling is provided to residents. Community services work projects are undertaken and the Wards work closely with local schools and civic groups. Specialized program elements include small engine repair, a construction technology class, anger management and family services.

Municipal and Superior Courts

The County Municipal Courts have jurisdiction over civil cases involving amounts up to $25,000 and presides over preliminary hearings in felony cases to determine whether there is reasonable and probable cause to hold a defendant for further proceedings in Superior Court. There are two Municipal Court judges in the county.

The Superior Court has jurisdiction for civil cases over $25,000 and for all felony cases. The Superior Court is responsible for Probate, Domestic Relations, and Juvenile Court and is responsible for the selection of the Grand Jury. The Court is currently composed of three judges.

Grand Jury

The Grand Jury is a body of 19 electors who are selected annually from a panel of prospective jurors by the Superior Court. The Grand Jury hears evidence of criminal matters presented by the District Attorney and judges if there is sufficient evidence to present an indictment to the Superior Court. The Grand Jury also investigates the operation accounts and records of the County departments and inquires into misconduct by any public office within the County.

District Attorney

The District Attorney is elected to serve as the chief law enforcement officer of the County and acts as the public prosecutor for all criminal violations of state and county laws and ordinances. In addition, the District Attorney operates a family support division that enforces child and family support obligations; investigates and prosecutes criminal child abuse; operates a welfare fraud unit to investigate welfare and public assistance fraud; and provides enforcement of environmental health, planning, and building code violations.

County Clerk/Recorder

The elected County Clerk/Recorder serves as the Clerk of Superior Court and is responsible for filing all civil, criminal, probate, and juvenile cases. The clerk also registers voters, conducts elections, records vital statistics and real estate documents, maintains files on corporate and fictitious business names, issues marriage licenses, and may perform civil marriages. In addition, this office serves the BOS with clerk attendance at all meetings and maintains all minutes and records in accordance with State law.

County Counsel

Appointed by the BOS for a four-year term, the County Counsel serves as the chief legal counsel to the BOS and all County departments, Local Agency Formation Commission (LAFCO), some special districts, and the Boards and Commissions. The Counsel is responsible for advice on legal matters, written legal opinions, review of County contracts, personnel

hearings and arbitrations, overseeing litigation, and represents the County in administrative hearings.

Public Defender

The Public Defender provides legal counsel at the request of the defendant or of the court to those citizens who have been charged with a criminal offense and who are not able to provide for their own legal defense.

Public Guardian-Conservator

As appointed by the court, the Public Guardian-Conservator serves as conservator of persons, and/or the estate of persons, who are unable to manage their personal and/or financial affairs by reason of a mental or physical disability.

County Civic & Cultural Departments and Facilities

Sutter County residents have access to several civic and cultural facilities, as described below.

Veterans Memorial Community Building

Sutter County operates the Veterans Memorial Community Building located on Veterans Memorial Circle in the City of Yuba City. This facility can be rented by the public and includes a full service kitchen and the main hall with a capacity of 640 persons or 400 persons for dinner. The building is typically used for community events and rented by the public; however, it can also be used as an emergency facility in case of area disaster.

Yuba City Senior Center

The Yuba City Senior Center provides unincorporated county area residents with senior services, health and wellness classes, arts and crafts activities, social events, and workshops. The center is located on Ainsley Avenue in the City of Yuba City.

Sutter County Museum – Community Memorial Museum

The Community Memorial Museum is located on Butte House Road in Yuba City and is a department of Sutter County government. The Museum is funded by both Sutter County and through private funds and is open to the public 7 days a week free of charge. The mission of the Museum is the acquisition, preservation, interpretation and exhibition of artifacts and information reflecting the cultural heritage of Sutter County.

The Museum provides the residents of Sutter County a place to experience local history through exhibition, research, school programs, adult and children's programs as well as virtual museum archives of images with online access to Sutter County's history.

The Museum houses several permanent exhibits on the native Maidu Indians, early Sutter County settlers, agriculture, and the Sutter Buttes. Displays incorporate artifacts and photographs of historic structures or events with interpretive labels to aid in self guided tours of the museum. Highlights of the collection include a restored Yuba Ball Tractor, John Sutter's Gun, and Lola Montez's dressing table. The Museum also rotates in special exhibits every 3 to 4 months that can be viewed in the main hall.

Sutter Community Center

The Sutter Community Center is located on the corner of Butte House Road and Acacia Street in the community of Sutter and is owned and operated by the South Sutter Recreation Association. The facility consists of the main community room and adjacent little league field with bleachers. The facility hosts community events and is available to the public for rental.

Libraries

The five County branches, shown in Table 3.3-11, service the rural areas of the County as well as provide reciprocal access by residents of both Yuba City and the City of Live Oak. Public branch libraries are a valuable resource center for Sutter County residents and provide services including, information assistance, children's reading programs, on line access kiosks, and on line book renewal service. In branch and online catalog search options have access to books, periodicals, audiovisual materials, and reciprocity agreements for loan materials form other jurisdictions.

Table 3.3-11. Sutter County Libraries and Accessibility

Branch	Location	Hours
Main Branch	Forbes Avenue, Yuba City	10-8 Monday – Thursday 10-5 Friday – Saturday Closed Sunday
Barber Branch	Live Oak Boulevard, Live Oak	1-5 Monday – Thursday 9-1 Friday Closed Sunday
Browns Branch	Pacific Avenue, Rio Oso	8:30 – 12:30 Monday, Wednesday – Friday 2- 6 Tuesday Closed Saturday and Sunday
Pleasant Grove Branch	Howsley Road, Pleasant Grove	8 – 4:30 Tuesday and Thursday Closed all other days
Sutter Branch	California Street, Sutter	1 – 5 Monday – Friday Closed Saturday and Sunday

Source: Sutter County, 2007.

As of 2007, Sutter County libraries do not have per capita standards to define adequate levels of library space or holdings. In addition, it is important to note that “adequate” square footage varies for each branch depending on the services it offers. No new library facilities are planned in Sutter County with budget limited to funds collected through the local bonds.

Yuba/Sutter Fairgrounds

The joint fairground facility shared by Yuba and Sutter Counties is located adjacent to Gauche Park on Franklin Avenue at Garden Highway in Yuba City. Facilities include 4 exhibit halls with kitchens, a 2,300 occupancy main exhibit building, livestock barns, exhibitor arenas, main arena with grandstands, shower and bathroom facilities, and RV hookups. The fairgrounds are used for many events, including the annual county fair, and have also been used to stage county flood rescue and outreach.

YMCA

The YMCA offers education and recreation programs to area residents with a focus on healthy child development. YMCA centers in Sutter County are located in Robbins (one center), Live

Oak (one center), and Yuba City (five centers). Yuba City's YMCA has a migrant education center included.

REGULATORY CONTEXT

Federal and State Local

There are no specific federal, State, or local regulations related to general government or civic and cultural facilities within the Policy Area.

Chapter 4 ENVIRONMENTAL RESOURCES

Sutter County is committed to the protection of its environmental resources. It recognizes that the health of its natural resources, its plant and wildlife communities, agricultural resources, water, air, scenic amenities, and cultural resources are inseparably related to the health and well-being of current residents and the sustainability of future generations. This chapter describes the existing natural, visual, and historic resources in the county and highlights the key regulatory requirements necessary for their protection and conservation.

The Environmental Resources chapter is divided into the following sections:

4.1 Biological Resources

4.2 Agriculture, Soils, and Mineral Resources

4.3 Hydrology and Water Quality

4.4 Air Quality

4.5 Visual Resources

4.6 Prehistoric and Historic Resources

4.1 BIOLOGICAL RESOURCES

INTRODUCTION

This section identifies major plant and animal resources within Sutter County. Significant biological resources in the County include species listed as or proposed for listing as threatened or endangered, proposed for listing as threatened or endangered, or any species identified as a candidate, sensitive or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Game (CDFG) or U.S. Fish and Wildlife Service (USFWS). Additionally, sensitive habitats, habitat, and/or designated critical habitats for any of the species described above, and wetlands or other waters under the jurisdiction of the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act are considered significant biological resources.

Information for this section is based on data obtained from the California Department of Fish and Game's Natural Diversity Database (CNDDB), the California Native Plant Society's (CNPS) Electronic Inventory, the USFWS Special-Status Species Database website,[1] and USFWS[2] and CDFG[3] species information websites.

1 http://www.fws.gov/pacific/sacramento/es/spp_lists/auto_list_form.cfm.

2 http://ecos.fws.gov/tess_public/TESSWebpageNonlisted?listings=0&type=C.

3 http://www.dfg.ca.gov/hcpb/species/search_species.shtml.

FINDINGS

- The proposed Yuba-Sutter Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) is currently under development, and is likely to become adopted within the lifetime of this General Plan update. Future development within the HCP/NCCP planning area would be required to be consistent with the final policies described in this document.
- Development within the portion of southern Sutter County that lies within the boundaries of the Natomas Basin Habitat Conservation Plan (NBHCP) must comply with the provisions described in the HCP and pay a mitigation fee sufficient to cover the costs of acquiring, restoring and managing one-half acre of habitat for every acre of land developed. Habitat lands would be acquired and managed by the Natomas Basin Conservancy.
- Undeveloped grasslands in the County have a high probability of supporting vernal pools or other seasonal wetlands and the listed plant and wildlife species associated with them. These grasslands are most common on and adjacent to the Sutter Buttes, and in the Natomas Basin. However, undeveloped lots within otherwise developed areas are capable of supporting these resources as well.
- Wetlands subject to U.S. Army Corps of Engineers jurisdiction within the County are primarily associated with the Sacramento, Feather and Bear Rivers, the Sutter Bypass and their tributaries, and/or their floodplains. However, riparian forest, riparian scrub, freshwater marsh, vernal pools, seasonal wetlands and isolated ponds are present in the Sutter Buttes and other undeveloped portions of the County.
- Grasslands, which are most abundant in the Sutter Buttes, and agricultural fields in the County also support foraging habitat for a number of raptor species including Swainson's hawk, white-tailed kite and burrowing owl, and potentially support nesting habitat for burrowing owl.
- Potential habitat for many of the special-status plant and wildlife species occur throughout the County. Specific habitat parameters vary by species, but in general these areas are located in the Sutter Buttes, along the Sacramento, Feather, and Bear Rivers and their tributaries, the Butte Sink, and other undeveloped habitats in the County. Although special-status species habitat will be located primarily outside of current urban limits, undeveloped lots within otherwise developed areas are capable of supporting these resources as well.
- A wide variety of non-listed birds use vegetation communities in the County, particularly riparian and oak woodlands, for nesting and shelter. Though these species are not listed as threatened or endangered, they are afforded protection through the Migratory Bird Treaty Act (MBTA) and sections of the Fish and Game Code.
- Riparian areas and older urban areas may contain roosting habitat for special-status bats known to occur in the region. This habitat will primarily be located in the Sutter Buttes, along the Sacramento, Feather and Bear Rivers, and in older, possibly abandoned buildings, and in cavities in large old trees in urban areas such as Live Oak and Yuba City.
- The waterways including the Sacramento, Feather and Bear Rivers, the Sutter Bypass, and their tributaries are significant to regional wildlife movement

because they offer linear movement corridors in an area that is dominated by agricultural lands, urban development, and highways that are generally considered to be of low value for native wildlife species.

EXISTING CONDITIONS

Habitats

The County encompasses approximately 388,358 acres. Historically, the natural habitats within the County included perennial grasslands, riparian woodlands, oak woodlands, and a variety of wetlands including vernal pools, seasonal wetlands, freshwater marshes, ponds, streams and rivers. Over the last 150 years, development for agriculture, irrigation, flood control and urbanization has resulted in the alteration or loss of much of the natural habitat within the County. One exception to this is the Sutter Buttes which contain the largest expanses of relatively undisturbed habitat in the County. The Sutter Buttes is a volcanic formation in northern central Sutter County that is over 2,000 feet in elevation, and covers approximately 40,000 acres. Although almost entirely under private ownership and used for livestock grazing, the Sutter Buttes support a high diversity of vegetation communities including oak woodland, chaparral, non-native grassland, with vernal pools and other seasonal wetlands. Plant and wildlife species found here are also diverse, and include some endemic, and/or special-status species such as the Marysville kangaroo rat, the San Francisco campion, and rose mallow.

County wide, as with most of the rest of the state, non-native annual grasses have replaced the native perennial grasslands. Many natural streams in the County have been channelized, much of the riparian and oak woodlands have been cleared, and most of the marshes have been drained and converted to agricultural or urban uses. However, due to the scarcity of urban development relative to many nearby counties, valuable plant and wildlife habitat still exists. These habitats are located primarily along the Sacramento River, Feather River, Bear River, and Sutter Bypass, but also in a number of undeveloped parcels distributed throughout the County. These habitats include annual grasslands, riparian woodlands, oak woodlands, oak savanna, riverine (rivers and streams), ponds, freshwater marshes, seasonal wetlands and vernal pools (Figure 4.1-1). Each habitat, their general location within the County, and special status plant and wildlife species found within each habitat type are discussed below.

Agricultural Land

Agricultural land is the most abundant habitat type in the County. Several agricultural types are present, but rice fields are by far the single most common, covering approximately 92,984 acres of the County. Row and field crops (approximately 124,000 acres), and orchards (approximately 50,603 acres consisting primarily of walnut, almond and peach) are the next most common types, but alfalfa, vineyards and irrigated pasture are also found in relatively small areas distributed throughout the County. Due to the level of disturbance related to crop management, agricultural lands are of limited use to wildlife, and are typically devoid of native plant species. However, certain agricultural types do provide foraging habitat for native wildlife species, including some special-status species. Rice fields and their associated drainage canals are well known to support the federally listed as threatened giant garter snake (*Thamnophis gigas*), and provide foraging habitat for herons, egrets, cranes and other waterfowl. Alfalfa, low growing row crops, and irrigated pastures provide foraging habitat for the Swainson's hawk (*Buteo swainsoni*), State listed as threatened, white-tailed kite (*Elanus caeruleus*), northern harrier (*Circus cyaneus*), and other raptors, as well as the tricolored blackbird (*Agelaius tricolor*). Irrigated pastures and the edges of other low growing crop types may also provide nesting and foraging habitat for burrowing owl (*Athene cunicularia*).

Annual Grassland

Annual grassland habitat occurs in undeveloped portions of the County, primarily as a distinct vegetation community, but also as an understory to oak and riparian woodland habitats. Annual grassland in the County has largely been replaced by agriculture. Approximately 11,000 acres remain in the County that occurs in small patches adjacent to water courses, and the vicinity of the Sutter Buttes. Where it occurs, this habitat occupies (and has largely replaced through competition) what was once native perennial bunch grass habitat. Annual grassland species commonly observed in the County include ripgut brome (*Bromus diandrus*), soft chess (*Bromus mollis*), wild oat (*Avena fatua*), Italian rye (*Lolium multiflorum*), Mediterranean barley (*Hordeum marinum* spp. *gussoneanum*), foxtail barley (*Hordeum murinum* spp. *leporinum*), hairgrass (*Aira caryophylla)* and medusahead grass (*Taeniatherum caput-medusae*). Common forbs found in these annual grasslands include cranesbill (*Geranium dissectum*), red stem filaree (*Erodium botrys*), clover (*Trifolium* spp.), bur clover (*Medicago polymorpha*), fiddle-neck (*Amsinckia menziesii*), curly dock (*Rumex crispus*), wild radish (*Raphanus sativa*), wild mustard (*Brassica* spp.), star thistle (*Centaurea solstitialis*), milk thistle (*Silybum marianum*), bull thistle (*Circium vulgare*), blue dicks (*Dichelostemma capitatum*), spikeweed (*Hemizonia fitchii*), and vinegar weed (*Trichostema lanceolatum*).

Annual grasslands are important habitats to a variety of wildlife, including small rodents such as deer mice (*Peromyscus maniculatus*) and California voles (*Microtus californicus*) that feed on the abundance of grass seeds that this habitat provides. Other small mammals that use this habitat include species such as Botta's pocket gopher (*Thomomys bottae*), cottontail (*Sylvilagus audubonii*), black-tail hare (*Lepus californicus*) and California ground squirrel (*Spermophilus beecheyi*). These small mammals in turn provide food for a variety of predators including mammals such as the coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*) and birds such as the red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), barn owl (*Tyto alba*), American crow (*Corvus brachyrhyncos*) and loggerhead shrike (*Lanius ludovicianus*). Other bird species that may occur in this habitat include the prairie falcon (*Falco mexicanus*), meadowlark (*Sturnella neglecta*), scrub jay (*Aphelocoma coerulescens*) and western bluebird (*Sialia mexicana*). Frequently encountered reptile species in annual grasslands include the western yellow-bellied racer (*Coluber constrictor mormon*), northern Pacific rattlesnake (*Crotalus oreganus oreganus*), Pacific gopher snake (*Pituophis catenifer catenifer*), California kingsnake (*Lampropeltis getulua californiae*), western terrestrial garter snake (*Thamnophis elegans*), western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinatus*) and Gilbert's skink (*Eumeces gilberti*). Annual grasslands also frequently support seasonal wetlands and vernal pools that provide important breeding sites for the Pacific tree frog (*Pseudacris regilla*) and western toad (*Bufo boreas*).

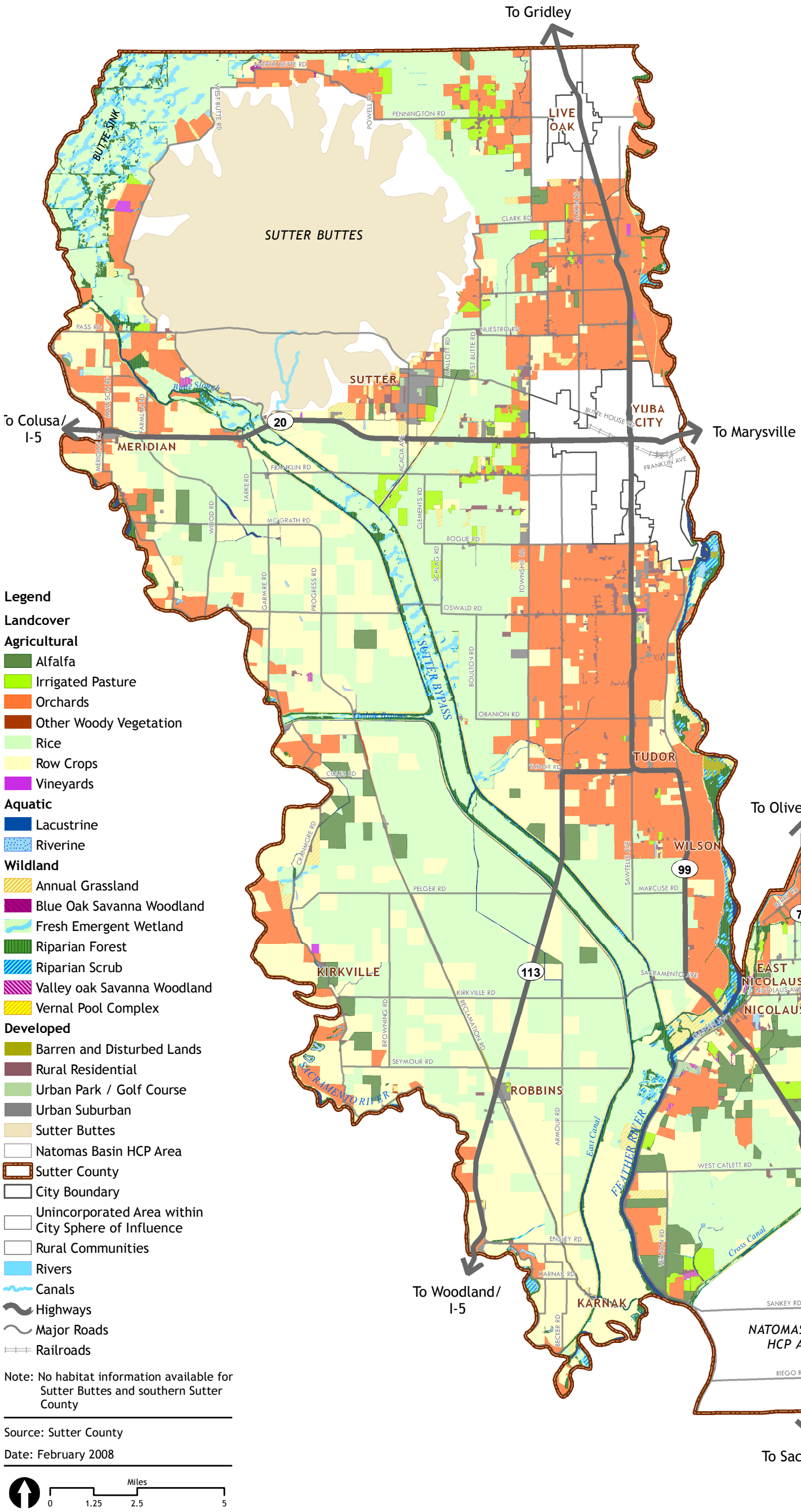
Special-status species that use annual grasslands for foraging and/or nesting include the "state listed as threatened" Swainson's hawk and "state species of concern" burrowing owl and white-tailed kite. Where vernal pools or seasonal wetlands are a component, grasslands provide habitat for special-status species such as the federally listed as threatened vernal pool fairy shrimp (*Branchinecta lynchi*), the federally listed as endangered vernal pool tadpole shrimp (*Lepidurus packardi*) and a variety of special-status plants.

Riparian

Riparian woodland and scrub habitats are generally associated with rivers, low gradient streams, floodplains and occasionally ponds and canals. The composition of species in riparian woodland communities is highly variable and dependent on geographic location, elevation, substrate, and amount of flow in the watercourse. Approximately 9,500 acres of this habitat occurs in the County (consisting of riparian forest and riparian scrub), and can be found along

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Legend

Landcover

Agricultural
- Alfalfa
- Irrigated Pasture
- Orchards
- Other Woody Vegetation
- Rice
- Row Crops
- Vineyards

Aquatic
- Lacustrine
- Riverine

Wildland
- Annual Grassland
- Blue Oak Savanna Woodland
- Fresh Emergent Wetland
- Riparian Forest
- Riparian Scrub
- Valley oak Savanna Woodland
- Vernal Pool Complex

Developed
- Barren and Disturbed Lands
- Rural Residential
- Urban Park / Golf Course
- Urban Suburban
- Sutter Buttes
- Natomas Basin HCP Area
- Sutter County
- City Boundary
- Unincorporated Area within City Sphere of Influence
- Rural Communities
- Rivers
- Canals
- Highways
- Major Roads
- Railroads

Note: No habitat information available for Sutter Buttes and southern Sutter County

Source: Sutter County

Date: February 2008

Miles
0 1.25 2.5 5

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HABITATS
Figure 4.1-1

many of the perennial and ephemeral drainages and other waterways. The largest expanses of riparian vegetation occur along the Sacramento, Feather and Bear Rivers, the Sutter Bypass, with smaller patches along the numerous tributaries to these waters. The vegetation of the riparian woodland habitat is variable and often structurally diverse, and species characteristics of the County include valley oak (*Quercus lobata*), Fremont cottonwood (*Populus fremontii*), California black walnut (*Juglans californica*), white alder (*Alnus rhombifolia*), willow (*Salix* spp.) and Oregon ash (*Fraxinus latifolia*). Typical understory includes box elder (*Acer negundo*), button willow (*Cephalanthus occidentalis*), California buckeye (*Aesculus californicus*), coyote brush (*Baccharis pilularis*), California grape (*Vitis californicus*), Himalayan blackberry (*Rubus discolor*), and poison oak (*Toxicodendron diversilobum*). The herbaceous species occurring in the understory includes seashore vervain (*Verbena litoralis*), bedstraw (*Galium* spp.), sedges (*Carex* spp.), umbrella sedges (*Cyperus* spp.), rushes (*Juncus* spp.), spike rush (*Eleocharis macrostachya*), and a variety of annual grasses.

Riparian habitats provide abundant food, cover, and breeding sites for wildlife in close proximity to water. These factors and the structural diversity of riparian woodland are largely responsible for the high productivity of this habitat type. Characteristic bird species in this habitat include the California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), Nuttall's woodpecker (*Picoides nuttallii*), black phoebe (*Sayornis nigricans*), western wood-pewee (*Contopus sordidulus*), California towhee (*Pipilo crissalis*), and song sparrow (*Melospiza melodia*). A number of these species nest or roost in riparian woodlands and feed in adjacent habitat types, such as annual grassland and agricultural fields. Riparian woodlands also provide important feeding, resting, and nesting habitat for neotropical migrant songbirds such as warblers, vireos, grosbeaks, and flycatchers. Mammals found within riparian habitat may include the raccoon (*Procyon lotor*), deer mouse, broad-footed mole (*Scapanus latimanus*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginianus*), and gray fox. Amphibians and reptiles likely to occur in this community include the western toad (*Bufo boreas*), Pacific tree frog, common king snake, valley garter snake (*Thamnophis sirtalis fitchii*), and Gilbert's skink. Special-status species that forage and/or nest in riparian habitats include the Swainson's hawk, Cooper's hawk (*Accipiter cooperii*), yellow warbler (*Dendroica petechia*), white-tailed kite, and yellow-breasted chat (*Icteria virens*).

Oak Woodlands

Oak woodlands, including Blue Oak Savanna Woodland and Valley Oak Savanna Woodland, are very limited in the County, covering only an approximate 270 acres. The largest concentration of oak woodland occurs around the south western base of the Sutter Buttes, and along the Sacramento, Feather and Bear Rivers, adjacent to riparian vegetation. Plant species composition in this habitat can be variable, but is typically dominated by an overstory of blue oaks (*Quercus douglasi*), valley oaks, and/or interior live oaks (*Quercus wislizenii*), with California buckeye, and California black walnut also commonly found. Understory plant species include poison oak, toyon (*Heteromeles arbutifolia*), coyote brush, Himalayan blackberries, and a variety of annual grasses such as wild oats, wild rye and foxtail barley.

Oak woodlands provide a diversity of wildlife habitat. Acorns are an essential food resource for many wildlife species including the western gray squirrel (*Sciurus griseus*), California ground squirrel, black-tailed deer (*Odocoileus hemionus*), deer mouse, dusky-footed woodrat (*Neotoma fuscipes),* acorn woodpecker (*Melanerpes formicivorus*), band-tailed pigeon (*Columba fasciata*), northern flicker (*Colaptes auratus*), and western scrub jay. The abundant insect life found in the bark and foliage of oaks provide food for bird species such as the white-breasted nuthatch (*Sitta carolinensis*), bushtit (*Psaltriparus minimus*), plain titmouse (*Parus inornatus*), and ash-throated flycatcher (*Myiarchus cinerascens*). Avian predators that nest and forage in oak woodland

habitat include the great horned owl (*Bubo virginianus*), western screech-owl (*Otus kennicotti*), red-tailed hawk, and red-shouldered hawk (*Buteo lineatus*).

Common mammals in this habitat within the County include the raccoon, striped skunk, cottontail, and gray fox. A variety of woodpecker species nest in the cavities of oak trees, as well as house wrens (*Troglodytes aedon*), western bluebirds (*Sialia mexicana*), and American kestrels (*Falco sparverius*) that use abandoned woodpecker cavities. Typical amphibian and reptile species found in this habitat include the California newt (*Taricha torosa*), ensatina (*Ensatina eschscholtzi*), California slender salamander (*Batrachoceps attenuatus*), sharp-tailed snake (*Contia tenuis*), ringneck snake (*Diadophis punctatus*), Pacific tree frog, western terrestrial garter snake (*Thamnophis elegans*), Gilbert's skink, western fence lizard, and southern alligator lizard. Special-status species using oak woodlands for foraging and/or nesting include Cooper's hawk (*Accipiter cooperii*), white-tailed kite, and loggerhead shrike.

Wetlands

Rivers, Creeks, and Canals

The County is bounded on the west by the Sacramento River, by the Feather River on the east, and is bisected on its north/south axis by the Sutter Bypass. These rivers, their tributaries (such as the Bear River and Butte Slough) and other waterways cover approximately 5,000 acres in the County, and are important to local wildlife, not only for the habitat they provide, but for the connectivity they create between otherwise isolated areas of wildlife habitat, acting as corridors through which wildlife species can migrate. Other major waterways include the Butte Slough, and the Cross Canal, but numerous tributaries and canals are present in the County as well. Special-status species that use rivers, creeks and canals in the County include Swainson's hawk, giant garter snake (*Thamnophis gigas*), herons and egrets, steelhead (*Oncorhynchus mykiss*), Chinook salmon (*Oncorhynchus tshawytscha*), Sacramento perch (*Archoplites interruptus*), and green sturgeon (*Acipenser medirostris*).

Freshwater Marsh

Freshwater marsh (or freshwater emergent wetland) habitat is typically associated with the margins of rivers, streams or ponds, but can form anywhere shallow, slow moving perennial water is present. Approximately 14,000 acres of this habitat occurs in the County, with the largest concentration occurring in the Butte Sink northwest of the Sutter Buttes. Additional extensive freshwater marsh areas occur along the Sutter Bypass, with many smaller areas along the Sacramento, Feather and Bear Rivers, and along the many canals associated with rice farming. Plant species common to freshwater marsh habitats in the County include cattails (*Typha latifolia*), tule (*Scirpus californicus*), sedges and umbrella sedges, rushes, water primrose (*Ludwigia peploides*), water smartweed (*Polygonum amphibium*), parrot feather (*Myriophyllum aquaticum*), pennyroyal (*Mentha pulegium*), verbena (*Verbena litoralis*), common yellow monkey flower (*Mimulus guttatus*) and smooth cocklebur (*Xanthium strumarium*). Freshwater marshes provide important breeding and foraging habitat for a wide variety of local wildlife such as herons and egrets, muskrats (*Ondatra zibethicus*), raccoon, red-winged blackbirds (*Agelaius phoenicus*) and a wide variety of waterfowl. Special-status species that use freshwater marsh habitats in the County include giant garter snake, northern harrier (*Circus cyaneus*), tricolor blackbird (*Agelaius tricolor*), Sanford's arrowhead (*Sagittaria sanfordii*) and rose mallow (*Hibiscus lasiocarpus*).

Vernal Pools and Seasonal Wetlands

Grasslands throughout much of the County had historically supported vernal pools and seasonal wetlands. However, much of this habitat has been lost with conversion of grasslands to agriculture and urban development. Approximately 680 acres of this habitat remain in the County. The greatest remaining concentration of vernal pool and seasonal wetland habitat is in the vicinity of the Sutter Buttes, and in upland areas near the Sacramento and Feather Rivers.

Vernal pools are ephemeral wetlands that form in shallow depressions underlain by a substrate near the surface that restricts the percolation of water. These depressions fill with rainwater during the fall and winter and can remain inundated until spring or early summer, sometimes filling and emptying numerous times during the rainy season. A flowering community, dominated by characteristic wetland plants, differentiates vernal pools from other seasonal wetlands. Vernal pool plant species likely to occur within the County include the winged water-starwort (*Callitriche marginata*), annual hairgrass (*Deschampsia danthonioides*), horned downingia (*Downingia ornatissima*), coyote thistle (*Eryngium vaseyi*), bractless hedge-hyssop (*Gratiola ebracteata*), slender popcorn flower (*Plagiobothrys stipitatus*), spine-fruit butter-cup (*Ranunculus bonariensis*), and purslane speedwell (*Veronica peregrina*).

Seasonal wetlands are distinguished from vernal pools in that they may not be inundated for as long as vernal pools and generally contain a greater abundance of facultative plant species usually found in wetlands, (but that can frequently be found in uplands) and grassy species, and few, if any vernal pool endemic species (i.e., species found only in vernal pools). The distinction between the two types is often unclear; the final determination of the type of wetland can often be dependent upon the verification of the U.S. Army Corps of Engineers (Corps). The extent to which special-status plant and animal species can use these habitats also varies, but, conservatively, any species present in vernal pools could also be present in seasonal wetlands. Both vernal pools and seasonal wetlands provide habitat for a number of plant and animal species listed as threatened or endangered, or that have other special status that requires their protection. The most well known are the vernal pool crustaceans, such as vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardi*), along with a variety of plant species characteristically occurring in vernal pools.

Special-Status Species

The following special-status species are known to occur within the natural habitats most likely to be present within the County boundaries, based upon queries of the CNDDB and the USFWS special-status species database (Figure 4.1-2). These and other species potentially occurring in the County can be found in Table 4.1-1.

Sanford's arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is a tuberous rooted, perennial herb that occurs in marshes, swamps and shallow margins of other waters throughout the Central Valley and North Coast Range,[4,5] Sanford's arrowhead is a CNPS List 1B species, but has no State or federal status. This species is known to occur in the County north of the Sutter Buttes, but could also occur elsewhere in areas of suitable habitat.

4 CNPS Electronic Inventory.

5 Hickman, J.E. (ed). *The Jepson Manual.* University of California Press, Berkeley, 1400 pps. p. 848, 1993.

Rose Mallow

The rose mallow is a perennial herb that grows from three to six feet in height (sometimes prostrate forms can be found) and has white or rose-colored flowers. This CNPS List 2 species has no federal or state protected status. The rose-mallow is associated with wet banks and marshes at elevations less than 40 meters above mean sea level throughout the central and southern portions of the Central Valley and Delta regions. This species in known to occur in the Butte Sink, but could also occur elsewhere in the County in areas of suitable habitat.

Vernal Pool Plants

Vernal pool plant species known from the County include the legenere (*Legenere limosa*), dwarf downingia (*Downingia pusilla*), Boggs Lake hedge hyssop (*Gratiola heterosepala*) among others. These plants typically occur in vernal pools, vernal swales, and occasionally other seasonal wetlands and have become restricted in their distribution as a result of habitat conversion and associated disturbance (e.g. degradation of wetland hydrology through plowing, grading, or grazing). Habitat for vernal pool plant species occurs primarily in the southeast portion of the County.

Northern California Black Walnut

Extensive stands of northern California black walnut trees once occurred in riparian woodlands and forests through much of the lower-elevation portions of the State, but have since been cleared for agriculture and development. Native stands are now only known to occur in Napa and Contra Costa Counties. However, because the species was widely used as rootstock for the English walnut (with which it readily hybridizes), the northern California black walnut has become widely re-established throughout riparian zones in the County.

Valley Elderberry Longhorn Beetle

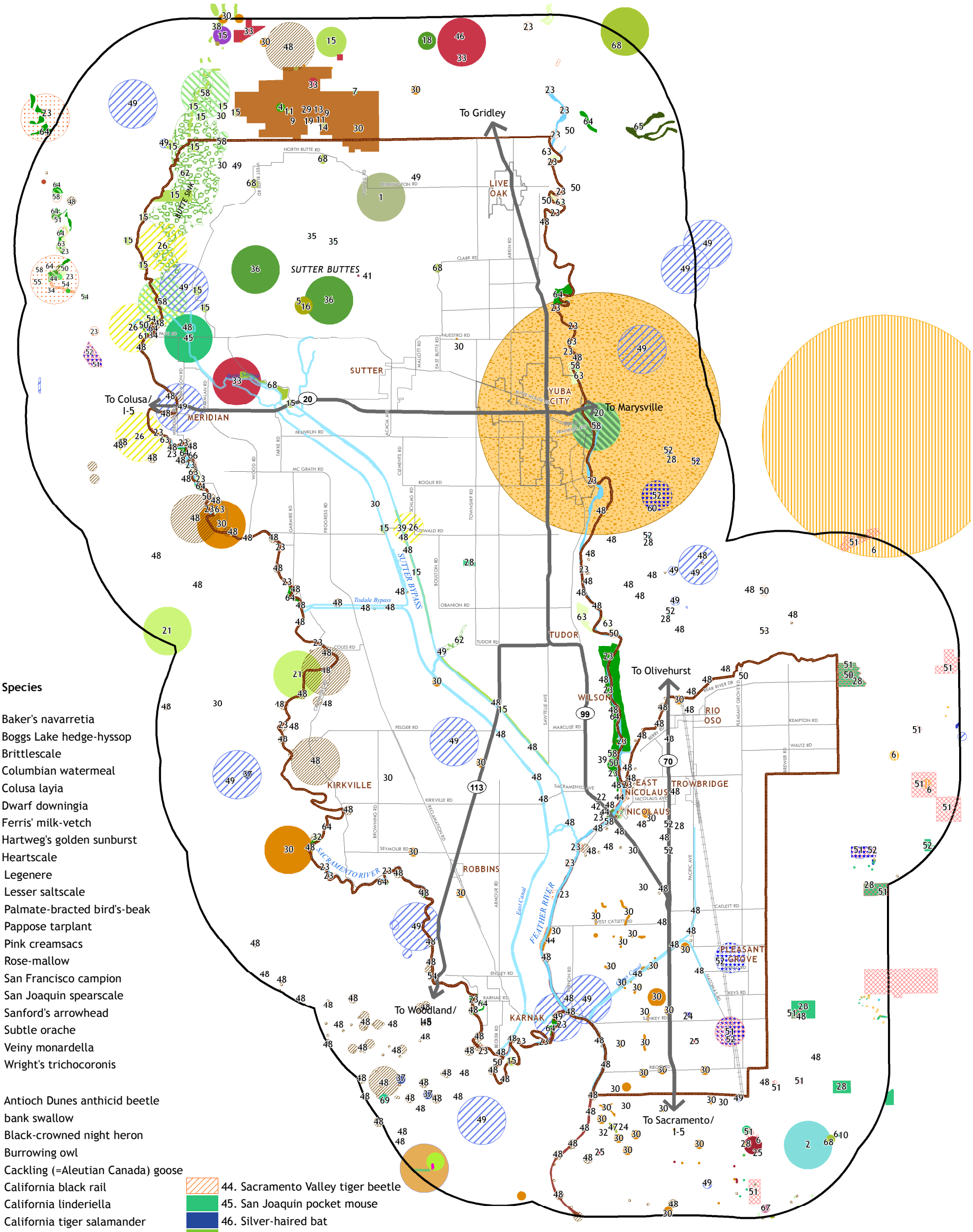
The valley elderberry longhorn beetle (VELB) occurs throughout the year in riparian woodlands and other Central Valley habitats containing elderberry shrubs (*Sambucus* spp.), upon which the VELB are completely dependent for all stages of their life cycle. The females lay their eggs in crevices in the bark. After hatching, the larvae burrow into the stems of the tree where they feed on the interior wood for the next one to two years until they form pupae, from which the adults emerge. The adults bore their way out of the stems, leaving a distinctive oval-shaped hole. As the larvae and adults are rarely seen, these borer holes are often the only evidence of this species' presence. After emergence from the stems, the adults remain in association with the elderberries, where they will feed on the elderberry foliage and eventually reproduce. All elderberry shrubs within the known range of the VELB that have one or more stems with diameters of one inch or greater at ground level, are considered potential habitat for this species. This potential habitat (i.e., elderberry shrubs) occurs primarily along the Sacramento and Feather Rivers, though elderberry shrubs bearing VELB exit holes can be found in other undeveloped portions of the County.

Vernal pool crustaceans

Vernal pool crustaceans occurring within the County include vernal pool fairy shrimp *(Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*) and California linderiella (*Linderiella occidentalis*). These small crustaceans are adapted to survive the annual flooding and drying of vernal pools and other seasonal wetlands in valley or foothill grasslands by hatching from encysted eggs embedded in the soil in the bottom of the pools when the pools fill with rainwater. After reaching maturity, they breed, lay their eggs on the silty bottom of the pool, and die as the vernal pool dries up. The dormant eggs are protected by thick outer coverings

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Sensitive Species

Plant

1. Baker's navarretia
2. Boggs Lake hedge-hyssop
3. Brittlescale
4. Columbian watermeal
5. Colusa layia
6. Dwarf downingia
7. Ferris' milk-vetch
8. Hartweg's golden sunburst
9. Heartscale
10. Legenere
11. Lesser saltscale
12. Palmate-bracted bird's-beak
13. Pappose tarplant
14. Pink creamsacs
15. Rose-mallow
16. San Francisco campion
17. San Joaquin spearscale
18. Sanford's arrowhead
19. Subtle orache
20. Veiny monardella
21. Wright's trichocoronis

Animal

22. Antioch Dunes anthicid beetle
23. bank swallow
24. Black-crowned night heron
25. Burrowing owl
26. Cackling (=Aleutian Canada) goose
27. California black rail
28. California linderiella
29. California tiger salamander
30. Giant garter snake
31. Great blue heron
32. Great egret
33. Greater sandhill crane
34. Hoary bat
35. Lawrence's goldfinch
36. Marysville California kangaroo rat
37. Mountain plover
38. Northern harrier
39. Northwestern pond turtle
40. Osprey
41. Pallid bat
42. Sacramento anthicid beetle
43. Sacramento splittail
44. Sacramento Valley tiger beetle
45. San Joaquin pocket mouse
46. Silver-haired bat
47. Snowy egret
48. Swainson's hawk
49. Tricolored blackbird
50. Valley elderberry longhorn beetle
51. Vernal pool fairy shrimp
52. Vernal pool tadpole shrimp
53. Western pond turtle
54. Western red bat
55. Western small-footed myotis
56. Western snowy plover
57. Western spadefoot
58. Western yellow-billed cuckoo
59. White-faced ibis
60. White-tailed kite

Terrestrial

61. Yuma myotis
62. Coastal and Valley Freshwater Marsh
63. Great Valley Cottonwood Riparian Forest
64. Great Valley Mixed Riparian Forest
65. Great Valley Valley Oak Riparian Forest
66. Great Valley Willow Scrub
67. Northern Claypan Vernal Pool
68. Northern Hardpan Vernal Pool
69. Valley Oak Woodland

Source: CA Dept. of Fish and Game, CNDDB, January 2008

Date: February 2008

Miles
0 1.25 2.5 5 7.5

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SPECIAL-STATUS SPECIES
Figure 4.1-2

that resist cold, heat, and desiccation. Vernal pool crustaceans are known to occur in the eastern and southeastern portions of the County, but these species have been observed in a number of places within urban areas as well, such as along railroad right-of-ways.

Sacramento perch

The Sacramento perch (*Archoplites interruptus*) is the only freshwater perch native to California. It once occurred throughout the Central Valley and other lower elevation portions of the State, but due to severe alterations to the State's waterways for flood control and agriculture and the introduction of non-native perch (e.g., bluegill [*Lepomis macrochirus*] and other sunfish), crappie (*Pomoxis* spp.) and bass (*Micropterus* spp.), the species has been eliminated from the majority of its former range. True native populations (as opposed to re-introduced populations) now only exist at Clear Lake in Lake County and portions of Alameda Creek in Alameda County. Despite the serious decline in native Sacramento Perch populations, it is not endangered, as the species is doing quite well in several locations outside its natural range. Due to its ability to withstand high alkalinity, it has been introduced into several alkaline lakes in Nevada, Colorado, Nebraska, and North and South Dakota, and is flourishing where most other centrarchid species cannot survive and reproduce. It has also become established in several California reservoirs where it has been introduced, or where young fish were transported through the California aqueduct system into holding reservoirs, such as San Luis Reservoir and O'Neill Forebay. The California Department of Fish & Game has also promoted the Sacramento Perch for introduction into Central Valley farm ponds. This species is present in the Sacramento and Feather Rivers and their tributaries.

Western Pond Turtle

The western pond turtle (*Actinemys marmorata*) is an aquatic turtle that ranges throughout much of the state - from the Sierra Nevada foothills to the coast - and in coastal drainages from the Oregon border to Baja California.[6] It occurs in suitable habitat throughout the County in ponds, slow moving streams and rivers, irrigation ditches, and reservoirs that have abundant emergent and/or riparian vegetation. The turtle requires adjacent (i.e. within 200-400 meters of water) uplands for nesting and egg-laying - typically in soils with high clay or silt component on unshaded, south-facing slopes. The western pond turtle is a federal and California Species of Concern and is fairly common along the Sacramento and Feather Rivers, the Sutter Bypass, and in many tributaries and canals, but could occur in any of the creeks, streams or ponds in the County.

Giant Garter Snake

The giant garter snake (*Thamnophis gigas*) is both a federally- and state-threatened species. It is a highly aquatic snake that historically ranged from Butte County, south through the Central Valley to Buena Vista and Tulare Lakes in Tulare and Kern counties. Having disappeared from much of its former range due to habitat loss (particularly in the southern part of its range), the current stronghold for this species is in the Sacramento-American River Basin of Sutter and Sacramento counties, which provides some of the species' most important remaining habitat.[7,8] Numerous

6 Stebbins, 1985. Stebbins, Robert C. A Field Guide to Western Reptiles and Amphibians, Second Edition, Revised. Houghton Mifflin Company, 1985.

7 U.S. Fish and Wildlife Service (USFWS), 2002, URL; http://sacramento.fws.gov/es/animal_spp_acct/giant_garter_snake.htm.

8 California Department of Fish and Game (CDFG), 2002, URL; http://www.dfg.ca.gov/hcpb/species/jsp/ssc_result.jsp?specy=reptiles&query=Thamnophis%20gigas.

occurrence records for giant garter snake occur within the County, with most records in the Butte Sink, and south of the Bear River and east of the Feather River, though they may be present in suitable habitat throughout the County. Giant garter snakes historically occurred in cattail and tule marshes, and in open riparian woodlands on the valley floor.[9,10] Although much of their historic habitat has been lost due to channelization of waterways, flood control, and the conversion of marshlands to agriculture, this species has adapted to occupy certain man-made waterways.[11,12] The irrigation systems associated with rice farming in Sutter, Sacramento, Yolo, and Colusa counties are of particular value. Potential habitat for giant garter snakes will typically include all, or at least most of the following features: relatively deep, perennial water (or at least adequate water during the snake's active season [early-spring through mid-fall]); presence of abundant emergent vegetation such as cattails and bulrushes for escape cover and foraging habitat during the active season; grassy banks and openings in waterside vegetation for basking; and higher elevation uplands adjacent to their aquatic habitat for cover and refuge from flood waters during the snake's dormant season in the winter.[13,14] Aquatic habitat must also support prey species such as fish and amphibians.

Swainson's hawk

The Swainson's hawk (*Buteo swainsoni*) occurs in open country, foraging in grasslands and agricultural fields, especially after disking or harvest. They use tall riparian trees (typically oaks or cottonwoods) for nesting, but will occasionally nest in large eucalyptus or other large ornamental trees if there is suitable foraging habitat nearby. The species has lost much of its former nesting habitat as a result of the significant reduction in riparian woodland and forest habitat throughout the County and state over the last 100 years, and is increasingly losing foraging habitat to urban development. Swainson's hawks can forage as far as 20 miles from the nest, but nests are generally more successful if sufficient foraging habitat is present within an approximate 10-mile radius. When forced to travel greater distances from the nest, the adults must expend much more time and energy gathering food, leaving the eggs and young in the nests much more vulnerable to predation and the elements. Numerous nesting records for Swainson's hawks within the County occur along the Sacramento, Feather and Bear Rivers, and along the Sutter Bypass.

Burrowing Owl

Burrowing owls (*Athene cunicularia*) are yearlong residents in generally flat, open, dry grasslands, pastures, deserts, and shrub lands, and in grass, forbs and open-shrub stages of pinyon-juniper and ponderosa pine habitats. They use communal ground squirrel and other small mammal burrows for nesting and cover, as well as artificial structures such as roadside embankments, levees, and berms. They prefer open, dry, nearly-level grassland or prairie habitat and can exhibit high site fidelity, often reusing burrows year after year. Occupancy of suitable burrowing owl habitat can be verified at a site by observation of a pair of burrowing owls

9 U.S. Fish and Wildlife Service (USFWS), 2002, URL; http://sacramento.fws.gov/es/animal_spp_acct/giant_garter_snake.htm.
10 California Department of Fish and Game (CDFG), 2002, URL; http://www.dfg.ca.gov/hcpb/species/jsp/ssc_result.jsp?specy=reptiles&query=Thamnophis%20gigas.
11 U.S. Fish and Wildlife Service (USFWS), 2002, URL; http://sacramento.fws.gov/es/animal_spp_acct/giant_garter_snake.htm.
12 California Department of Fish and Game (CDFG), 2002, URL; http://www.dfg.ca.gov/hcpb/species/jsp/ssc_result.jsp?specy=reptiles&query=Thamnophis%20gigas.
13 U.S. Fish and Wildlife Service (USFWS), 2002, URL; http://sacramento.fws.gov/es/animal_spp_acct/giant_garter_snake.htm.
14 California Department of Fish and Game (CDFG), 2002, URL; http://www.dfg.ca.gov/hcpb/species/jsp/ssc_result.jsp?specy=reptiles&query=Thamnophis%20gigas.

during their breeding season (March to August) or, alternatively, by the presence of molted feathers, cast pellets, prey remains (rodents, small reptiles, and large insects), eggshell fragments, or whitewash (guano), at or near a burrow. Burrowing owls are fairly tolerant of human activity near their nest burrows as long as suitable foraging habitat exists nearby. Known burrowing owl colonies are present in the southeast portion of the County, but could occur in suitable habitat throughout the County.

White-tailed Kite

The white-tailed Kite (*Elanus leucurus*) is a "fully protected" raptor under the California Fish and Game code. White-tailed kites feed on rodents, small reptiles, and large insects in fresh emergent wetlands, annual grasslands, pastures, and ruderal vegetation. They breed between February and October. Although like other raptors kites typically build solitary nests, they often roost and occasionally nest communally. Therefore, disturbance of a relatively small roost or nesting area could affect a large number of birds. The white-tailed kite can commonly be observed foraging in open grasslands throughout the County, but breeding sites are primarily located near riparian corridors along the Sacramento, Feather and Bear Rivers.

Herons and Egrets

The great blue heron (*Ardea herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*) and black-crowned night heron (*Nycticorax nycticorax*) have similar life histories, and are all fairly common in the County. These species are typically associated with waterways, marshes, ponds and other wetlands where they forage for prey, but also use grasslands and agricultural fields for this purpose. These species are all colonial nesters in rookeries they create in the tops of groves of large trees in riparian areas or other woodlands adjacent to suitable foraging habitat. Due to this strategy, nesting sites for these species are vulnerable, as the loss of even one rookery can affect a large number of birds. Heron and egret rookeries are rare in the County, but do occur within extensive riparian areas along the Sacramento, Feather and Bear Rivers.

Bank Swallow

The bank swallow (*Riparia riparia*) is the smallest North American swallow, with a body length of about 4.75 inches. It nests in colonies and creates nests by burrowing into vertical bluffs and riverbanks with fine-textured soils. Bank swallows breed in California from April to August and spend the winter months in South America. Most of California's remaining populations nest along the upper Sacramento River, where it still meanders in a somewhat natural manner. In this alluvial plain, the river system provides suitable soil types and erosion needed for prime nesting habitat. It is estimated that the range of bank swallows in California has been reduced by 50 percent since 1900. Seventy-five percent of the State's population is concentrated on the banks of Central Valley streams, including several colonies on the Sacramento River.

Cooper's Hawk

The Cooper's hawk (*Accipiter cooperii*) is a breeding resident throughout most of the wooded portion of the state. This species ranges from sea level to above 2700 m (0-9000 ft) and nests in dense stands of live oak, riparian deciduous, or other forest habitats, typically near water. Seldom found in areas without dense tree stands, or patchy woodland habitat, this species is known to occur in the more extensive riparian forests along the Sacramento, Feather and Bear Rivers.

Purple Martin

The purple martin (*Progne subis*) can be found throughout nearly the entire United States east of the Rocky Mountains. Although declining in many western states, it is also found in isolated areas of Canada, Oregon, Washington, California, Utah, Colorado, Arizona, New Mexico and Mexico. It is an early spring migrant from its wintering grounds in South America. Generally, purple martins inhabit open areas with an open water source nearby. Martins adapt well in and around people, but are out-competed by starlings and sparrows in urban areas. Purple martins are colonial cavity nesters in abandoned woodpecker holes, human-made nest boxes, or cavities in other structures such as bridges and overpasses. Once established at a nest location, martins usually come back to the same site every year. Within the County, the purple martin can be expected to occur in riparian areas along the Sacramento, Feather and Bear Rivers.

Tricolored Blackbird

The tricolor blackbird *(Agelaius tricolor*) is a California Species of Special Concern and federal Species of Concern that occurs in suitable habitat throughout much of the Central Valley of California and along the Coast - from approximately Mendocino County to northern Baja California, Mexico. This colonial species is a year-round resident in marshes, wet meadows, rice fields, and rangelands. Tricolor blackbirds require large tracts of tules, cattails, or blackberries for their nesting colonies. Much of the historic habitat for this species has been eliminated due to conversion of marshes to agriculture and urban development. This species is known from a few occurrences along the Sacramento River and in agricultural fields, but could occur in suitable habitat throughout the County

Special-status bats

Special-status bat species with the potential to occur within the County include: the pallid bat (*Antrozous pallida*), pale big eared bat (*Corynorhinus townsendii townsendii*), silver-haired bat (*Lasionycteris noctivagans*), western red bat (*Lasiurus blossevillii*), hoary bat (*Lasiurus cinereus*), small-footed myotis (*Myotis ciliolabrum*), long-legged myotis (*Myotis volans*) and Yuma myotis (*Myotis yumanensis*). With the exception of the hoary bat and western red bat (which are foliage roosters), these species use hollow trees, caves, and rock crevices for roosting, but also use man-made structures such as mines, old buildings, and bridges if suitable structure and seclusion are available. Several of these species are known to occur at various locations in the County, but all have potential to occur there in areas of suitable habitat.

Table 4.1-1. Special-status Species Potentially Occurring in Sutter County

Scientific Name	Common Name	Status[1] Fed/State/Other	Habitat
Plants			
Astragalus tener var. *ferrisiae*	Ferris' milk-vetch	--/--/1B	Found on subalkaline flats in vernally mesic meadows and seeps, and Valley and foothill grasslands.
Centromadia parryi ssp. *rudis*	Parry's red tarplant	--/--/4	Occurs in alkaline, vernally mesic, seeps and vernal pools in valley and foothill grassland Occasionally found along roadsides.
Hesperevax caulescens	Hogwallow starfish	--/--/4	Shallow vernal pools in valley and foothill grassland, usually on mesic, clay soils.
Hibiscus lasiocarpus	Rose mallow	--/--/2	Freshwater marshes and swamps in the Central Valley.

Table 4.1-1. Special-status Species Potentially Occurring in Sutter County

Scientific Name	Common Name	Status[1] Fed/State/Other	Habitat
Layia septentrionalis	Colusa layia	--/--/1B	Chaparral, Cismontane woodland, valley and foothill grassland, usually on sandy, serpentinite soils.
Microseris sylvatica	Sylvan microseris	--/--/4	Occurs in chaparral, cismontane woodland, Great Basin scrub, pinyon and juniper woodland, and valley and foothill grassland. Usually on serpentinite soils.
Navarretia cotulifolia	Cotula navarretia	--/--/4	Occurs in chaparral, cismontane woodland, valley and foothill grassland, frequently on adobe soils.
Navarretia leucocephala ssp. *bakeri*	Baker's navarretia	--/--/4	Occurs in vernal pools in cismontane woodland, lower montane coniferous forest, meadows and seeps, and mesic valley and foothill grassland.
Navarretia nigelliformis ssp. *nigelliformis*	Adobe navarretia	--/--/1B	Occurs in vernal pools in vernally mesic valley and foothill grasslands. Occasionally associated with either clay or serpentinite soils.
Sagittaria sanfordii	Sanford's arrowhead	--/--/1B	Marshes and swamps (assorted shallow fresh water)
Silene verecunda ssp. *verecunda*	San Francisco campion	--/--/1B	On sandy soils in coastal bluff scrub, chaparral, coastal prairie, coastal scrub, and valley and foothill grasslands.
Invertebrates			
Branchinecta lynchi	Vernal pool fairy shrimp	T/--	Vernal pools and seasonal wetlands in grassland habitats.
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	T/--	Elderberry shrubs, typically in or near riparian areas.
Lepidurus packardi	Vernal pool tadpole shrimp	E/--	Vernal pools and seasonal wetlands in grassland habitats.
Linderiella occidentalis	California linderiella	FSC/--	Vernal pools and seasonal wetlands in grassland habitats.
Fish			
Acipenser medirostris	Green sturgeon	(T) (NMFS)	Pacific Ocean, and large rivers from San Francisco Bay north.
Archoplites interruptus	Sacramento Perch	--/CSC	Remnant native populations may occur in the Sacramento, Feather and Bear Rivers. More abundant in areas where the species has been stocked in farm ponds and other water bodies free of introduced fishes.
Oncorhynchus mykiss	Central Valley steelhead Critical habitat, Central Valley steelhead	(T) (NMFS) (NMFS)	Includes all naturally spawning populations of steelhead in the Sacramento and San Joaquin Rivers and their tributaries. Spawns in relatively silt free gravel beds in upstream portions of rivers.
Oncorhynchus tshawytscha	Central Valley spring-run Chinook salmon Critical Habitat, Central Valley spring-run Chinook Winter-run Chinook salmon, Sacramento River Critical habitat, winter-run Chinook salmon	(T) (NMFS) (NMFS) (NMFS) (E) (NMFS)	Migrate to spawning habitats (relatively silt free gravel beds) in upstream portions of the Sacramento and San Joaquin rivers from October through April, with peak migration occurring in December.

Table 4.1-1. Special-status Species Potentially Occurring in Sutter County

Scientific Name	Common Name	Status[1] Fed/State/Other	Habitat
Amphibians			
Ambystoma californiense	California tiger salamander, central population (T)	FT/CSC/none	Valley and foothill grasslands and adjacent oak woodlands; shelters in rodent burrows and breeds in seasonal wetlands such as vernal pools.
Rana aurora draytonii	California red-legged frog (T)	FT/CSC/none	Creeks and streams with deep pools and dense bank vegetation; presence of adjacent woodlands and grasslands important.
Spea hammondii	Western spadefoot	--/CSC	Breeds in seasonal wetlands and large vernal pools, spends most of the year underground in adjacent upland areas.
Reptiles			
Actinemys marmorata	Western pond turtle	FSC/CSC	Ponds, streams, rivers, marshes and canals with suitable basking sites and vegetative cover. Nests and aestivates (i.e., hibernate) in adjacent uplands.
Phrynosoma coronatum frontale	California horned lizard	FSC/CSC/none	Annual grassland, chaparral, saltbush scrub, alkali flats, oak woodland, riparian woodland, and coniferous forest; open habitats with loose fine (often sandy) soils
Thamnophis gigas	Giant garter snake	T/T/--	Historically occurred in cattail and tule marshes on the Central Valley floor. Has since adapted to a variety of artificial drainages, particularly those associated with rice farming. Requires open water supporting fish and/or amphibian prey, with vegetative cover in the water and on the banks. Also requires adjacent uplands for aestivation (i.e., hibernate). Does not occur in major rivers.
Birds			
Accipiter cooperii	Cooper's hawk	--/CSC (Nesting)	Nests and forages in woodland habitats.
Accipiter striatus	Sharp-shinned hawk	--/CSC (Nesting)	Nests in forests; forages in wooded habitats.
Agelaius tricolor	Tricolor blackbird	FSC/CSC	Nests in dense stands of cattails, thickets of willows, blackberries, or tall herbs adjacent to open grasslands.
Aquila chrysaetos	*Golden eagle*	FP/CSC	Nests on cliffs and very large trees. Forages primarily in grasslands and chaparral, but also woodlands and other relatively open habitats.
Asio otus	Long-eared owl	--/CSC (Nesting)	Nests and forages in oak and riparian woodlands
Athene cunicularia	Burrowing owl	--/CSC (Nesting)	Grassland, deserts and other open habitats. Requires ground squirrel or other small mammal burrows for nesting.
Buteo regalis	Ferruginous hawk	FSC/CSC	Forages in open grasslands and chaparral. Not known to nest in California
Buteo swainsoni	Swainson's hawk	--/T	Nests in riparian trees; forages in open grasslands and agricultural fields
Circus cyaneus	Northern harrier	--/CSC	Nests in freshwater marsh and agricultural fields; forages in marshes, grasslands and agricultural fields

Table 4.1-1. Special-status Species Potentially Occurring in Sutter County

Scientific Name	Common Name	Status[1] Fed/State/Other	Habitat
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	FC/CSC/none	Occurs in extensive riparian woodlands with clearings and a dense shrub layer. Often found in woodlands near streams, rivers or lakes.
Elanus leucurus	White-tailed kite	CSC (Nesting)	Nests colonially in large trees adjacent to open grasslands for foraging.
Eremophila alpestris	Horned lark	--/CSC	Forages and nests in open grasslands
Lanius ludovicianus	Loggerhead shrike	--/CSC	Nests in woodlands adjacent to grassland foraging habitat
Mammals			
Antrozous pallida	Pallid bat	FSC/CSC/ none	Roosts in crevices in caves, mines, large rock outcrops, under bridges and in abandoned buildings. Forages on or near the ground in a wide variety of open habitats.
Corynorhinus townsendii townsendii	Pacific western big eared bat	FSC/CSC/none	Roosts in the open in large caves, abandoned mines and buildings. Very sensitive to roost disturbance
Myotis ciliolabrum	Small-footed myotis bat	FSC/CSC/none	Occurs in most of California except the coastal redwood region; roosts in buildings, trees, and crevices in cliffs
Myotis volans	Long-legged myotis bat	FSC/CSC/ none	Roosts in crevices in caves, mines, large rock outcrops, under bridges and in abandoned buildings. Forages in a wide variety of open habitats, frequently over water.
Myotis yumanensis	Yuma myotis bat	FSC/CSC/none	Common along wooded canyon bottoms throughout California; roosts in buildings, large trees with hollows, and crevices in cliffs
Perognathus inornatus	San Joaquin pocket mouse	FSC/CSC/none	Open grasslands, preferably (but not restricted to) areas with friable soils.

[1]Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

California Native Plant Society (CNPS).

1B = Defined as plants that are rare, threatened or endangered in California and elsewhere.

2 = Defined as plants that are rare, threatened or endangered in California, but are more common elsewhere.

4 = Plants of Limited Distribution - A Watch List.

Fed = Federal status.
- E = Federally listed as endangered.
- T = Federally listed as threatened.
- PE = Proposed endangered.
- PT = Proposed threatened.
- FC = Federal candidate for listing as threatened or endangered.
- FSC = Federal species of concern.

CA = California status.
- E = Endangered; Species whose continued existence in California is jeopardized.
- T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.
- CSC = California Department of Fish and Game "Species of Special Concern". Species with declining populations in California.
- FP = Fully protected against take pursuant to the Fish and Game Code Section 3503.5.
- -- = No California or federal status.

Sources: California Department of Fish and Game, *California Natural Diversity Database*, 2008 and California Department of Fish and Game, *Special Animals*, July 2000.

REGULATORY CONTEXT

Federal

Endangered Species Act (FESA)

The Federal Endangered Species Act (FESA) of 1973 provides legal protection for threatened and endangered plant and animal species and requires definitions of critical habitat and development of recovery plans for specific species. Section 7 of the FESA requires federal agencies to make a finding on the potential to jeopardize the continued existence of any listed species potentially impacted by all federal actions, including the approval of a public or private action, such as the issuance of a permit pursuant to Sections 10 and 404 of the U.S. Clean Water Act (CWA). Section 9 of the FESA prohibits the take of any member of an endangered species. Take is defined by the FESA as *"...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct*." Section 10(a) of the FESA permits the incidental take of listed species if the take is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Projects adversely affecting federally-listed threatened or endangered species are required to obtain take permission from the USFWS prior to project implementation. If a federal agency is involved (i.e., if a wetlands permit is required, project has federal funding, etc.), take permission can be obtained through FESA Section 7 consultation with the USFWS. Consultation will determine whether the project would adversely impact a protected species or designated critical habitat and identify mitigation measures that would be required to avoid or reduce impacts on the species or its habitat. Following this consultation, the USFWS issues a Biological Opinion (BO), which dictates the conditions of take that are allowed for the project. If no federal agency is involved, project applicants are required to obtain an Incidental Take Permit through Section 10 of the FESA, which requires preparation of a Habitat Conservation Plan (HCP) and results in the issuance of an Incidental Take Permit.

Federal Clean Water Act (CWA)

Section 404

The objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Section 401 prohibits the discharge of any pollutant into the Nation's waters without a permit, and Section 402 establishes the permit program. Section 404 of the CWA regulates activities that result in discharge of dredged or fill material into waters of the United States. The Corps is responsible for permitting certain types of activities affecting wetlands and "other waters of the United States. Under Section 404 of the CWA, the Corps has the authority to regulate activity that could discharge fill or dredge material or otherwise adversely modify wetlands or other waters of the U.S. The Corps implements the federal policy embodied in Executive Order 11990, which, when implemented, is intended to result in no net loss of wetland values or acres.

Section 401

The State Water Resources Control Board (SWRCB) has authority over wetlands through Section 401 of the CWA, as well as the Porter-Cologne Act, California Code of Regulations Section 3831(k), and California Wetlands Conservation Policy. The CWA requires that an applicant for a Section 404 permit (to discharge dredged or fill material into waters of the United States) first obtain a certificate from the appropriate state agency stating that the fill is consistent with the State's water quality standards and criteria. In California, the authority to either grant

certification or waive the requirement for permits is delegated by the SWRCB to the nine regional boards. A request for certification is submitted to the regional board at the same time that an application is filed with the Corps. The regional board has 60 days to review the application and act on it. Because no Corps permit is valid under the CWA unless "certified" by the state, these boards may effectively veto or add conditions to any Corps permit.

State

California Endangered Species Act (CESA)

The CDFG administers a number of laws and programs designed to protect fish and wildlife resources. Principal among these is the California Endangered Species Act of 1984 (CESA - Fish and Game Code, Section 2050), which regulates the listing and take of state-endangered and state-threatened species. The CESA declares that deserving species will be given protection by the state because they are of ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the state. The CESA established that it is state policy to conserve, protect, restore, and enhance endangered species and their habitats.

Species listed under the CESA cannot be "taken" without adequate mitigation and compensation. The definition of take under CESA is the same as described above for the FESA. However, based on findings of the California Attorney General's Office, take under CESA does not prohibit indirect harm by way of habitat modification. Typically, the CDFG implements endangered species protection and take determinations by entering into management agreements (California Fish and Game Code, Section 2081 Management Agreements) with project applicants.

CDFG Lake and Streambed Alteration Agreements

Under Sections 1600-1616 of the California Fish and Game Code, the CDFG regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFG's jurisdiction are defined in the code as the *"… bed, channel or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit ...*" (Section 1601). In practice, the CDFG usually marks its jurisdictional limit at the top of the stream or bank, or at the outer edge of the riparian vegetation, whichever is wider.

California Environmental Quality Act (CEQA)

Although threatened and endangered species are protected by specific Federal and State statutes, Section 15380(b) of the CEQA Guidelines provides that a species not listed on the Federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after definitions in the FESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals. Section 15380(b) requires public agencies to undertake reviews to determine if projects would result in significant effects on species that are not listed by either the USFWS or CDFG (i.e., candidate species). Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

Local

Yuba-Sutter NCCP/HCP

Portions of the County are within the boundaries of the proposed Yuba-Sutter NCCP/HCP (Natural Community Conservation Plan/Habitat Conservation Plan). The Yuba-Sutter NCCP/HCP is a cooperative planning effort initiated by Yuba and Sutter counties in connection with improvements to Highways 99 and 70 and future development in the area surrounding those highways. The NCCP/HCP is being developed to facilitate ways to:

- continue economic growth and community development;
- retain the economic vitality of the agricultural community;
- maintain recreation, hunting, fishing, and other public uses of open space in the NCCP/HCP area;
- simplify and expedite land use and conservation planning in the NCCP/HCP area; and
- protect threatened and endangered species; and preserve plant and wildlife communities.

Preparation and approval of the NCCP/HCP is expected to take between 3 and 5 years, depending on the complexity of the planning process. Until the NCCP/HCP is approved, there is no requirement for compliance. However, it is prudent for longer term projects, or recently initiated smaller projects within the NCCP/HCP boundaries to give consideration to this planning document.

Natomas Basin Habitat Conservation Plan (NBHCP)

Portions of the County are within the Natomas Basin - a low-lying portion of the County east of the Sacramento River and north of the American River. The Natomas Basin contains incorporated and unincorporated areas within the jurisdictions of Sutter County and Sacramento County. Historically the basin was primarily in agricultural production. The existing water conveyance systems within the Natomas Basin were created for water conveyance and drainage. They provide nesting, feeding, and migration corridor habitat for a variety of species in the basin.

The Natomas Basin contains a variety of habitat types, open water aquatic habitat (including ditches and drains), emergent marsh, riparian forest, riparian scrub-shrub, grassland, vernal pools, and agriculture. A number of special-status species (wildlife and plant), as determined by the California Department of Fish and Game (CDFG) or the U.S. Fish and Wildlife Service (USFWS), inhabit or forage within the Natomas Basin.

The 1994 North Natomas Community Plan required the development and implementation of a Habitat Conservation Plan as mitigation for development in North Natomas. The NBHCP is a conservation plan supporting application for incidental take permits (ITPs) under Section 10(a)(1)(B) of the Endangered Species Act and under Section 2081 of the California Fish and Game Code. The purpose of the NBHCP is to promote biological conservation in conjunction with economic and urban development within the Permit Areas of the Natomas Basin. The NBHCP establishes a multi-species conservation program to minimize and mitigate the expected loss of habitat values and incidental take of Covered Species that would result from urban development, operation of irrigation and drainage systems, and certain activities associated with The Natomas Basin Conservancy's (TNBC) management of its system of

reserves established under the NBHCP. The goal of the NBHCP is to minimize incidental take of the Covered Species in the Permit Areas and to provide mitigation for the impacts of Covered Activities on the Covered Species and their habitat. The NBHCP applies to the 53,537-acre area interior to the toe of the levees surrounding the Natomas Basin.

In 1997, the NBHCP was approved by Sutter County and ITPs were issued to the City of Sacramento, by USFWS and CDFG. Subsequently, the 1997 NBHCP was challenged and on August 15, 2000, the U.S. District Court, Eastern District, ruled that the USFWS ITP was invalid and an EIS was required. On May 15, 2001, in a federal court ruling, a Settlement Agreement was attained which granted a motion modifying the Order to allow incidental take protection for limited development within Sutter County with the provision of mitigation land in specific areas of the Natomas Basin. Development of 1,068 acres of land in both North and South Natomas would be allowed to proceed if it is in compliance with mitigation requirements of the Settlement Agreement.

Sutter County, Sacramento County, and the USFWS prepared a revised NBHCP and an EIR/EIS that were approved on May 13, 2003 by Sacramento County Board of Supervisors. On June 27, 2003, the USFWS issued ITPs to Sutter County, Sacramento County and The Natomas Basin Conservancy. CDFG issued an amended ITP on July 10, 2003.

The NBHCP mitigation requirements include:

- Payment of HCP fees or dedication of land at a ratio of 0.5 to 1.
- Reconnaissance-level surveys to determine what habitats are present on a proposed development site. (Reconnaissance surveys are submitted with the developer's application.)
- Pre-construction surveys for potential special status species not less than 30 days or more than 6 months prior to construction activities.
- Species-specific mitigation, as required, per USFWS and CDFG protocol.
- Grading permit issued and habitat removed.

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4.2 AGRICULTURE, SOILS, AND MINERAL RESOURCES

INTRODUCTION

This section describes Sutter County's agricultural, soil, and mineral resources. The primary sources used to prepare this section include information from the US Department of Agriculture (USDA) Census of Agriculture, California Geological Survey (CGS), California Department of Conservation (CDC) Division of Gas and Geothermal Resources, CDC Farmland Monitoring Mapping Program (FMMP), and the Sutter County Agricultural Commissioner.

As a major economic asset to the county, agricultural activities play a huge role in Sutter County and have helped to shape and guide development in the county. However, despite the vital role agriculture plays, this resource can be vulnerable to different interests. Therefore, the protection of agricultural resources is major concern for the county as it plans for future growth.

SUMMARY OF KEY FINDINGS

- Approximately 83 percent of the county's total land acreage is currently being used for agricultural purposes.[1]
- Approximately 13 percent of farms in Sutter County are 500 acres or larger, but they control over 68 percent of the total farm acres in the County.
- As of December 31, 2007, the County has 64,302 acres protected as agricultural land under the Williamson Act.
- The predominant soil series in the county are the Capay, Clear Lake, Conejo, Oswald, and Olashes soils, which account for over 60 percent of the total land area.
- According to the 2000 Farmland Mitigation Monitoring Program (FMMP) report, Sutter County contains 387,603 acres of agricultural land, of which 169,749 acres or approximately 44 percent are designated as prime agricultural land with the highest-productivity soils.
- Construction aggregate, consisting primarily of sand, gravel, and crushed stone, is currently the County's main mining resource.
- There are currently three active mining operations in the County. Two are in the vicinity of the Sutter Buttes (South Butte Quarry and Bihlman Pit/Butte Rock), while the third (Reclamation District 1001) in the southeast portion of the County south of the community of Trowbridge.

EXISTING CONDITIONS

Agricultural Production

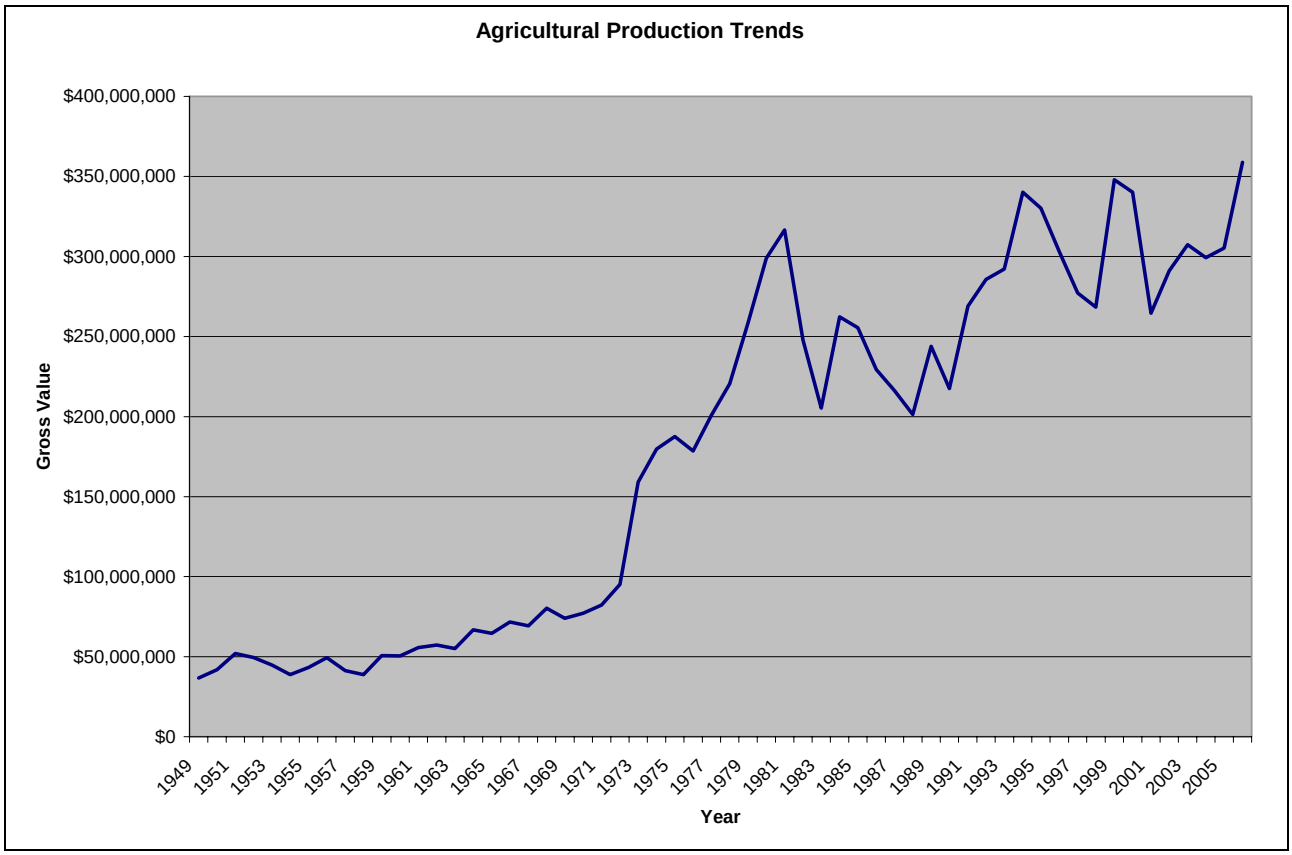
Sutter County is located within the northern portion of California's Central Valley in the area known as the Sacramento Valley. It contains some of the richest soils in the State. These soils,

1 Chapter 2, Section 2.1, Land Use, of this General Plan Technical Background Report.

combined with abundant surface and subsurface water supplies and a long, warm growing season, make the County's agricultural resources very productive.

Sutter County is one of California's leading agricultural counties, with 83 percent of the county's total land acreage currently being used for agricultural purposes. The County has continued to stay predominantly agricultural, unlike other historically agricultural counties such as Fresno, Tulare, Monterey, and Kern. Agricultural use in those counties has dramatically decreased. Even though agricultural production is dependent on weather and economic market fluctuations, local agricultural market revenues continue to rise in Sutter County, as illustrated on Figure 4.2-1.

Figure 4.2-1. Sutter County Agricultural Production Trends



Source: Sutter County Agricultural Report, 2006.

Approximately 13 percent of the farms in the county are 500 acres or larger; however, this small percentage of farms controls over 68 percent of the total farm acres in the county. While the total number of smaller farms up to 100 acres in size is greater than the number of the larger farms, these small farms only control approximately six percent of the farming acreage in the county. Table 4.2-1 gives the complete breakdown of farms according to size and approximate acreage controlled.

Agricultural activities in the county can generally be placed into one of two classes; either intensive agriculture, which includes field crops, seed crops, vegetable crops, fruit and nut crops, nursery stock and apiary products (bee keeping), or extensive agriculture, which involves animal husbandry forms of agriculture.

Table 4.2-1. 2002 Farm Size By Acreage

Acreage Range	Number of Farms	Percentage	Total Acres	Percentage
1 to 9	212	15.2%	904	0.24%
10 to 49	413	29.7%	9,863	2.65%
50 to 69	90	6.5%	5,301	1.43%
70 to 99	90	6.5%	7,368	1.98%
100 to 139	71	5.1%	8,351	2.25%
140 to 179	72	5.2%	11,307	3.04%
180 to 219	67	4.8%	13,306	3.58%
220 to 259	58	4.2%	13,663	3.67%
260 to 499	146	10.5%	51,789	13.92%
500 to 999	91	6.5%	61,761	16.60%
1,000 to 1,999	54	3.9%	74,523	20.04%
2,000 or more	27	1.9%	113,828	30.60%
Total	**1,391**	**100.0%**	**371,964**	**100%**

Source: 2002 Census of Agriculture.

Intensive Agriculture is the primary form of agricultural use in Sutter County, with 1,241 farms in 2002 designated under harvested cropland. In 2006, fruit and nut crops were the top agricultural product for the county, followed by field crops, seed crops, and vegetable crops. The leading crops according to value for 2006 were rice, dried plums (prunes), walnuts, and peaches. Figure 4.2-2 depicts agricultural production areas.

Extensive agriculture is associated with livestock production and includes lands for grazing and housing various types of livestock. In 2002, 91 farms were designated under the extensive agricultural use, accounting for 29,917 acres of land. In 2006, the top extensive agricultural use was for cattle and calves, followed by sheep and lambs.

Table 4.2-2 summarizes the value of agricultural production by production groups in 2005 and 2006.

Table 4.2-2. Summary Farm Value of Agricultural Production

2005		2006	
Fruit & Nut Crops[1]	$123,834,400	Fruit & Nut Crops	$158,918,900
Field Crops[1]	$116,674,300	Field Crops	$130,626,000
Seed Crops	$14,368,790	Seed Crops	$14,951,900
Vegetable Crops	$19,788,600	Vegetable Crops	$21,564,300
Nursery Products	$11,058,300	Nursery Products	$12,736,500
Apiary Products	$3,497,900	Apiary Products	$3,973,400
Livestock Products	$15,967,900	Livestock Products	$16,074,200
Total[1]	**$305,190,190**	**Total**	**$358,845,200**

Source: Sutter County, California, Crop, Livestock and Annual Department Report, 2006.
[1]Revised.

Table 4.2-3 provides a 1997 and 2002 breakdown for cropland in Sutter County according to its use.

Table 4.2-3. Cropland According to Use

	1997		2002	
	acres	farms	acres	farms
Harvested Cropland	274,218	1,368	267,891	1241
Cropland only used as pasture or grazing	10,853	107	29,917	91
Other land in farms[1]	74,999	39	74,156	59
Total Cropland	**360,070**	**1,514**	**371,964**	**1,391**

Source: 2002 Census of Agriculture.
[1]Includes, greenhouse, nursery, floriculture, milk production, poultry and egg production.

Williamson Act Contracts

Federal programs continue to preserve important and valuable agricultural land in Sutter County through the Williamson Act. As of December 31, 2007, the County had 64,302 acres protected as agricultural land under the Williamson Act. This program gives agricultural producers tax incentives to place the land in 10-year contracts to prevent development during the term of the contract. Sutter County also has 36 Organic Registered Producers that cover both intensive and extensive agriculture uses. See Figure 4.2-3 for the locations of Williamson Act lands within the County.

Soils

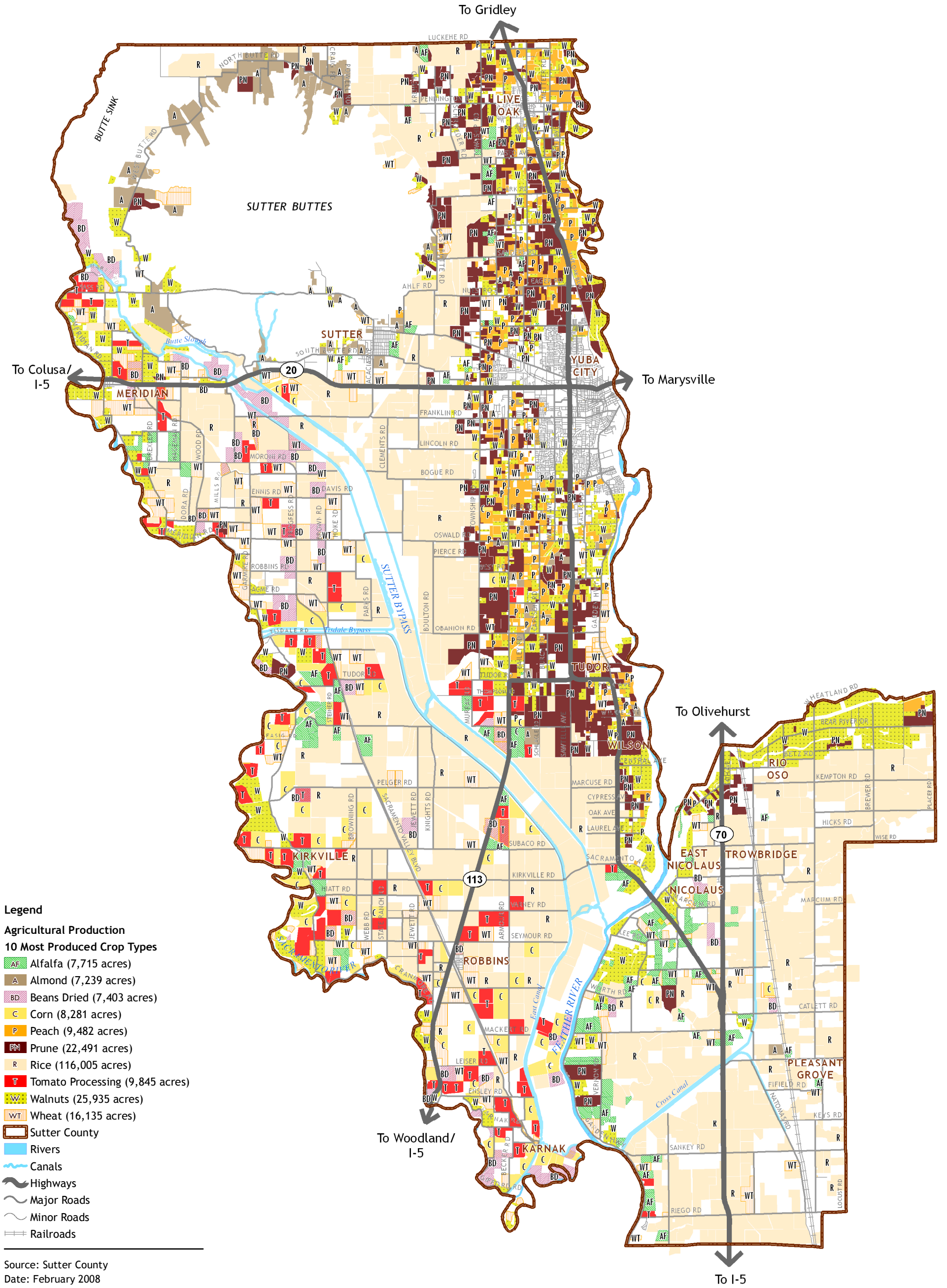
The Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service) has mapped over 40 individual soil units in the county (Figure 4.2-4).

The predominant soil series in the county are the Capay, Clear Lake, Conejo, Oswald, and Olashes soils, which account for over 60 percent of the total land area. The remaining soil units each account for smaller percentages the total land area. The Capay and Clear Lake soils are generally present in the western and southern parts of the county. The Conejo soils occur in the eastern part closer to the incorporated areas of the county. Oswald and Olashes soils are located in the central portion of the county extending north to south, with scattered areas along the southeastern edge of the county.

Soil descriptions for the principal soil units in the county are provided below. These descriptions, which were developed by the NRCS, are for native, undisturbed soils and are primarily associated with agricultural suitability. Soil characteristics may vary considerably from the mapped locations and descriptions due to development and other uses. Geotechnical studies are required to identify actual engineering properties of soils at specific locations to determine whether there are specific soil characteristics that could affect foundations, drainage, infrastructure, or other structural features.

SUTTER COUNTY
General Plan Update

SUTTER COUNTY
GENERAL PLAN UPDATE



Legend

Agricultural Production

10 Most Produced Crop Types

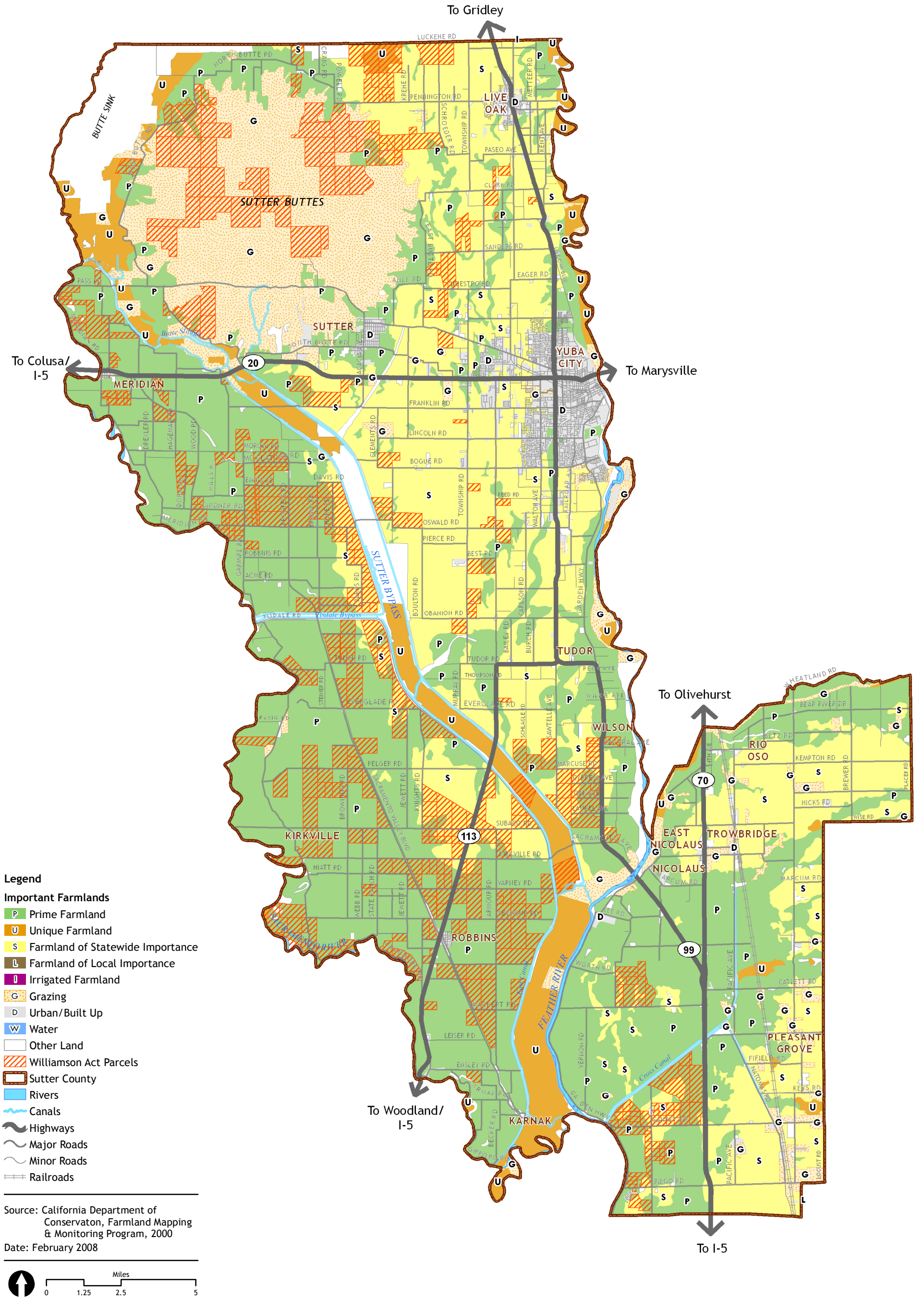
- AF Alfalfa (7,715 acres)
- A Almond (7,239 acres)
- BD Beans Dried (7,403 acres)
- C Corn (8,281 acres)
- P Peach (9,482 acres)
- PN Prune (22,491 acres)
- R Rice (116,005 acres)
- T Tomato Processing (9,845 acres)
- W Walnuts (25,935 acres)
- WT Wheat (16,135 acres)
- Sutter County
- Rivers
- Canals
- Highways
- Major Roads
- Minor Roads
- Railroads

Source: Sutter County
Date: February 2008

Miles
0 1.25 2.5 5

PBS&J

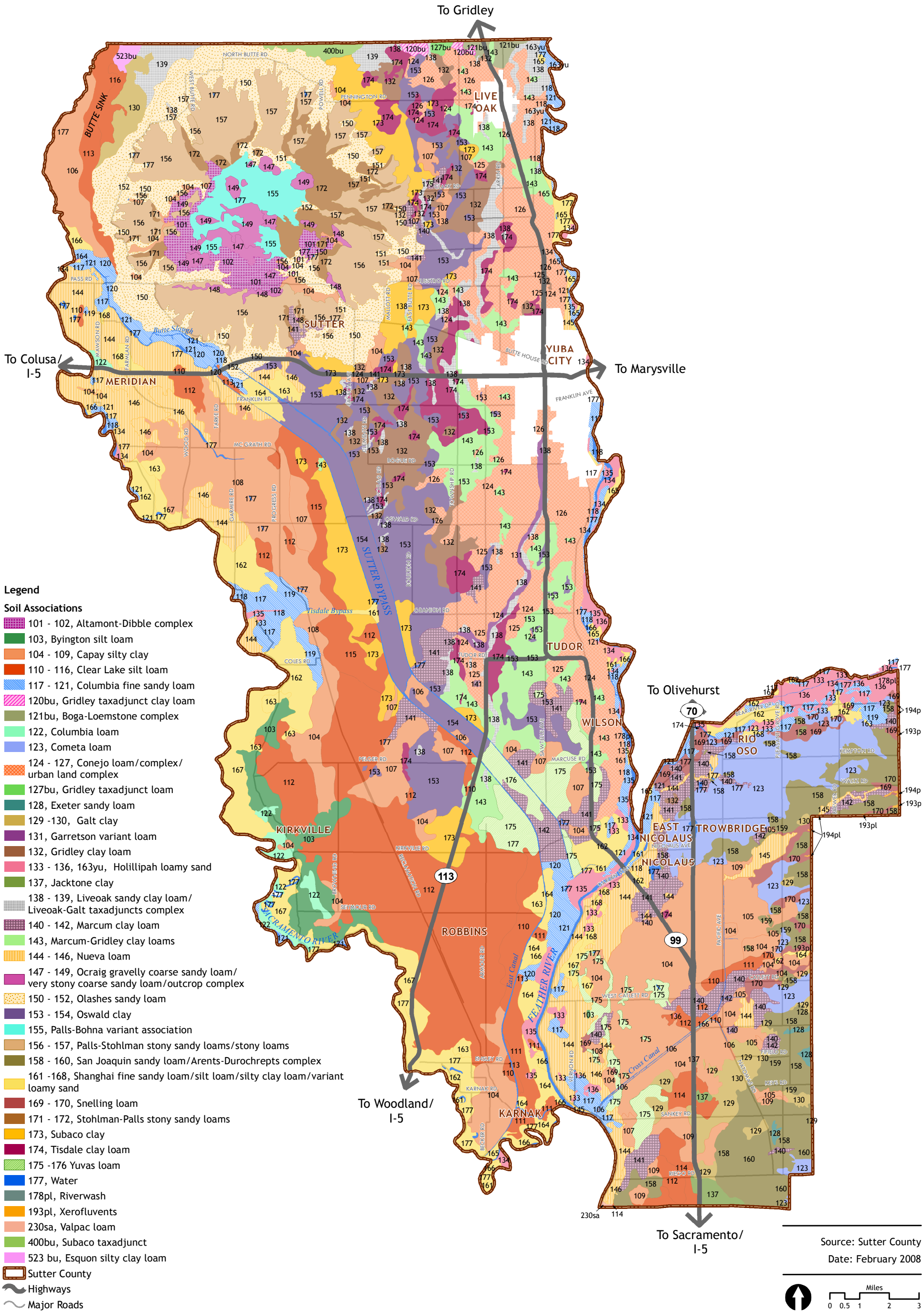
AGRICULTURAL PRODUCTION
Figure 4.2-2



IMPORTANT FARMLANDS AND WILLIAMSON ACT LANDS
Figure 4.2-3

SUTTER COUNTY
General Plan Update

SUTTER COUNTY
GENERAL PLAN UPDATE



Legend

Soil Associations

- 101 - 102, Altamont-Dibble complex
- 103, Byington silt loam
- 104 - 109, Capay silty clay
- 110 - 116, Clear Lake silt loam
- 117 - 121, Columbia fine sandy loam
- 120bu, Gridley taxadjunct clay loam
- 121bu, Boga-Loemstone complex
- 122, Columbia loam
- 123, Cometa loam
- 124 - 127, Conejo loam/complex/ urban land complex
- 127bu, Gridley taxadjunct loam
- 128, Exeter sandy loam
- 129 -130, Galt clay
- 131, Garretson variant loam
- 132, Gridley clay loam
- 133 - 136, 163yu, Holillipah loamy sand
- 137, Jacktone clay
- 138 - 139, Liveoak sandy clay loam/ Liveoak-Galt taxadjuncts complex
- 140 - 142, Marcum clay loam
- 143, Marcum-Gridley clay loams
- 144 - 146, Nueva loam
- 147 - 149, Ocraig gravelly coarse sandy loam/ very stony coarse sandy loam/outcrop complex
- 150 - 152, Olashes sandy loam
- 153 - 154, Oswald clay
- 155, Palls-Bohna variant association
- 156 - 157, Palls-Stohlman stony sandy loams/stony loams
- 158 - 160, San Joaquin sandy loam/Arents-Durochrepts complex
- 161 -168, Shanghai fine sandy loam/silt loam/silty clay loam/variant loamy sand
- 169 - 170, Snelling loam
- 171 - 172, Stohlman-Palls stony sandy loams
- 173, Subaco clay
- 174, Tisdale clay loam
- 175 -176 Yuvas loam
- 177, Water
- 178pl, Riverwash
- 193pl, Xerofluvents
- 230sa, Valpac loam
- 400bu, Subaco taxadjunct
- 523 bu, Esquon silty clay loam
- Sutter County
- Highways
- Major Roads

Source: Sutter County
Date: February 2008

Miles
0 0.5 1 2 3

PBS&J

SOIL CLASSIFICATIONS
Figure 4.2-4

Capay

Formed in moderately fine and fine textured alluvium derived from mostly sandstone and shale, the Capay series consists of very deep moderately well drained soils. Capay soils are primarily found on alluvial fans, alluvial flats, interfan basins and basin rims, at elevations below 1,200 feet with no greater than a nine percent slope and are used for growing irrigated crops such as tomatoes, sugar beets, beans or grain sorghum, dry farmed to small grains, and irrigated and dry land pasture. Native vegetation for this soil type consists of dense stand of annual grasses and forbs.

Clear Lake

The Clear Lake series consists of very deep poorly drained soils that formed in fine textured alluvium derived from sandstone and shale. Clear Lake soils are mainly located in basins and in swales of drainage ways. Clear Lake soils are in basins and in swales of level drainage ways. Slopes are 0 to 2 percent. Elevations are 25 to 2,000 feet. The soils formed in fine textured alluvium derived from sandstone and shale or other mixed rock sources. Used for growing row crops such as tomatoes, beans and sugar beets, dry farmed to grain, or irrigated and dry farmed pasture. Also used for rangeland. Native vegetation is grasses and forbs.

Conejo

The Conejo series of soils is not found in many areas of California, with most of the locations existing in the northern and central California Valley and California Coastal Range. The Conejo series consists of very deep, well drained soils that formed in alluvium from basic igneous or sedimentary rocks found on alluvial fans and stream terraces. Conejo soils are found on alluvial fans and stream terraces at elevations of 30 to 2,000 feet, with slopes ranging from 0 to 9 percent. The soil is predominantly used for irrigated row crops, orchard, hay and pasture and grain. Natural vegetation often included annual grasses and forbs with scattered oaks.

Oswald

The Oswald series consists of moderately deep, poorly drained soils that are formed in alluvium from mixed sources. Oswald soils are predominantly located in basins and on basin rims with slopes of less than two percent. They formed in alluvium from mixed sources deposited over unrelated siltstone with elevations from 20 to 80 feet. The soil series is subject to periods of seasonal flooding due to its fairly poor drainage, and slow permeability. A perched water table is at a depth of 18 to 36 inches from December through April. This soil is used predominantly for irrigated rice, small grains and row crops.

Olashes

The Olashes series is named by a tribe native to Sutter County who now has vanished. The soil series consists of very deep well drained soils that formed in alluvium weathered from mixed sources. Olashes soils are generally located in the Sutter Buttes and southeastern part of the Sacramento Valley, on alluvial fans and fan terraces with slopes of 0 to 5 percent. Elevations typically range from 45 to 750 feet. These soils drain relatively well with very low runoff potential and moderately slow permeability. Some areas of this soil are subject to frequent and brief to long periods of flooding from December to April. This soil is used mainly for irrigated orchards, small grain and forage crops.

Farmland Soil Classifications

The California Department of Conservation has developed a FMMP that classifies the different agricultural soil types related to their ability to sustain agricultural crops. Agricultural land is quantified based upon acreage and classified as Prime, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. The FMMP also quantifies the amount of urban land and grazing lands within the county. Every two years, the FMMP inventories the amount of farmland lost and gained and the amount of urban land gained.

Farmland classifications are as follows:

Prime Farmland

Prime Farmland is defined as soils with the best combination of physical and chemical features able to sustain long-term production of agricultural crops. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.

Farmland of Statewide Importance

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

Unique Farmland

Farmland of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climactic zones in California. The land must have been cropped at some time during the two update cycles prior to the mapping date.

Farmland of Local Importance

Farmland of local importance is defined as land that is imperative in maintaining the local agricultural economy, as determined by each county's board of supervisors and a local advisory committee.

According to the 2000 FMMP report, of Sutter County's 387,603 acres of agricultural land, 169,749 acres or approximately 44 percent is designated as prime agricultural land with the highest productive soils. Grazing land accounts for approximately 13 percent of the county's farmland, with 111,242 acres of farmland designated as of Statewide Importance, and 20,239 acres designated as Unique Farmland. Table 4.2-4 shows the county breakdown of farmland acreage according to the FMMP's designations. Figure 4.2-3 depicts the locations of important farmland in the county.

Table 4.2-4. FMMP 2000 Sutter County Farmland

Type	Acres	Percent
Urban	11,359	3%
Grazing	50,826	13%
Local Importance	8	>1%
Prime Farmland	169,749	44%
Statewide Importance	111,242	29%
Unique Farmland	20,239	5%
Other	24,180	6%
Total	**387,603**	**100%**

Source: Sutter County GIS, farmland .mxd. California Department of conservation Farmland Mapping & Monitoring Program, 2000.

Mineral Resources

The Sutter County Surface Mining Code and the Zoning Code provide for the extraction of mineral resources from unincorporated lands. The extraction of mineral resources in Sutter County has historically been limited to the extraction of clay, sand, soils, and rock. These materials have generally been used for construction; with the exception of clay that was extracted by Gladding-McBean for their Lincoln processing facility to manufacture tile, brick, and other clay products. The Gladding-McBean Mine closed some time prior to 1980. Other previous mining sites that are closed were generally "borrow sites" for highway or other major construction activities.

Sutter County has no deep-shaft mining activity. All mines in the county are open-pit type or surface mines which require the possession of a valid surface mining permit and reclamation plan under both the County's Surface Mining Code and the State's Surface Mining and Reclamation Act (SMARA).

Based on the U.S. Geological Survey's (USGS) preliminary data for 2002, California ranked first among the states in non-fuel mineral production, accounting for approximately nine percent of the United States' total. Construction sand and gravel was California's leading industrial mineral with a total value of $1.16 billion produced for the year, a seven percent increase from 2001 (final USGS data). Sand and gravel production was estimated to be 173 million tons, a five percent increase from 2001.

The unincorporated portions of Sutter County have rich deposits in mineral resources. The County Surface Mining Code and the Zoning Code both permit the extraction of mineral resources from land under Sutter County's jurisdiction. Historic mining extraction has included kaolin and common clay, sand, soils, rock, pumice, and some gold.

Construction aggregate is currently the county's main market for mining resources produced in the county and consists predominantly of sand, gravel, and crushed stone. The California Geological Survey (CGS, formally the Division of Mines and Geology) has classified regions of the state according to the presence or absence of significant concrete-grade aggregate deposits. The land classification is presented in the form of Mineral Resource Zones, or MRZ's. CGS guidelines for establishing the Mineral Resource Zones are as follows:

> **MRZ-1:** Areas where available geologic information indicates there is little or no likelihood for presence of significant mineral resources.

MRZ-2a: Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present. Areas classified MRZ-2a contain discovered mineral deposits as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.

MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified MRZ-2b contain discovered mineral deposits that are either inferred reserves as determined by limited sample analysis, exposure, and past mining history or are deposits that presently are sub-economic. Further exploration and/or changes in technology or economics could result in upgrading areas classified MRZ-2b to MRZ-2a.

MRZ-3a: Areas containing known mineral occurrences of undetermined mineral resource significance. Further exploration within these areas could result in the reclassification of specific localities as MRZ-2a or MRZ-2b.

MRZ-3b: Areas containing inferred mineral occurrences of undetermined mineral resource significance. Land classified MRZ-3b represents areas in geologic settings that appear to be favorable environments for the occurrence of specific mineral deposits. Further exploration could result in the reclassification of all or part of these areas as MRZ-3a or specific localities as MRZ-2a or MRZ-2b.

MRZ-4: Areas of no known mineral occurrences where geologic information does not rule out the presence or absence of significant mineral resources.

The distinction between the MRZ-1 and the MRZ-4 categories is important for land-use considerations. It must be emphasized that MRZ-4 classification does not imply that there is little or no likelihood for the presence of mineral resources, but rather there is a lack of knowledge regarding mineral occurrence. Further exploration work could well result in the reclassification of land in MRZ-4 areas to a MRZ-3 or MRZ-2 category.

Table 4.2-5 provides the geological information that is the basis for the CGS designations. In 1986, the California Division of Mines and Geology issued Special Report 132 entitled, "Mineral Land Classification: Portland cement and Concrete-Grade Aggregate in the Yuba City-Marysville Production-Consumption Area." That report was prepared pursuant to amendments in SMARA. The report found no significant or substantial deposits located within Sutter County. Under SMARA, any such deposits found in the county would have been required to be protected from conflicting uses. Although the CGS has no areas classified as MRZ-2 documented in Sutter County, pockets of MRZ-1, MRZ-3, and MRZ-4 are found southwest of Yuba City and Live Oak and along the base of the Sutter Buttes.

Qual is a designated unit of geological stratigraphic section under the Quaternary, Holocene sections. The Qual units have proven deposits of PCC-grade aggregate. The predominant non-fuel mineral production in Sutter County consists of sand and gravel aggregate identified as a proven source of Portland Cement Concrete-Grade (PCC) aggregate. Between 0.5 and 2 million tons of aggregate were produced in Sutter County west of Yuba City during 2005.[1]

1 California Geological Survey, *Aggregate Availability in California*. Map Sheet 25, 2006.

Table 4.2-5. Mineral Land Classifications

		Sedimentary Rocks		Volcanic Rocks	
Cenozoic	Quaternary	Qsc	Recent stream channel deposited found in Qual		
		Qf	Recent fan deposits; included in Qual		
		Qb	Recent basin deposits; included in Qual		
Mesozoic	Tertiary			Pv^p	Pliocene volcanic pyroclastic rock

Source: California Geological Survey, *Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Yuba City-Marysville Production Consumption Region.* Special Report 132, 1988.

Current County Mining Operations

There are currently three active mining operations within the County. All of the mines in the County are open-pit mines. There are no deep-shaft mine activities currently. As required by both the County's Surface Mining Code and the SMARA, all of the mines in Sutter County must have a current reclamation plan reviewed and be approved by both the Board of Supervisors and the State of California. Refer to Figure 4.2-5 for the locations of the mining areas.

The joint Yuba-Sutter aggregate yield amounts to approximately 360 to 409 million tons annually, depending on market demands. These estimates indicate that area mines have adequate reserves to meet local needs for the next 75 years. Pockets of sand and gravel have been identified along the Feather and Bear Rivers. These pockets were deposited in the stream channels due to mining activities that occurred upstream during the late 1800s and early 1900s. The aggregate is concrete quality; however currently, no mining activity has occurred in these areas due to environmental impacts and ready supplies in other areas.

The South Butte Quarry is one of Sutter County's larges pit mining operations comprised from the recently merged 1956 Butte Sand and Gravel and the 1974 Butte Ranch mines. The combined mining operations cover approximately 320 acres with a total land holding of over 500 acres, jointly used for agricultural purposes. One aggregate material normally produced from these mines is commonly called "Butte Rock." It is a term associated with the materials found in the foothill area of the Sutter Buttes. This material is weathered volcanic rock and is characterized as a good base material due to its compaction and natural cementing capabilities. Butte Rock, however, lacks the strength required for concrete or other high load aggregate uses. Table 4.2-6 summarizes the permitted surface mining operations found within the county.

The Reclamation District 1001 excavates clay from a location in the southern portion of the County, east of Pacific Avenue just north of Catlett Road. The open pit mine started production in 1993 and is slated to yield approximately one million cubic yards of clay over its lifetime.

Several additional mines have the potential to be active within a few years. One of the mines which is currently inactive but expected to be reactivated in the next couple of years is the "Meyer" mine located west of the Butte Sand & Gravel location. The County expects new applications requesting 3 to 4 mines (borrow pits) to be filed in the next few years due to the material that will be needed for future levee construction and Highway 70 widening. It is anticipated that these will be located in the valley (flat areas) rather than the Buttes as many of the other mining operations are; however, no specific locations are known at this time.

Table 4.2-6. 2006 Permitted Surface Mines

Mine/Operator	Materials Mined	Location	Yield[1]	Reserves
South Butte Quarry/ Butte Sand & Gravel (Butte Sand & Gravel & Butte Ranch combined in 2007 under one reclamation plan)	Sand and gravel	On the south side of the Sutter Buttes, north of South Butte Rd.	1.0 to 2.0 million tons	40 million cubic yards
Bihlman Pit/Bihlman Butte Rock	Sand and gravel	South of North Butte and Pennington Roads	Data not available	Data not available
Reclamation District 1001	Clay	Located in the southern portion of the County on the east side of Pacific Ave. and north of Catlett Rd.	< 1,000 cubic yards	Million cubic yards total allowable yield

Source: Butte Sand and Gravel Company Reclamation Plan, 2007.
[1]Yield is contingent on market demand.

REGULATORY CONTEXT

Federal

There are no specific federal regulations pertaining to local agricultural, soils, or resources that would be applicable.

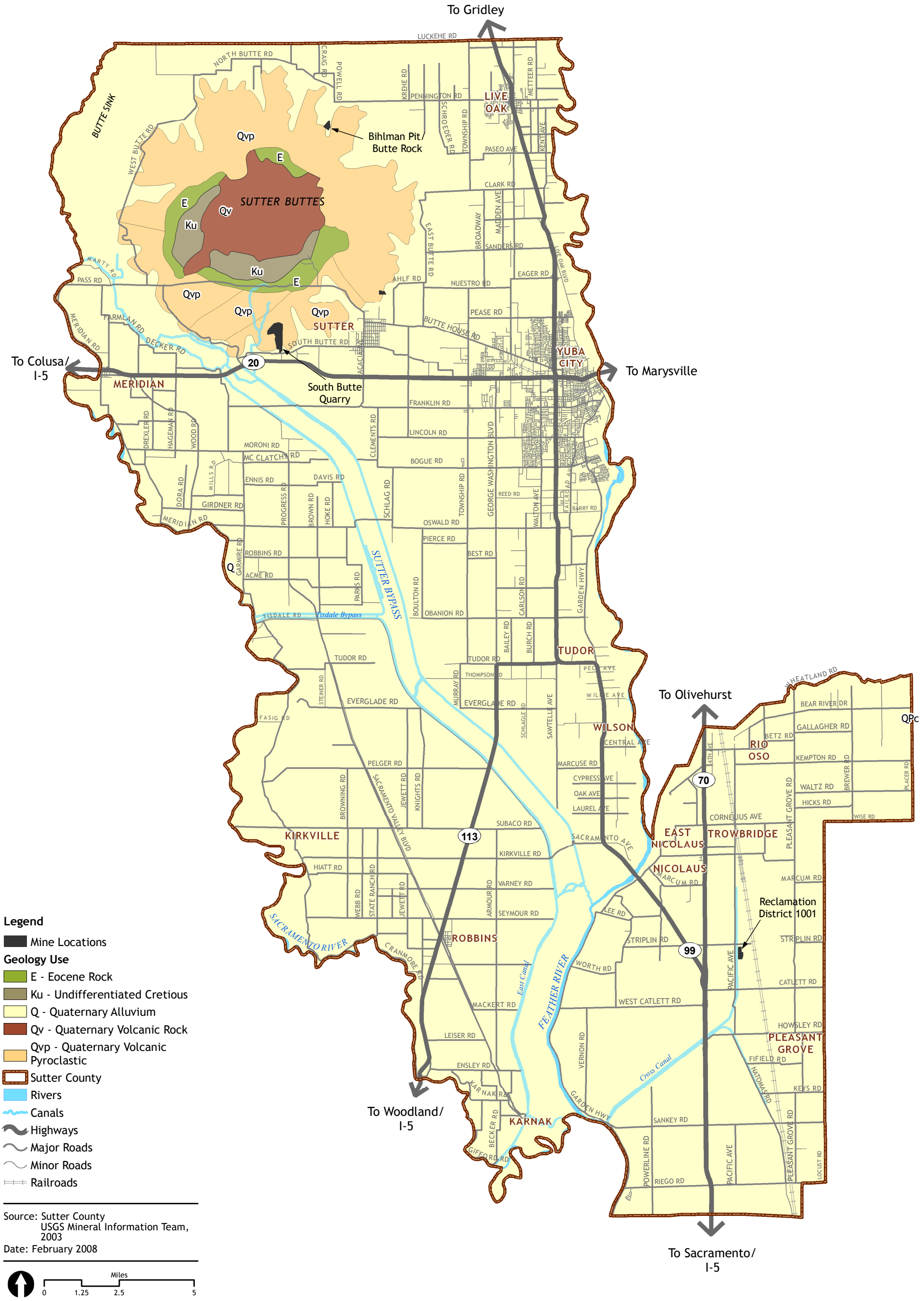
State

California Land Conservation Act of 1965 (Williamson Act)

The California Land Conservation Act of 1965 (or Williamson Act) (California Government Code Section 51200) recognizes the importance of agricultural land as an economic resource which is vital to the general welfare of society. The enacting legislation declares that the preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the State's economic resources, and is necessary not only to the maintenance of the agricultural economy of the State, but also for the assurance of adequate, healthful, and nutritious food for future residents of the State and the nation.

Intended to assist the long-term preservation of prime agricultural land in the State, Williamson Act contracts provide the agricultural landowner with a substantial property tax break for keeping land in agricultural use. When under contract, the landowner no longer pays property tax for an assessed valuation based upon the property's urban development potential. The Williamson Act stipulates that for properties under contract, "the highest and best use of such land during the life of the contract is for agricultural uses." Therefore, property under contract is assessed and taxed based upon its agricultural value. Williamson Act contracts remain in effect for 10 years unless the property owner files for a notice of non-renewal with the County.

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GEOLOGY AND MINERAL OPERATIONS
Figure 4.2-5

Intended to assist the long-term preservation of prime agricultural land in the State, Williamson Act contracts provide the agricultural landowner with a substantial property tax break for keeping land in agricultural use. When under contract, the landowner no longer pays property tax for an assessed valuation based upon the property's urban development potential. The Williamson Act stipulates that for properties under contract, "the highest and best use of such land during the life of the contract is for agricultural uses." Therefore, property under contract is assessed and taxed based upon its agricultural value. Williamson Act contracts remain in effect for 10 years unless the property owner files for a notice of non-renewal with the County.

The Williamson Act also addresses "compatible" uses. In Section 51231, the Williamson Act states that, "…the board or council, by resolution, shall adopt rules governing the administration of agricultural preserves…Rules related to compatible uses shall be consistent with the provisions of Section 51238.1." Section 51238.1 states the following:

> (a) Uses approved on contracted lands shall be consistent with all of the following principles of compatibility:
>
> (1) The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel or parcels or on other contracted lands in agricultural preserves.
>
> (2) The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels or on other contracted lands in agricultural preserves . . .
>
> (3) The use will not result in the significant removal of adjacent contracted land from agricultural or open-space use.

Surface Mining and Reclamation Act

As previously discussed, mining activities are regulated by the SMARA (Public Resources Code Section 2710 et seq.). The purpose of this act is to create and maintain an effective and comprehensive surface mining and reclamation policy with regulation of surface mining operations so as to assure that: (1) adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses; (2) the production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, wildlife, range and forage, and aesthetic enjoyment; and (3) residual hazards to the 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.

Performance standards for mine reclamation are set forth in Section 3700 et seq. of Title 14 of the California Code of Regulations (CCR). With regard to geotechnical considerations, these regulations generally address soil erosion control and drainage, re-soiling and revegetation, backfilling, regrading, slope inclination and stabilization, and recontouring, but the specific methods to achieve conformance with the standards are not specified.

Section 2761 (a) and (b) and 2790 of the SMARA provides for a mineral lands inventory process termed classification-designation. The CGS and the State Mining and Geology Board (SMGB) are the State agencies responsible for administering this process. The primary objective of the process is to provide local agencies, such as cities and counties, with information on the location, need, and importance of minerals within their respective jurisdictions. It is also the intent of this process, through the adoption of general plan mineral resource management

policies, that this information be considered in future local land-use planning decisions (Public Resources Code Section 2762).

Mining operations and mine reclamation activities must be performed in accordance with laws and regulations adopted by the SMGB, which are contained in Section 3500 et seq. of Title 14 of the CCR. The Office of Mine Reclamation (OMR) in the State Department of Conservation oversees reclamation requirements.

Local

Agricultural Operations Disclosure

Under the County's Agricultural Operation Disclosure policy (County Ordinance 1013, Sec. 1; August, 1987), agricultural land and operations within the County are protected exclusively for agricultural use. Agricultural land is defined by the policy as those land areas of the county specifically classed and zoned as Upland Agricultural Districts (U-A), Exclusive Agricultural Districts (A-2), general Agricultural District (AG), Restrictive Agricultural Districts (A-3), and food Processing, Agricultural and Recreation Combining Districts (FPARC).

The policy protects agricultural land and agricultural uses from the impacts and restrictions that often occur when adjacent to residential development. The County requires full disclosure to residents residing adjacent to areas designated for agricultural use. The disclosure warns prospective purchasers and residents of agricultural operations that may cause issues inducing excess sounds, odors, dust, smoke, fertilizers and pesticides that may accompany agricultural operations.

Yuba-Sutter Farm Bureau

The Yuba-Sutter Farm Bureau does not have regulatory power in the County on agricultural land use matters; however the organization does promote guidelines to direct land use in the counties. The Yuba-Sutter County Farm Bureau Board of Directors has adopted the following Land Use Policies to protect the rural lifestyle of Yuba and Sutter Counties.

1. Agricultural planning and land use should be driven by agricultural needs.
2. Encroachment of incompatible uses into an agricultural area should be prevented. Productive agricultural land should be recognized with a high priority by agricultural zoning, and growth should be directed away from such areas.
3. We support local planning which accommodates orderly, logical, and restrictive contiguous patterns of urban development. To help control urban sprawl and protect our agricultural resources, responsible governmental agencies should discourage urban development of agricultural land. Parcelization of agricultural lands into non-viable commercial agricultural units should be discouraged and prohibited whenever possible to maintain the viability of commercial agriculture.
4. Efficient land use plans for existing cities and towns should emphasize infill development, redevelopment, and increased densities to preserve farmland. We would encourage financial incentives for such projects such as permit process expediting, as well as reduced fees. They should encourage efficient use of public services, promote affordable housing, and conserve energy and natural resources.
5. LAFCO should have at least one agricultural representative appointed to its board.

6. Yuba and Sutter Counties should participate fully in the Williamson Act and the Farmland Security Zone Act. Local agricultural property owners should be encouraged to participate.

7. Buffers that protect agricultural operations should be incorporated into Building Standards and included into the Zoning Ordinance and/or General Plan for those parcels that are nonconforming due to size or use. A mandatory "Right to Farm Ordinance" and or "Agricultural Land Disclosure" shall be recorded at the time of property purchase or at the time of any development. (Sample provided)

8. We oppose eminent domain to take private lands for any use other than public use.

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4.3 HYDROLOGY AND WATER QUALITY

INTRODUCTION

This section describes Sutter County's ground and surface water resources relative to hydrology and water quality. Information for this section was obtained from the State Water Resources Control Board (SWRCB), the California Stormwater Quality Association (CASQA), Central Valley Regional Water Quality Control Board, and the Department of Water Resources.

Minimizing pollutants in urban runoff is important because it protects water resources in the county for beneficial uses including water supplies, recreation, industry, and natural habitat.

SUMMARY OF KEY FINDINGS

- Sutter County regulates water quality from construction sites through its Public Works Design Standards, and requires the use of water quality BMPs.
- In the future, Sutter County will need to develop and implement a Watershed Management Plan to be fully compliant with Phase 2 of the NPDES system.
- Agricultural runoff from Sutter County contributes to impaired surface water quality in local drainages and the Sacramento and Feather rivers.
- Urban areas of the County discharge stormwater and treated wastewater to local drainages and rivers which can affect water quality.
- Groundwater levels in the County are relatively stable and groundwater quality generally requires treatment for drinking and is affected by application of fertilizers and other farm chemicals and septic systems.

EXISTING CONDITIONS

Surface Water

Regional Overview

Sutter County is located between the Sacramento River on the west and the Feather River on the east, in the northern portion of the relatively flat Sacramento Valley. Similar to Mediterranean climates, Sutter County's climate is generally characterized by hot, dry summers, with relatively moderate, wet winters. Precipitation rates are greatest during late fall to early spring followed by the dry season from later spring to early fall. Because there are no significant water storage reservoirs in Sutter County, rainfall percolates into the soil, runs off into local streams and rivers, and evaporates. By late summer, most small creeks and streams are generally dry and the rivers are at their lowest levels. Some small creeks have water during the dry season due to agricultural irrigation and drainage and/or from drainage in upstream urban areas.

Sutter County lies entirely within the Sacramento River watershed, which includes the Feather and Bear Rivers. Other notable regional hydrology features are Coon and Pleasant Grove Creeks and Markham and Auburn Ravines in the southeastern portion of the County and the Snake River on the east side of the Sutter Buttes. The Sutter Bypass is a major manmade flood control area that acts as an overflow collector of flood flows in the Sacramento River after

passing through the Butte Slough and the Butte Sink. The Sutter Bypass starts north of Pass Road, westerly of the Sutter Buttes generally in a south-southeast orientation for about 27 miles until it intercepts the Feather River about three miles downriver from the rural community of Nicolaus.

Sacramento River

The Sacramento River is the largest river (in terms of volume of water and length) in the State and drains approximately 27,210 square miles of watershed, including Sutter County. It forms a major portion of the western County boundary as it enters from Colusa County and extends south down to the Sacramento County boundary. The river supports various beneficial uses, including recreational, agricultural, and wildlife. The river is not used for municipal or domestic water supplies in the county. Water quality in the Sacramento River is generally of good quality and is treated and used for municipal and industrial water supplies up and downstream of Sutter County. The State Water Resources Control Board (SWRCB) publishes updates to the *Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins* to improve water quality and maintain beneficial uses in the Sacramento and San Joaquin Rivers. The Basin Plan describes water quality concerns for the Sacramento River that includes agriculture, forestry, urban land uses, and stormwater runoff. Further, the Sacramento River is listed in the SWRCB's Total Maximum Daily Load (TMDL) program for mercury and unknown toxicity. The SWRCB TMDL programs are implemented pursuant to Clean Water Act Section 303(d) for impaired waterbodies. TMDL programs are plans that describe how an impaired waterbody will meet federal water quality standards.

Feather River

The Feather River forms a major portion of Sutter County's eastern boundary. Like the Sacramento River, the Feather River provides beneficial uses, including recreational, agricultural, and wildlife. The City of Yuba City obtains a large portion of its annual water supplies for municipal and domestic use from the river. Water quality in the Feather River is generally good, but is listed in the SWRCB's TMDL program for chlorpyrifos (an agricultural insecticide), Group A pesticides, mercury, and unknown toxicity.

Bear River

The Bear River enters Sutter County from Placer County near the City of Wheatland in Yuba County. It generally flows in a south-southwest direction until it meets the Feather River about one mile upstream from the rural community of Nicolaus. Although smaller than the Sacramento and Feather Rivers, the Bear River also provides beneficial uses that include recreational, agricultural, and wildlife. River flows are generally controlled by the Camp Far West Reservoir in Yuba County. Water quality in the Bear River is generally good, but is listed in the SWRCB's TMDL program for diazinon (a widely used agricultural pesticide).

Agricultural Runoff

Sutter County is dominated by agriculture for production of numerous fruits, vegetables, and row crops. Crops produced in the County include rice, hay, safflower, almonds, plums, and peaches. Farmers in the County use a large variety of herbicides and pesticides during the growing season to control a variety of plant diseases and pests. In addition, farmers use fertilizers to ensure successful crop production. Use of these compounds results in residual concentrations of herbicides, pesticides, and fertilizers entering stormwater runoff or irrigation return water ditches. Some stormwater runoff and return water from agricultural irrigation discharge into local streams and rivers affecting water quality. The SWRCB has identified

agricultural runoff as a major factor affecting water quality in local drainages and the Sacramento, Feather, and Bear Rivers. Water quality data for the Sacramento, Feather, and Bear Rivers list the pesticide diazinon, insecticide chlorpyrifos, and Group A pesticides as constituents that require TMDL monitoring and reduction to ensure beneficial uses within these waterbodies.[1] These pesticides and insecticide are commonly used as part of agricultural practices.

Urban Runoff

Constituents found in urban runoff vary as a result of differences in rainfall intensity and occurrence, geographic features, the land use of a site, as well as vehicle traffic and percent of impervious surface. In the Sutter County region, there is a natural weather pattern of a long dry period from May to October. During this seasonal dry period, pollutants contributed by vehicle exhaust, vehicle and tire wear, crankcase drippings, spills, and atmospheric fallout accumulate within the urban watershed. Precipitation during the early portion of the wet season (November to April) washes these pollutants into the stormwater runoff, which can result in elevated pollutant concentrations in the initial wet weather runoff. This initial runoff with peak pollutant levels is referred to as the "first flush" of a storm event or events. Concentrations of heavy metals present in dry weather runoff (e.g., runoff during the dry season is generated by landscape irrigation, street washing, etc.) are typically lower than concentrations measured in wet weather runoff (runoff generated during the rainy season primarily by precipitation).

Stormwater drainage throughout much of Sutter County is provided by piped storm drain conveyance systems (in the cities) and open channel systems. Stormwater flowing in these systems is either pumped or gravity drains into the Sacramento River, the Sutter Bypass, or the Feather River. These stormwater systems are owned and operated by a variety of agencies including reclamation districts, cities, Sutter County, and the State of California.

Pollutants can enter stormwater runoff as it flows over the ground surface. A summary of pollutant types contained in runoff from various land uses is provided in Table 4.3-1. All of these land use types occur within Sutter County, with agricultural being the most wide spread of these land uses.

Construction is one of the primary activities that can lead to pollutants entering stormwater. One of the most common pollutants from construction sites is sediment from soil erosion. Construction site Best Management Practices (BMPs) are used to prevent contamination of runoff from construction sites. Examples of construction site BMPs from the California Stormwater Quality Association (CASQA) include the following.

- Scheduling construction to occur during non-rainy seasons.
- Preserving existing vegetation.
- Use of mulch or straw to cover the ground surface.
- Use of geotextile fabrics or/and mats to cover the ground surface.
- Use of soil binders to prevent erosion.
- Drainage swales and slope drains.
- Use of sediment basins.

1 State Water Resources Control Board, website: http://www.waterboards.ca.gov/, accessed on November 14, 2007.

Table 4.3-1. Potential Pollutants Generated by Land Use Type

Priority Project Categories	General Pollutant Categories								
	Pathogens	Heavy Metals	Nutrients	Pesticides	Organic Compounds	Sediments	Trash & Debris	Oxygen Demanding Substances	Oil & Grease
Detached Residential Development	X		X	X		X	X	X	X
Attached Residential Development	P		X	X		X	X	P[1]	P[2]
Commercial/Industrial Development >100,000 ft^2	P[3]		P[1]	P[5]	P[2]	P[1]	X	P[5]	X
Automotive Repair Shops		X			X[4,5]		X		X
Restaurants	X						X	X	X
Hillside Development			X	X		X	X	X	X
Parking Lots		X	P[1]	P[2]		P[1]	X	Ps	X
Streets, Highways & Freeways		X	P[1]		X[4]	X	X	P[5]	X
Agricultural	X		X	X	X	X	X	X	

Source: Modified from Table 2-1 of the California Stormwater Quality Association, *Stormwater Best Management Practice Handbook for New Development and Redevelopment,* January 2003.
X = anticipated
P = potential
[1]A potential pollutant if landscaping exists on-site.
[2]A potential pollutant if the project includes uncovered parking areas.
[3]A potential pollutant if land use involves food or animal waste products.
[4]Including petroleum hydrocarbons.
[5]Including solvents.

Permanent BMPs can also be used to reduce pollutants that enter runoff from developed areas after construction is completed. Examples of permanent BMPs from the CASQA include:

- Vegetation and landscaping.
- Pervious pavement.
- Covering trash storage areas, fueling areas, and loading docks. These areas can also be elevated slightly to prevent stormwater from flowing onto these areas. Drains from these areas can also be connected to sanitary sewers rather than storm drains.
- Infiltration trenches and basins.
- Wet or dry treatment basins.
- Treatment wetlands.
- Vegetated swales and buffer strips.
- A variety of commercially available water quality drain inlets.

Sutter County is covered by a Phase 2 permit of the National Pollutant Discharge Elimination System (NPDES) regulations (see discussion under "Regulatory Context" heading below). These regulations are intended to reduce the pollutants that are discharged to surface water bodies. Sutter County has addressed water quality issues through their storm drainage design criteria, as discussed further below, and through the joint Yuba City – Sutter County Stormwater Management Plan to meet Phase 2 NPDES requirements.

Sutter County is currently developing a grading ordinance that will require review and adoption by the County Board of Supervisors.

In addition to stormwater, two urban sewage treatment plants in the County discharge to local channels and rivers. Yuba City discharges its treated effluent to the Feather River. The City of Live Oak discharges its effluent to a Reclamation District 777 drainage canal, which flows to the Sutter Bypass and the Sacramento River. The Central Valley Regional Water Quality Control Board (CVRWQCB) issues permits for wastewater treatment plants. The City of Live Oak maintains its own wastewater treatment plant. The plant was issued a cease and assist order from the CVRWQCB in 1999 due to high levels of residual chlorine, total coliform, and pH in effluent. Because the City of Live Oak is planning to complete a plant upgrade to meet the CVRWQCB's wastewater discharge limitations, the cease and desist order was rescinded on July 9, 2004.[2]

Groundwater

Sutter County is located within the greater Sacramento Valley Groundwater Basin in the Sutter, East Butte, and North American Subbasins. Major surface water sources described above are major sources of groundwater recharge to the groundwater subbasins within Sutter County. Other sources of groundwater recharge in Sutter County are from percolation of rainfall, agricultural irrigation, and subsurface inflow from adjacent groundwater basins. Pumping of groundwater and subsurface outflow to rivers and adjoining subbasins result in a groundwater discharge from Sutter County.

2 Central Valley Regional Water Quality Control Board Order No. R5-2004-0097.

The three subbasins within the county have similar water bearing formations that are used for water supplies for agricultural irrigation and domestic drinking water. The groundwater level trends are reported to be stable within Sutter County and tend to be within about 10 feet below the ground surface. The State Department of Water Resources (DWR) reported that the Sutter Subbasin has an estimated five million acre-feet of usable storage potential for Sutter County. The southern portion of the Butte Subbasin within Sutter County is relatively stable, with seasonal fluctuations in groundwater levels of about four feet during normal precipitation years. The portion of Sutter County within the North American Subbasin experienced some decline, but is relatively stable.[3,4]

Water quality in Sutter County is monitored by DWR, the State Department of Health Services (DHS), and Sutter County. The primary groundwater chemistry in Sutter County is calcium, magnesium, sodium, chloride, sulfate, and bicarbonate. Recent groundwater data in portions of the county report chemical elements and compounds in amounts that exceed drinking water quality safety and aesthetic standards. In addition, groundwater quality is expected to degrade in the future unless measures are taken to reduce contaminants in soil and prevent additional contamination from occurring. In the southern portion of the county within the North American Subbasin, groundwater quality is impaired by high levels of total dissolved solids, manganese, and arsenic. No major areas of groundwater contamination have been reported in Sutter County.[5,6]

REGULATORY CONTEXT

Regulations that are relevant to hydrology and water quality are summarized below.

Federal

Clean Water Act

The Federal Clean Water Act (CWA), established by Congress in 1972, is the cornerstone of surface-water-quality protection in the United States. The 1987 amendments added section 402(p), which regulates municipal, industrial and construction discharges under the NPDES program. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct discharges of pollutants into waterways, finance municipal wastewater-treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. Section 303 of the CWA requires states to adopt water-quality standards for all surface waters of the United States. Section 304(a) requires U.S. EPA to publish water-quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. The CWA prohibits the discharge of pollutants to navigable waters from a point source unless authorized by a NPDES) permit, as described below.

National Pollutant Discharge Elimination System (NPDES) Permits

The NPDES permit system was established in the CWA to regulate municipal and industrial discharges to surface waters of the U.S. Each NPDES permit contains limits on allowable

3 Department of Water Resources, *California's Groundwater*, Bulletin 118.

4 Sutter County, *General Plan Background Report*, November 25, 1996.

5 Department of Water Resources, *California's Groundwater*, Bulletin 118.

6 Sutter County, *General Plan Background Report*, November 25, 1996.

concentrations and mass emissions of pollutants contained in discharges. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that U.S. EPA must consider in setting effluent limits for priority pollutants.

The CWA was amended in 1987 to require NPDES permits for non-point sources (i.e., stormwater) pollutants in discharges. Stormwater sources are diffuse and originate over a wide area rather than from a definable point. The goal of NPDES stormwater regulations is to improve the quality of stormwater discharged to receiving waters to the "maximum extent practicable" through the use of structural and non-structural Best Management Practices (BMPs). BMPs can include the development and implementation of various practices including educational measures (workshops informing public of what impacts results when household chemicals are dumped into storm drains), regulatory measures (local authority of drainage facility design), public policy measures (label storm drain inlets as to impacts of dumping on receiving waters) and structural measures (filter strips, grass swales and detention ponds).

State

Surface Water Quality

The SWRCB and CVRWQCB have established water quality standards that are required by section 303 of the CWA and the Porter-Cologne Water Quality Control Act. The Porter-Cologne Act states that basin plans consist of beneficial uses, water quality objectives, and a program of implementation for achieving water quality objectives. The Water Quality Control Plan, or Basin Plan, prepared by the CVRWQCB, has established water quality numerical and narrative standards and objectives for rivers and their tributaries within its jurisdiction. In cases where the Basin Plan does not contain a standard for a particular pollutant, other criteria, such as U.S. Environmental Protection Agency (U.S. EPA) water quality criteria developed under section 304(a) of the CWA apply.

Because Sutter County drainage is within the Sacramento River watershed, which drains into the Delta, water quality criteria for the Delta is applicable to Sutter County runoff water quality. However, monitoring and enforcement of water quality objectives for the Sacramento River is the responsibility of the CVRWQCB according to objectives identified in a plan developed specifically for the Central Valley Region (Region 5).

Water quality objectives for the Sacramento River are specified in the *Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin* (Basin Plan) prepared by the CVRWQCB in compliance with the federal CWA and the California Water Code (Section 13240). The Basin Plan establishes water quality objectives, and implementation programs to meet stated objectives and to protect the beneficial uses of water in the Sacramento-San Joaquin River Basin. Because Sutter County located within the CVRWQCB's jurisdiction, all discharges to surface water or groundwater are subject to the Basin Plan requirements.

Construction Dewatering

Dewatering during construction is sometimes necessary to keep trenches or excavations free of standing water when improvements or foundations/footings are installed where groundwater levels tend to be shallow. Clean or relatively pollutant-free wastewater that poses little or no threat to water quality may be discharged directly to surface water under certain conditions. The CVRWQCB has adopted a general NPDES permit for short-term discharges of small volumes of wastewater from certain construction-related activities. Permit conditions for the discharge of these types of wastewaters to surface water are specified in "General Order for

Dewatering and Other Low-Threat Discharges to Surface Waters" (Order No. 5-00-175, NPDES No. CAG995001). Discharges may be covered by the permit provided they are: (1) either four months or less in duration; or (2) the average dry weather discharge does not exceed 0.25 million gallons per day. Construction dewatering, well development water, pump/well testing, and miscellaneous dewatering/low-threat discharges are among the types of discharges that may be covered by the permit. The general permit also specifies standards for testing, monitoring, and reporting, receiving water limitations, and discharge prohibitions.

Construction Site Runoff Management

In accordance with NPDES regulations, to minimize the potential effects of construction runoff on receiving water quality, the state requires that any construction activity affecting one acre or more must obtain a General Construction Activity Stormwater Permit (General Permit). The first General Permit was issued in 1992. The SWRCB adopted a revised General Permit in August 1999. Performance standards for obtaining and complying with the General Permit are described in NPDES General Permit No. CAS000002, Waste Discharge Requirements, Order No. 99-08-DWQ. Under the 1999 General Permit, all construction activity over one acre must obtain a General Permit. The General Permit was modified in April 2001 (SWRCB Resolution No. 2001-046) to require permittees to implement specific sampling and analytical procedures to determine whether the BMPs used at permitted construction sites are effective.

General Permit applicants are required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) which includes implementing BMPs to reduce construction effects on receiving water quality by implementing erosion control measures and reducing or eliminating non-stormwater discharges. Examples of typical construction BMPs included in SWPPPs include, but are not limited to: using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; and installing sediment control devices such as gravel bags, inlet filters, fiber rolls, or silt fences to reduce or eliminate sediment and other pollutants from discharging to the City's drainage system or receiving waters.

Local

Sutter County manages discharges of stormwater from construction sites by its Department of Public Works Design Standards, Appendix B. These standards are consistent with the state and federal regulations described above. For construction activities that disturb one acre or more, a Notice of Intent (NOI) to comply with the terms of the State General Permit to Discharge Storm Water Associated with Construction Activities must be submitted to the State Water Resources Control Board. One of the most important terms is to develop and implement a SWPPP. The SWPPP describes how stormwater runoff will be protected at the construction site.

The Sutter County Design Standards further require all construction sites, regardless of the area disturbed, to implement BMPs to mitigate the discharge of pollutants and provide erosion control. The Design Standards reference the California Stormwater Quality Association's *Stormwater Best Management Practice Handbook, Construction* for guidance on use of BMPs.

4.4 AIR QUALITY

INTRODUCTION

This section describes the existing air quality conditions within Sutter County, the County's attainment status for criteria air pollutants, relevant State and federal ambient air quality standards, the regulatory agencies responsible for managing and improving air quality, and the laws and plans that have been adopted to improve air quality. A discussion of global greenhouse gas emissions and the potential for emissions to cumulatively contribute to global climate change is also discussed, in addition to recent regulations passed to monitor and reduce those emissions. Information for this section is based on data from the U.S. Environmental Protection Agency (U.S. EPA), the California Energy Commission (CEC), the Feather River Air Quality Management District (FRAQMD), and the California Air Resources Board (CARB).

The attainment of criteria air pollutants in the county is important for the health and well-being of Sutter County's residents and visitors. Non-attainment of air pollutants increases the risk of adverse health effects to those that live and work in these areas. It is important to note that both the regional and local air quality can affect residents in the county. Planning for communities that reduce people's dependence on the automobile can greatly reduce the amount of emissions generated in the county.

SUMMARY OF KEY FINDINGS

- Air pollutant emissions within the Northern Sacramento Valley Air Basin (NSVAB) are generated by stationary and mobile sources. Mobile sources, which include emissions from motor vehicles, account for the majority of the air pollutant emissions within the NSVAB. Farming operations also contribute 42 percent of the total PM emissions in the entire county.
- The CARB indicates that Sutter County has an existing estimated risk that is between 50 and 500 cancer cases per 1 million people. A significant portion of Sutter County is within the 100 to 250 cancer cases per 1 million people range. There is a higher risk around Yuba City where the cancer risk is as high as 500 cases per 1 million people. There are only very small portions of the county where the cancer risk is between 50 and 100 cases.
- Sutter County is in non-attainment for the federal 8-hour ozone standard, the State 1-hour and 8-hour standards, and the PM_{10} 24-hour standard. Future population growth around the incorporated cities in the county will make attaining these standards challenging. The meteorology and topography of the NSVAB also adds to this challenge.
- Regional efforts, as well as policies adopted by the FRAQMD, indicate that there is acknowledgement of the linkage between land use, transportation, agricultural operations, and air quality.
- While the effects of global warming within Sutter County are difficult to predict, a broad scientific consensus has been reached that concludes that addition of greenhouse gases to the atmosphere by human activities, predominantly the burning of fossil fuels but also land use changes, is increasing the potency of the greenhouse effect and leading to global climate change.

EXISTING CONDITIONS

Regional Climate

Sutter County is located within the Sacramento Valley Air Basin (SVAB) which consists of the northern half of the Central Valley and approximates the drainage basin for the Sacramento River and its tributaries. The SVAB is bounded on the west by the Coast Range, on the north by the Cascade Range, on the east by the Sierra Nevada, and on the south by the San Joaquin Valley Air Basin. The intervening terrain is flat, and approximately 25 feet above sea level. The SVAB consists of the counties of Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and Yuba and portions of Placer and Solano Counties.

Hot dry summers and mild rainy winters characterize the Mediterranean climate of the Sacramento Valley. The climate of the SVAB is dominated by the strength and position of the semi-permanent high-pressure cell over the Pacific Ocean north of Hawaii. In summer, when the high-pressure cell is strongest and farthest north, temperatures are high and humidity is low, although the incursion of the sea breeze into the Central Valley helps moderate the summer heat. In winter, when the high-pressure cell is weakest and farthest south, conditions are characterized by occasional rainstorms interspersed with stagnant and sometimes foggy weather. Throughout the year, daily temperatures may range from summer highs usually exceeding 100 degrees Fahrenheit and winter lows occasionally below freezing. Average annual rainfall is about 20 inches with snowfall being very rare. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

In addition to prevailing wind patterns that control the rate of dispersion of local pollutant emissions, Sutter County experiences two types of inversions that affect the vertical depth of the atmosphere through which pollutants can be mixed. In the warmer months in the SVAB (May through October), sinking air forms a "lid" over the region. These subsidence inversions contribute to summer photochemical smog problems by confining pollution to a shallow layer near the ground. These warmer months are characterized by stagnant morning air or light winds with the delta sea breeze arriving in the afternoon out of the southwest. Usually, the evening breeze transports the airborne pollutants to the north and out of the SVAB. During about half of the day from July to September, however, a phenomenon called the “Schultz Eddy” prevents this from occurring. Instead of allowing the prevailing wind patterns to move north carrying the pollutants out of the valley, the Schultz Eddy causes the wind pattern to circle back south. This phenomenon exacerbates the pollution levels in the area and increases the likelihood of violating federal or State standards. The Schultz Eddy normally dissipates around noon when the Delta sea breeze begins.

In the second type of inversion, the mountains surrounding the SVAB create a barrier to airflow which can trap air pollutants in the valley. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells lie over the valley. The air near the ground cools by radiative processes, while the air aloft remains warm. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in a stable volume of air. These inversions typically occur during winter nights and can cause localized air pollution "hot spots" near emission sources because of poor dispersion. The surface concentrations of pollutants are highest when these conditions are combined with smoke from agricultural burning or when temperature inversions trap cool air and pollutants near the ground. Although these subsidence and radiative inversions are present throughout much of the year, they are much less dominant during spring and fall, and the air quality during these seasons is generally good.

Local Climate

The climate of Sutter County is subject to hot dry summers and mild rainy winters which characterize the Mediterranean climate of the SVAB. Summer temperatures average approximately 90 degrees Fahrenheit during the day and 50 degrees Fahrenheit at night. Winter daytime temperatures average in the low 50s and nighttime temperatures are mainly in the upper 30s.

During summer, prevailing winds are from the south. This is primarily because of the north-south orientation of the valley and the location of the Carquinez Strait, a sea-level gap in the coast range that is southwest of Sutter County. During winter, atmospheric conditions cause north winds to become more frequent, but winds from the south still predominate.

Criteria Air Pollutants

Criteria air pollutants are a group of pollutants for which federal or State regulatory agencies have adopted ambient air quality standards. Criteria air pollutants are classified in each air basin, county, or in some cases, within a specific urbanized area. The classification is determined by comparing actual monitoring data with State and federal standards. If a pollutant concentration is lower than the standard, the area is classified as "attainment" for that pollutant. If an area exceeds the standard, the area is classified as "non-attainment" for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated "unclassified."

Ambient Air Quality Standards

Both the federal and State government have established ambient air quality standards for outdoor concentrations of various pollutants in order to protect public health. The federal and State ambient air quality standards have been set at levels whose concentrations could be generally harmful to human health and welfare and to protect the most sensitive persons from experiencing health impacts with a margin of safety. Applicable ambient air quality standards are identified later in this section.

The air pollutants for which federal and State standards have been promulgated and which are most relevant to air quality planning and regulation in the air basins include ozone, carbon monoxide, nitrogen oxides, suspended particulate matter, sulfur dioxide, and lead. In addition, toxic air contaminants are of concern in Sutter County. Each of these pollutants is briefly described below.

- **Ozone (O_3)** is a gas that is formed when reactive organic gases (ROGs) and nitrogen oxides (NO_X), both byproducts of internal combustion engine exhaust and other processes undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.

- **Carbon Monoxide (CO)** is a colorless, odorless gas produced by the incomplete combustion of fuels. CO concentrations tend to be the highest during the winter morning, with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the SVAB. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.

- **Nitrogen Oxides (NO_X)** is the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Many of the nitrogen oxides are colorless and odorless. However, one common pollutant, nitrogen dioxide (NO_2) along with particles in the air can often be seen as a reddish-brown layer over many urban areas. Nitrogen oxides form when fuel is burned at high temperatures, as in a combustion process. The primary manmade sources of NO_X are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels. Nitrogen oxides can also be formed naturally.

- **Respirable Particulate Matter (PM_{10})** and **Fine Particulate Matter ($PM_{2.5}$)** consist of extremely small, suspended particles or droplets 10 microns and 2.5 microns or smaller in diameter. Some sources of suspended particulate matter, like pollen and windstorms, occur naturally. However, in populated areas, most fine suspended particulate matter is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities.

- **Sulfur Dioxide (SO_2)** is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of the burning of high sulfur-content fuel oils and coal, and from chemical processes occurring at chemical plants and refineries.

- **Lead** occurs in the atmosphere as particulate matter. The combustion of leaded gasoline is the primary source of airborne lead. Since the use of leaded gasoline is no longer permitted for on-road motor vehicles, lead is not a pollutant of concern in the SVAB.

- **Toxic Air Contaminants (TACs)** are known to be highly hazardous to health, even in small quantities. TACs are airborne substances capable of causing short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects (i.e., injury or illness). TACs can be emitted from a variety of common sources, including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations.

  TAC impacts are assessed using a maximum individual cancer risk (MICR) that estimates the probability of a potential maximally exposed individual (MEI) contracting cancer as a result of sustained exposure to toxic air contaminants over a constant period of 24 hours per day for 70 years for residential receptor locations. The CARB and local air districts have determined that any stationary source posing an incremental cancer risk to the general population (above background risk levels) equal to or greater than 10 people out of 1 million to be excessive. For stationary sources, if the incremental risk of exposure to project-related TAC emissions meets or exceeds the threshold of 10 excess cancer cases per 1 million people, the CARB and local air district require the installation of best available control technology (BACT) or maximum available control technology (MACT) to reduce the risk threshold. To assess risk from ambient air concentrations, the CARB has conducted studies to determine the total cancer inhalation risk to individuals due to outdoor toxic pollutant levels. The CARB has conducted studies to determine the total cancer inhalation risk to individuals due to outdoor toxic pollutant levels. According to the map prepared by the CARB showing the estimated inhalation cancer risk for TACs in the State of California, Sutter County has an existing estimated risk that is between 50 and 500 cancer cases per 1 million people. A significant portion of Sutter County is within the

100 to 250 cancer cases per 1 million people range. There is a higher risk around Yuba City where the cancer risk is as high as 500 cases per 1 million people. There are only very small portions of the County where the cancer risk is between 50 and 100 cases.[1] This represents the lifetime risk that between 50 and 500 people in 1 million may contract cancer from inhalation of toxic compounds at current ambient concentrations under an MEI scenario.

Federal and State Air Quality Standards

Table 4.4-1 identifies the federal and State ambient air quality standards that are applicable in California. Table 4.4-2 lists the health effects associated with these pollutants.

Table 4.4-1. Ambient Air Quality Standards Applicable in California

Pollutant	Averaging Time	Standard (ppm)[4]		Standard (µg/m^3)[5]	
		State[1]	Federal[2]	State[1]	Federal[2]
Ozone (O_3)	1-hour	0.09	0.12	-	-
	8-hour	0.07	0.08	-	-
Carbon Monoxide (CO)	1-hour	20	35	-	-
	8-hour	9.0	9.0	-	-
Nitrogen Dioxide (NO_2)	1-hour	0.25	-	-	-
	Annual arithmetic mean	-	0.053	-	-
Sulfur Dioxide (SO_2)	1-hour	0.25	-	-	-
	24-hour	0.04	0.14	-	-
	Annual arithmetic mean	-	0.03	-	-
Hydrogen Sulfide (H_2S)	1-hour	0.03	-	-	-
Vinyl Chloride (C_2H_3Cl)	24-hour	0.01	-	-	-
Particulate Matter – 10 microns or less (PM_{10})	24-hour	-	-	50	150
	Annual arithmetic mean	-	-	20	-
Particulate Matter – 2.5 microns or less ($PM_{2.5}$)	24-hour	-	-	-	35
	Annual arithmetic mean	-	-	12	15
Sulfate Particles (SO_4)	24-hour	-	-	25	-
Lead Particles (Pb)	30 days	-	-	1.5	-
	Calendar quarter	-	-	-	1.5

Source: California Air Resources Board, Ambient Air Quality Standards, http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, Accessed August 31, 2007.

[1]California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter (PM10 and PM2.5), and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 on Title 17 of the California Code of Regulations.

[2]National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

[4] ppm = parts per million by volume.

[5] µg/m3 = micrograms per cubic meter.

1 California Air Resources Board, Cancer Inhalation Risk: Local Trend Maps, Yuba-Sutter: 2001 Cancer Risk Per Million, http://arb.ca.gov/toxics/cti/hlthrisk /cncrinhl/rskmapvwtrend.htm, accessed August 29, 2007.

Table 4.4-2. Health Effects of Main Criteria Air Pollutants

Pollutant	Adverse Effects
Ozone	• Ozone can irritate lung airways and cause inflammation. Other symptoms include wheezing, coughing, and breathing difficulties during exercise or outdoor activities. People with respiratory problems are most vulnerable, but even healthy people that are active outdoors can be affected when ozone levels are high. • Repeated exposure to ozone pollution for several months may cause permanent lung damage. • Even at very low levels, ground-level ozone triggers a variety of health problems including aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis. • Ground-level ozone interferes with the ability of plants to produce and store food, which makes them more susceptible to disease, insects, other pollutants, and harsh weather. • Ozone reduces crop and forest yields and increases plant vulnerability to disease, pests, and weather.
Carbon Monoxide	• The health threat from lower levels of CO is most serious for those who suffer from heart disease. For a person with heart disease, a single exposure to CO at low levels may cause chest pain and reduce that person's ability to exercise; repeated exposures may contribute to other cardiovascular effects. • Healthy people can be affected by high levels of CO as well. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity, and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death. • CO contributes to the formation of ground-level ozone, which can trigger serious respiratory problems.
Particulate Matter	• Particle pollution, especially fine particles, contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including: increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; decreased lung function, aggravated asthma, development of chronic bronchitis; irregular heartbeat, nonfatal heart attacks; and premature death. • Particles can be carried over long distances by wind and then settle on ground or water. The effects of this settling include: making lakes and streams acidic; changing the nutrient balance in coastal waters and large river basins; depleting the nutrients in soil; damaging sensitive forests and farm crops; and affecting the diversity of ecosystems.
Nitrogen Dioxide	• One of the main ingredients involved in the formation of ground-level ozone, which can trigger serious respiratory problems. • Reacts to form nitrate particles, acid aerosols, as well as NO2, which also cause respiratory problems. • Contributes to formation of acid rain; to nutrient overload that deteriorates water quality; and to atmospheric particles that cause visibility impairment. • Reacts to form toxic chemicals.
Sulfur Dioxide	• SO_2 causes a wide variety of health and environmental impacts because of the way it reacts with other substances in the air. • Peak levels of gaseous SO_2 can cause temporary breathing difficulty for people with asthma who are active outdoors. Longer-term exposures to high levels of SO_2 gas and particles cause respiratory illness and aggravate existing heart disease. • SO_2 reacts with other chemicals in the air to form tiny sulfate particles. When these are breathed, they gather in the lungs and are associated with increased respiratory symptoms and disease, difficulty in breathing, and premature death.
Lead	• People, animals, and fish are mainly exposed to lead by breathing and ingesting it in food, water, soil, or dust. Lead accumulates in the blood, bones, muscles, and fat. Infants and young children are especially sensitive to even low levels of lead. • Excessive exposure to lead causes seizures, mental retardation, behavioral disorders, memory problems, and mood changes. Low levels of lead damage the brain and nerves in fetuses and young children, resulting in learning deficits and lowered IQ. • Lead exposure causes high blood pressure and increases heart disease, especially in men. Lead exposure may also lead to anemia.

Source: Environmental Protection Agency, Six Common Air Pollutants, http://www.epa.gov/air//urbanair/6poll.html, accessed August 29, 2007.

Stationary and Mobile Sources

Air pollutant emissions within the SVAB are generated by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources.

Point sources are usually subject to a permit to operate from the local air district, occur at specific identified locations, and are usually associated with manufacturing and industry. Examples of point sources include refineries, concrete batch plants, and can coating operations.

Area sources are widely distributed and produce many small emissions, and do not require permits to operate from any air agency. Examples of area sources include residential and commercial water heaters, painting operations, portable generators, lawn mowers, and consumer products such as barbeque lighter fluid and hairspray. The wide-spread use of these items and operations contributes to regional air pollution.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources are those that are legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, racecars, and construction vehicles. Mobile sources account for the majority of the air pollutant emissions within the SVAB.

Regional Air Quality

Regionally, some portions of the SVAB have fewer air quality problems than others. Only the southern portion of the SVAB is in non-attainment for federal ozone standards, which includes the southern portion of Sutter County. Regarding State standards, the entire SVAB is in non-attainment for ozone and PM standards.

Even though the SVAB does not attain certain standards, air quality has improved over time. Pollutant levels have decreased dramatically since the 1980s even with substantial region-wide population growth.

Local Air Quality

The CARB collects ambient air quality data through a network of air monitoring stations throughout the State. Many of the monitoring stations are part of the State and Local Air Monitoring Network Plan (SLAM) which collect data on ambient levels of gaseous and particular air pollutants which are used to determine attainment status. There are two monitoring stations in Sutter County: the Yuba City – Almond Street station and the Sutter Buttes – S Butte station. While the Yuba City station collects data on ozone, carbon monoxide, PM_{10}, $PM_{2.5}$, and nitrogen dioxide, the Sutter Buttes station only collects data on ozone.

Table 4.4-3 lists the ambient pollutant concentrations that have been measured within the county through the period of 2004 to 2006. As shown, Sutter County has a recent history of federal exceedances for the 8-hour ozone standard. Sutter County has also exceeded the State standards for the ozone 1-hour average, the ozone 8-hour average, and the PM_{10} standards. The federal and state standards for CO, $PM_{2.5}$, and NO_2 have not been exceeded during this time.

Table 4.4-3. Exceedances of Federal and State Air Pollution Standards in Sutter County[1]

Pollutant	Standard[2]	2004	2005	2006
Ozone (1-hour)				
Highest 1-hour measurement	-	0.100 ppm	0.096 ppm	0.110 ppm
# days over Federal standard	0.12 ppm	0	0	0
# days over State standard	0.09 ppm	1	4	5
Ozone (8-hour)				
Highest 8-hour measurement	-	0.081 ppm	0.073 ppm	0.081 ppm
# days over Federal standard	0.08 ppm	1	0	2
# days over State standard	0.07 ppm	3	7	10
Carbon Monoxide (CO 8-hour)				
Highest 8-hour measurement	-	2.54 ppm	3.39 ppm	2.29 ppm
# days over Federal standard	9.0 ppm	0	0	0
# days over State standard	9.0 ppm	0	0	0
Particulate Matter (PM_{10})				
Highest 24-hour concentration	-	53.0 µg/m^3	60.0 µg/m^3	66.0 µg/m^3
# days over Federal standard	150.0 µg/m^3	0	0	0
# days over State standard	50.0 µg/m^3	1	5	4
Particulate Matter ($PM_{2.5}$)				
Highest 24-hour concentration	-	41.0 µg/m^3	47.2 µg/m^3	51.6 µg/m^3
# days over Federal standard	35.0 µg/m^3	0	0	0
Annual Mean	-	10.1 µg/m^3	10.2 µg/m^3	11.2 µg/m^3
Annual Mean over State standard	12.0 µg/m^3	n/a	n/a	n/a
Nitrogen Dioxide (NO_2)				
Highest 1-hour measurement	-	0.066 ppm	0.062 ppm	0.070 ppm
# days over State standard	0.25 ppm	0	0	0
Annual Mean	-	0.012 ppm	0.012 ppm	0.012 ppm
Annual Mean over Federal standard	0.053 ppm	n/a	n/a	n/a

Source: California Air Resources Board, Air Quality Data Statistics, http://www.arb.ca.gov/adam/welcome.html, accessed August 30, 2007.

[1]Data is derived from the Yuba City-Almond Street station due to the limited data collection capabilities of the Sutter Buttes-S Butte station. The Sutter Buttes station only collects data about ozone, while the Yuba City station collects data for all the pollutants listed above.

[2]It should be noted that according to the California Air Resources Board, an exceedance is not necessarily a violation of federal or State standards.

Attainment Status

As specified in the California Clean Air Act (CCAA) of 1988, 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 CCAA requires that an Attainment Plan be developed by all non-attainment districts for O_3, CO, sulfur oxides (SO_X), and NO_X that are either receptors or contributors of transported air pollutants. Districts are required to update the Plan every three years. The purpose of this Plan is to comply with the requirements of the CCAA as implemented through the California Health and Safety Code.

In compliance with the CCAA, the FRAQMD, in conjunction with other air districts in the NSVAB, prepared the 2003 NSVAB Air Quality Attainment Plan (AQAP) to address the non-attainment status for ozone and respirable PM_{10}. The NSVAB includes the following counties located in the northern portion of the SVAB: Butte, Colusa, Glenn, Shasta, Sutter, Tehama, and Yuba. This triennial update of the NSVAB AQAP discusses the progress made in implementing the 2000 plan and proposes modifications to the strategies necessary to attain the California ambient air quality standard for the 1-hour ozone standard at the earliest practicable date. The 2003 Plan

also identifies the air pollution problems to be cooperatively addressed on as many fronts as possible with the cooperation of other air districts. Like the 1994, 1997 and 2000 Plans, the 2003 Plan focuses on the adoption and implementation of control measures for stationary sources, area wide sources, indirect sources, and address public education and information programs. The 2003 Plan also addresses the effect that pollutant transport has on the NSVAB's ability to meet and attain the State standards.[2] Table 4.4-4 shows the District's attainment status for criteria air pollutants.

Table 4.4-4. Criteria Air Pollutants Attainment Status of the Feather River Air Quality Management District Area

Pollutant	State Standards	Federal Standards
Ozone (1-hour)	**Non-attainment**	N/A
Ozone (8-hour)	**Non-attainment**	**Non-attainment**
Carbon Monoxide	Attainment	N/A
PM_{10}	**Non-attainment**	Unclassified
$PM_{2.5}$	Unclassified	N/A
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified/Attainment
Sulfates	Attainment	N/A
Lead	Attainment	N/A
Hydrogen Sulfide	Unclassified	N/A
Visibility Reducing Particles	Unclassified	N/A

Source: Feather River Air Quality Management District, 2004 FRAQMD Area Designations for State and National Ambient Air Quality Standards, http://www.fragmd.org, accessed August 30, 2007.

Ozone violations are caused in part, within the NSVAB, by combustion sources and have occasionally been influenced by smoke impacts due to nearby wildfires. The primary emission source is the internal combustion engine. The ozone problem is further aggravated by transport from the greater Sacramento region, which is comprised of Sacramento County, and portions of El Dorado, Placer, Sutter, and Yolo Counties. Ozone is formed by a photochemical reaction of the ozone precursors, nitrogen oxides and reactive organic gases. These ozone precursors are emitted as part of the exhaust of internal combustion engines in the NSVAB and greater Sacramento area and are transported northward via prevailing winds. Due to the regional nature of the ozone problem and the fact that the NSVAB counties share the same air basin with the greater Sacramento area, the 2003 Attainment Plan is prepared in conjunction with the Sacramento Valley Air Basin Control Council's Technical Advisory Committee.

The CARB has outlined, in the approved 1994 State Implementation Plan (SIP) for ozone, new control strategies that will be developed and implemented over the next decade in California. This 2003 Plan contains the suggested control measures included in the 2000 Plan along with the Tier 1 Control Measures (*Identification of Achievable Performance Standards and Emerging Technologies for Stationary Sources – March 1998*; *Identification of Performance Standards for Existing Stationary Sources – Updated May 16, 2002*). These control measures will reduce air pollution throughout California and ensure continued progress towards meeting or maintaining federal standards, as well as progress towards California's more stringent health protective State standards.

2 Feather River Air Quality Management District, Northern Sacramento Valley Air Basin, 2003 Air Quality Attainment Plan, http://www.fraqmd.org/FinalNSVAB/2003PlanContents.htm, Accessed August 31, 2007.

With the SIP as the State's established control strategy for the future, the CARB found that the NSVAB Districts would not be required to prepare a comprehensive Plan update for 2003. Instead, districts were directed to focus on implementing their existing control strategies and SIP commitments. The 2003 Plan update incorporates three general principles that guide air districts in their planning process:[3]

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.

While air quality is gradually improving and tons of ROG and NO_x have been removed from the emission inventory, the District must continue to reduce emissions to meet and maintain state healthful air quality levels. Incentive programs, such as the Carl Moyer Program, assist the District in achieving the necessary NO_x and PM emission reductions to meet these objectives and requirements. Without incentive programs, emission reductions would have to be obtained from industry and other sources or through regulatory measures, where reductions are not typically as cost effective.

Sutter County Emission Contributions

Table 4.4-5 presents the latest average daily emissions for a variety of air pollutants including total organic gases (TOG), ROG, CO, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ for Sutter County. It should be noted that there is a wide variety of activities that contribute to the emission of criteria air pollutants. The sources that are most associated with producing these pollutants come from fuel combustion, petroleum production, farming operations, and motor vehicles. Other contributions come from waste disposal, cleaning and surface coatings, solvent evaporation, and natural sources. Natural sources make up approximately five percent of Sutter County's emissions totals. It should also be noted that farming operations in Sutter County contribute approximately 42 percent to the total PM emissions (11.51 tons of PM per day from farming operations with 27.26 tons of PM per day for the entire county).

Within Sutter County, there are a number of facilities that emit significant amounts of air pollutants which contribute to the ambient air quality in the county and in the entire FRAQMD. Table 4.4-6 shows the various point source facilities located in Sutter County that report emissions to the CARB. A search on the CARB's database revealed 48 facilities in the county that contribute to the ambient air quality in the region, including gas stations, print shops, auto body shops, and dry cleaners.

Sensitive Receptors

Some individuals are considered to be more sensitive than others to air pollution. Reasons for greater sensitivity can include existing health problems, duration of exposure to air pollutants, or certain peoples' increased susceptibility to pollution-related health problems due to factors such as age.

3 Feather River Air Quality Management District, Northern Sacramento Valley Air Basin, 2003 Air Quality Attainment Plan, http://www.fraqmd.org/FinalNSVAB/2003PlanContents.htm, Accessed August 31, 2007.

Table 4.4-5. 2006 Estimated Average Daily Emissions for Sutter County (tons/day)

	TOG	ROG	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$
STATIONARY SOURCES								
Fuel Combustion								
Electric Utilities	0.29	0.03	0.34	0.78	0.02	0.12	0.12	0.12
Cogeneration	0.00	0.00	-	-	0.00	0.00	0.00	0.00
Oil and Gas Production (combustible)	0.83	0.24	0.43	1.76	0.00	0.05	0.00	0.05
Manufacturing and Industrial	0.03	0.01	0.14	0.41	0.05	0.03	0.03	0.03
Food and Agricultural Processing	0.19	0.16	0.40	1.89	0.02	0.14	0.13	0.13
Service and Commercial	0.06	0.01	0.46	0.23	0.01	0.05	0.05	0.05
Other (fuel combustion)	0.01	0.00	0.02	0.09	0.00	0.01	0.00	0.01
Total Fuel Combustion	**1.41**	**0.45**	**1.78**	**5.15**	**0.11**	**0.40**	**0.34**	**0.39**
Cleaning and Surface Coatings								
Laundering	0.02	0.00	-	-	-	-	-	-
Degreasing	0.18	0.14	-	-	-	-	-	-
Coatings and Related Process solvents	0.13	0.12	-	-	-	-	-	-
Printing	0.01	0.01	-	-	-	-	-	-
Adhesives and Sealants	0.03	0.02	-	-	-	-	-	-
Total Cleaning and Surface Coatings	**0.39**	**0.32**	**-**	**-**	**-**	**-**	**-**	**-**
Petroleum Production and Marketing								
Oil and Gas Production	8.63	2.47	0.00	0.00	-	-	-	-
Petroleum Refining	0.02	0.01	-	-	-	-	-	-
Petroleum Marketing	0.17	0.17	-	-	-	-	-	-
Other (Petroleum Production and Marketing)	0.00	0.00	-	-	-	-	-	-
Total Petroleum Production and Marketing	**8.82**	**2.65**	**0.00**	**0.00**	**-**	**-**	**-**	**-**
Industrial Processes								
Food and Agricultural	0.01	0.01	-	-	-	1.87	1.04	0.40
Mineral Processes	-	-	-	-	-	0.35	0.20	0.10
Wood and Paper	-	-	-	-	-	0.20	0.12	0.07
Other (Industrial Processes)	-	-	-	-	-	0.06	0.02	0.02
Total Industrial Processes	**0.01**	**0.01**	**-**	**-**	**-**	**2.47**	**1.38**	**0.60**
Total Stationary Sources	**10.62**	**3.43**	**1.78**	**5.15**	**0.11**	**2.88**	**1.72**	**0.99**

Table 4.4-5. 2006 Estimated Average Daily Emissions for Sutter County (tons/day)

	TOG	ROG	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$
AREAWIDE SOURCES								
Solvent Evaporation								
Consumer Products	0.68	0.57	-	-	-	-	-	-
Architectural Coatings and Related Process Solvents	0.27	0.26	-	-	-	-	-	-
Pesticides/Fertilizers	0.88	0.88	-	-	-	-	-	-
Asphalt Paving/Roofing	0.13	0.13	-	-	-	-	-	-
Total Solvent Evaporation	**1.95**	**1.84**	-	-	-	-	-	-
Miscellaneous Processes								
Residential Fuel Combustion	0.67	0.30	4.56	0.22	0.01	0.70	0.66	0.63
Farming Operations	2.32	0.19	-	-	-	11.51	5.23	0.78
Construction and Demolition	-	-	-	-	-	1.26	0.62	0.06
Paved Road Dust	-	-	-	-	-	3.35	1.53	0.23
Unpaved Road Dust	-	-	-	-	-	3.83	2.27	0.23
Fugitive Windblown Dust	-	-	-	-	-	2.35	1.07	0.18
Fires	0.00	0.00	0.02	0.00	-	0.00	0.00	0.00
Managed Burning and Disposal	0.89	0.49	5.85	0.39	0.07	0.64	0.63	0.60
Cooking	0.01	0.01	-	-	-	0.06	0.04	0.03
Total Miscellaneous Processes	**3.90**	**0.98**	**10.42**	**0.62**	**0.08**	**23.71**	**12.06**	**2.75**
Total Area-wide Sources	**5.85**	**2.82**	**10.42**	**0.62**	**0.08**	**23.77**	**12.06**	**2.75**
MOBILE SOURCES								
On-Road Motor Vehicles								
Light Duty Passenger (LDA)	0.81	0.75	6.66	0.58	0.00	0.03	0.03	0.02
Light Duty Trucks (LDT1)	0.50	0.47	4.56	0.45	0.00	0.02	0.02	0.01
Light Duty Trucks (LDT2)	0.41	0.37	3.85	0.49	0.00	0.02	0.02	0.01
Medium Duty Trucks (MDV)	0.19	0.17	1.98	0.27	0.00	0.01	0.01	0.01
Light Heavy Duty Gas Trucks 1 (LHDV1)	0.10	0.09	0.71	0.09	0.00	0.00	0.00	0.00
Light Heavy Duty Gas Trucks 2 (LHDV2)	0.04	0.03	0.26	0.03	0.00	0.00	0.00	0.00
Medium Heavy Duty Gas Trucks (MHDV)	0.15	0.14	1.06	0.07	-	0.00	0.00	0.00
Heavy Heavy Duty Gas Trucks (HHDV)	0.05	0.04	0.62	0.05	-	0.00	0.00	-
Light Heavy Duty Diesel Trucks 1 (LHDV1)	0.01	0.01	0.04	0.21	0.00	0.00	0.00	0.00
Light Heavy Duty Diesel Trucks 2 (LHDV2)	0.00	0.00	0.02	0.09	0.00	0.00	0.00	0.00
Medium Heavy Duty Diesel Trucks (MHDV)	0.01	0.01	0.12	0.63	0.01	0.02	0.02	0.02
Heavy Heavy Duty Diesel Trucks (HHDV)	0.49	0.43	1.75	6.39	0.05	0.27	0.27	0.24
Motorcycles (MCY)	0.13	0.12	0.98	0.03	-	0.00	0.00	0.00
Heavy Duty Diesel Urban Buses (UB)	-	-	-	0.00	-	-	-	-
Heavy Duty Gas Urban Buses (UB)	0.00	0.00	0.01	0.00	-	-	-	-

Table 4.4-5. 2006 Estimated Average Daily Emissions for Sutter County (tons/day)

	TOG	ROG	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$
School Buses (SB)	0.00	0.00	0.03	0.04	0.00	0.00	0.00	0.00
Other Buses (OB)	0.01	0.01	0.05	0.01	-	0.00	0.00	0.00
Motor Homes (MH)	0.01	0.01	0.23	0.03	0.00	0.00	0.00	0.00
Total On-Road Motor Vehicles	**2.89**	**2.66**	**22.93**	**9.47**	**0.08**	**0.39**	**0.38**	**0.31**
Other Mobile Sources								
Aircraft	0.03	0.03	0.85	0.00	0.00	-	-	-
Trains	0.05	0.05	0.13	0.68	0.04	0.02	0.02	0.02
Recreational Boats	0.15	0.15	0.36	0.02	-	0.00	0.00	0.00
Off-Road Recreational Vehicles	0.06	0.06	0.53	0.01	-	0.00	0.00	0.00
Off-Road Equipment	0.48	0.43	2.89	1.19	0.01	0.07	0.07	0.07
Farm Equipment	0.74	0.64	3.16	3.14	0.03	0.19	0.19	0.19
Fuel Storage and Handling	0.08	0.08	-	-	-	-	-	-
Total Other Mobile Sources	**1.60**	**1.43**	**7.93**	**5.04**	**0.08**	**0.29**	**0.29**	**0.26**
Total Mobile Sources	**4.49**	**4.09**	**30.86**	**14.51**	**0.15**	**0.67**	**0.67**	**0.58**
NATURAL (NON-ANTHROPOGENIC) SOURCES								
Natural Sources								
Biogenic Sources	3.62	3.20	-	-	-	-	-	-
Geogenic Sources	0.02	0.00	-	-	-	-	-	-
Total Natural Sources	**3.64**	**3.20**	**-**	**-**	**-**	**-**	**-**	**-**
Total Natural (non-anthropogenic) Sources	**3.64**	**3.20**	**-**	**-**	**-**	**-**	**-**	**-**
GRAND TOTAL FOR SUTTER COUNTY	**24.61**	**13.54**	**43.06**	**20.27**	**0.35**	**27.26**	**14.45**	**4.31**

Source: California Air Resources Board, Almanac Emission Projection Data, http://www.arb.ca.gov/app/emsinv/emssumcat.php, Accessed August 30, 2007.

Table 4.4-6. Point Source Facilities and Criteria Pollutant Emissions (tons/year)

Facility Name	Address	City/County	Zip	TOG	ROG	CO	NOx	SOx	$PM_{2.5}$	PM_{10}
99 Travel Center	4142 S. Highway 99	Yuba City	95991	0.96	0.96	0.00	0.00	0.00	0.00	0.00
A & A Concrete Supply, Inc	1201 Market St	Yuba City	95991	0.00	0.00	0.00	0.00	0.00	8.94	2.27
Anacapa Oil 2001	Kellogg #2	Sutter Co.	95982	4.23	0.39	4.10	7.34	0.01	0.15	0.15
Anacapa Oil 2003	Frye #5	Sutter Co.	95982	9.01	0.82	2.88	20.01	0.00	0.08	0.08
Atlantic Oil 2030	Site 21221	Sutter Co.	95982	19.10	1.75	0.43	2.13	0.00	0.01	0.01
Atlantic Oil 2031	Atlantic Giusti #1	Sutter Co.	95982	6.77	0.62	1.44	12.22	0.00	0.00	0.00
Atlantic Oil 2076	Frye #1 S 27, T15n R1e	Sutter Co.	95982	5.30	0.48	17.24	0.88	0.49	15.47	0.01
Butte Sand & Gravel	10373 South Butte Rd	Sutter Co.	95982	1.14	1.00	6.93	31.30	3.29	24.25	13.82
Calpine Greenleaf I	5087 South Township Rd	Yuba City	95993	42.48	3.88	55.45	143.53	1.11	14.02	14.02
Calpine Greenleaf Unit/Gilroy Energy Center	875 North Walton Ave	Yuba City	95993	38.59	3.53	58.83	32.06	1.05	11.63	11.56
Calpine NgCo	232 Lewis	Sutter Co.	95982	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Catlett Whs	2138 East Catlett Rd	Pleasant Grove	95668	0.03	0.02	0.07	0.52	0.00	36.19	15.14
City Of Yuba City	202 Burns Drive	Yuba City	95991	7.10	0.68	1.85	0.91	0.05	0.03	0.03
Deluxe Packages	800 N. Walton Ave	Yuba City	95993	5.18	5.16	0.52	0.32	0.00	0.05	0.05
Eagle Moulding Co	1625 Tierra Buena	Yuba City	95992	0.00	0.00	0.00	0.00	0.00	7.33	3.67
El Centro Stg	7339 Pacific Ave	Pleasant Grove	95668	0.00	0.00	0.04	0.14	0.05	22.26	8.04
H & J Ent	101 Sumner St	Yuba City	95991	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hi And Dry Whs	1551 Acacia Ave	Sutter Co.	95982	0.13	0.05	0.09	0.50	0.00	44.48	16.20
Key Prod Co, Inc	Anapurna#1	Meridian	95957	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Montna Farms Rice Dryer	12755 Garden Highway	Yuba City	95991	0.03	0.02	0.07	0.49	0.01	44.05	15.90
North Valley Gin	9450 Agri Park Rd	Sutter Co.	95992	0.03	0.02	0.07	0.52	0.00	36.19	15.14
North Valley Gin	9450 Agri Park Rd	Meridian	95957	0.01	0.01	0.02	0.17	0.00	18.33	9.17
Pacific Gas And Electric Co.	15871 Central St	Robbins	95982	49.23	4.50	0.00	0.00	0.00	0.00	0.00
Pacific Intl Rice Mills, Inc	17465 Highway 113	Rio Vista	94571	0.02	0.02	0.06	0.40	0.00	18.08	6.01
Royale Energy, Inc	Po Box 1082	Yuba City	95991	0.65	0.06	0.93	0.36	0.00	0.02	0.01
Smc Cabinets	800 Northgate Drive	Live Oak	95953	0.11	0.00	0.00	0.00	0.00	6.34	0.00
Sunset Moulding Co	2200 Paseo Ave	Knights Landing	95645	6.19	6.10	0.27	0.33	0.00	19.34	9.69
Sutter Basin Growers Coop	21831 Knights Landing Rd	Yuba City	95993	0.14	0.09	0.51	3.78	0.05	82.91	33.53
Sutter Energy Center	5029 South Township Road	Sutter Co.	95982	28.48	2.60	8.49	107.79	6.65	23.08	22.94
Sutter Rice Co	1421 Acacia Rd	Sutter Co.	95851	0.06	0.03	0.44	0.53	0.00	44.57	16.19
Teichert Readymix	Pacifc Ave And Riego Rd	Sutter Co.	95982	0.00	0.00	0.00	0.00	0.00	11.80	0.01
Triunion Dvpt Corp 2021	Sanborn 4	Sutter Co.	95982	0.85	0.08	8.90	5.31	0.00	0.02	0.03
Triunion Dvpt Corp 2025	Steidlmayer #26	Sutter Co.	95982	0.84	0.08	8.76	5.22	0.01	0.02	0.02
Triunion Dvpt Corp 2028	Cs #1	Sutter Co.	95982	3.03	0.28	31.49	18.13	0.00	0.07	0.07
Triunion Dvpt Corp 2057	Spencer 113	Yuba City	95991	0.30	0.03	3.08	1.92	0.00	0.02	0.01

Table 4.4-6. Point Source Facilities and Criteria Pollutant Emissions (tons/year)

Facility Name	Address	City/County	Zip	TOG	ROG	CO	NOx	SOx	$PM_{2.5}$	PM_{10}
Unity Forest Products	1162 Putman Ave	Yuba City	95991	0.03	0.03	0.13	1.80	0.00	15.93	7.97
Valley View Packing Co	7547 Sawtelle Ave	Pleasant Grove	95668	1.40	0.00	5.00	24.10	0.10	1.80	0.00
Van Dyke's Rice Dryer Inc	4036 Pleasant Grove Rd	Pleasant Grove	95957	0.03	0.02	0.23	0.93	0.33	61.12	39.55
Venoco Inc 2027	Site 2227d3	Meridian	95957	6.78	0.62	1.72	12.44	0.00	0.20	0.00
Venoco Inc 2035	Site 52	Meridian	95957	13.56	1.24	3.39	24.68	0.01	0.38	0.00
Venoco Inc 2042	Site 27284	Meridian	95957	6.71	0.61	1.73	12.47	0.00	0.20	0.00
Venoco Inc 2044	Site 33342	Meridian	95957	6.78	0.62	1.73	12.47	0.00	0.20	0.00
Venoco Inc 2048	Site 21224	Meridian	95957	6.78	0.62	1.72	12.44	0.00	0.20	0.00
Venoco Inc 2049	Site 2227d1	Sutter Co.	95982	13.59	1.24	3.47	25.09	0.01	0.41	0.00
Vintage Petro, Inc 2009	Sanborn 33	Sutter Co.	95982	6.99	0.00	2.26	16.56	0.00	0.46	0.00
Vintage Petro, Inc 2050	Tisdale 128	Sutter Co.	95982	7.01	0.64	2.27	16.62	0.00	0.46	0.00
Vintage Petro, Inc 2054	Deane 1(Middleton & Norman)	Sutter Co.	95982	0.29	0.03	13.99	3.55	0.00	0.46	0.00
Vintage Petro, Inc 2055	Hankins 171	Yuba City	95992	1.85	0.17	5.61	3.86	0.00	0.01	0.00
Yuba City Cogeneration	5087 N. Township Rd	Yuba City	95991	10.68	0.98	52.99	80.74	3.30	6.45	6.41

Source: California Air Resources Board, Facility Search Engine, http://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php, Accessed August 30, 2007.

Land uses such as day care providers, primary and secondary schools, hospitals, and convalescent homes are considered to be sensitive receptors to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air quality related health problems than the general public. Residential uses are considered sensitive because people in residential areas are often at home for extended periods of time, so they can be exposed to pollutants for extended periods. Recreational areas are considered moderately sensitive to poor air quality because vigorous exercise associated with recreation places a high demand on the human respiratory function.

Land Use Planning and Air Quality

California's population is expected to grow, and meeting federal and State air quality standards suggests a need for a fundamental shift in approaches to land use and development. According to the CEC, the State needs to investigate approaches that go beyond decreasing transportation fuel use and relieving congestion to approaches that can serve as a nexus for developing efficient transportation means in communities. This approach can help California reach attainment status for those pollutants which are currently above the standards. An opportunity to meet those goals includes incorporating "smart growth," which refers to the application of specific development principles to make prudent use of resources and create low-impact communities through design.[4]

Sutter County is a member of the Sacramento Area Council of Governments (SACOG), which covers a six-county area. SACOG has developed the "Blueprint," a transportation and land use study for the Sacramento region which includes all of Sutter County. SACOG has also adopted a Metropolitan Transportation Plan (MTP) to provide a regional vision for all modes of surface transportation and a guide for regional transportation investments. The MTP includes programs designed to meet goals which include: clean air; design of communities to encourage local walk, bicycle, and transit travel; and for improvements to main routes that serve longer distance travel around the region, specifically freeways, rail lines, and major roadways and streets that serve regional traffic. Application of these smart growth planning concepts in growing areas of Sutter County would help reduce the emission of criteria air pollutants by reducing vehicle trips, promoting alternative transportation, and developing smart-growth projects that, overall, reduce the population's reliance on motor vehicle use and reduces the distance of any necessary vehicle trips.

Global Warming and Greenhouse Gases

Gases that trap heat in the atmosphere are called greenhouse gases (GHG), analogous to the way a greenhouse retains heat. Common GHG include water vapor, carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values determined from ice cores spanning many thousands of years. The accumulation of GHG in the atmosphere regulates the earth's temperature. This "greenhouse effect" is a natural phenomenon, without which the planet would be significantly colder. However, a broad scientific consensus has been reached that concludes that GHG emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. While uncertainties remain, the most recent scientific reports both at the

4 California Energy Commission, *2006 Integrated Energy Policy Report Update*, January 2007.

international level and for the State of California conclude that human-made climate change is occurring.

In California, the most common GHG is carbon dioxide (CO_2), which constitutes approximately 84 percent of all GHG emissions.[5] CO_2 emissions in California are mainly associated with in-state fossil fuel combustion and with fossil fuel combustion in out-of-state power plants supplying electricity to California. Other activities that produce CO_2 emissions include mineral production, waste combustion, and land use changes that reduce vegetation.

By percentage, the transportation sector is the largest contributor to greenhouse gas emissions in California, followed by residential and commercial energy use. California's transportation sector is heavily dependent upon oil, with petroleum-based fuels currently providing nearly all (96 percent) of California's transportation energy needs (State of California 2007). Transportation-related activities represent almost half (48 percent) of California's petroleum-based fuel consumption. Within the transportation sector, light vehicles (i.e., cars, light trucks, and motorcycles) account for about 60 percent of the petroleum-based energy consumption. Electricity generation is the second largest category of GHG emissions in California, followed by natural gas combustion and solid waste processing/disposal.

Global climate change, as a result of increased GHG in the atmosphere, refers to the change in the average weather of the earth that may be measured by changes in wind patterns, storms, precipitation, and temperature. Projected climate changes could impact California's public health through changes in air quality, weather related disasters, and a possible increase in infectious disease. If extreme precipitation and severe weather events become more frequent, and if sanitation and water-treatment facilities have inadequate capacity or are not maintained, increases in infectious diseases may result.[6] The baseline by which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. Many of the recent concerns over global climate change use this data to extrapolate a level of statistical significance specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of greenhouse gas emissions needed to stabilize global temperatures and climate change impacts. The IPCC predicted that the range of global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1°C to 6.4°C. Regardless of analytical methodology, global average temperature and sea level are expected to rise under all scenarios.[7]

Although not specifically designed to address GHG emissions, California Code of Regulations (CCR) Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings was enacted in 1978 and allow consideration and possible incorporation of new energy efficient technologies that could reduce emissions. The latest amendments, made in October 2005, currently require new homes to use half the energy they used only a decade ago. Energy efficient buildings require less electricity, and electricity

5 California Energy Commission. December 2006. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004. Staff Final Report.

6 California EPA, AB 1493 (Pavley) Briefing Package Global Warming and Greenhouse Gas Emissions from Motor Vehicles.

7 Intergovernmental Panel on Climate Change, 2007. R.B. Alley et al. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Summary for Policymakers.

production by fossil fuels results in greenhouse gas emissions. Therefore, increased energy efficiency results in decreased greenhouse gas emissions.

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG in California. GHG as defined under AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. AB 32 requires CARB, the State agency charged with regulating statewide air quality, to adopt rules and regulations that would achieve greenhouse gas emissions equivalent to statewide levels in 1990 by 2020. On or before June 30, 2007, CARB is required to publish a list of discrete early action GHG emission reduction measures that can be implemented by 2010. The law further requires that such measures achieve the maximum technologically feasible and cost effective reductions in GHGs from sources or categories of sources to achieve the statewide greenhouse gas emissions limit for 2020.

AB 32 also requires that by January 1, 2008, CARB shall determine what the statewide greenhouse gas emissions level was in 1990, and approve a statewide greenhouse gas emissions limit that is equivalent to that level, to be achieved by 2020. While the level of 1990 GHG emissions has not yet been approved, reported emissions vary from 425 to 468 Tg CO_2 Eq. (teragrams of CO_2 equivalent).[8] In 2004, the emissions were estimated at 492 Tg CO_2 Eq.[9]

Under AB 32, CARB has the primary responsibility for reducing GHG emissions. However, the California Climate Action Team Report (2006) contains strategies that can be undertaken by many other California agencies. In addition, CARB staff are working on several non-regulatory measures including guidance documents and protocols to encourage the public, local government and businesses to take positive steps to reduce GHG emissions. Currently no State or regional regulatory agency has formally adopted or widely agreed upon thresholds of significance for greenhouse gas emissions, or issued guidance regarding the analysis of greenhouse gas emissions in EIRs. CEQA Guidelines §15064.7 states that “each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects.” This provides justification for lead agencies to determine their own climate change thresholds. The Association of Environmental Professionals (AEP) recommends that "If a Lead Agency chooses to address GCC [Global Climate Change] in a [CEQA] document, it should be addressed in the context of a cumulative (versus project-specific) impact."

REGULATORY CONTEXT

Air quality in the county is regulated by the U.S. EPA, the CARB, and the FRAQMD. These agencies develop rules and regulations to meet the goals or directives imposed on them through legislation. Although U.S. EPA regulations may not be superseded, both state and local regulations may be more stringent. In general, air quality evaluations are based on air quality standards developed by the federal and state government.

Since many air pollution problems are regional in nature, the federal government sometimes designates multi-county areas as “Non-attainment Areas.” Because it covers a large area, a

8 CO_2 equivalent is the quantity that describes the amount of CO_2 that would have the same global warming potential (GWP) when measured over a specified timescale (generally, 100 years). For example, the GWP for methane is 21 and for nitrous oxide is 310. This means that one million metric tonnes of methane is equivalent to the emissions of 21 million metric tonnes of CO_2; one million metric tonnes of nitrous oxide is equal to 310 million metric tonnes of CO_2.

9 California Energy Commission. December 2006. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004. Staff Final Report.

non-attainment area can be composed of several different air districts. The "non-attainment area" designation means that these individual local agencies must work together to solve regional air pollution problems. The Sacramento Federal Ozone Non-attainment Area includes all of Sacramento and Yolo Counties and portions of El Dorado, Solano, Sutter, and Placer Counties.

Federal

U.S. Environmental Protection Agency

The U.S. EPA is the federal agency responsible for setting and enforcing the federal ambient air quality standards for atmospheric pollutants. The U.S. EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. The U.S. EPA also has jurisdiction over emission sources outside state waters (outer continental shelf), and establishes various emissions standards for vehicles sold in states other than California.

As part of its enforcement responsibilities, the U.S. EPA requires each state with non-attainment areas to prepare and submit a State Implementation Plan that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in non-attainment areas, using a combination of performance standards and market-based programs.

Federal Clean Air Act

The Federal Clean Air Act (CAA), as amended, establishes air quality standards for several pollutants. These standards are divided into primary standards and secondary standards. Primary standards are designed to protect public health, and secondary standards are intended to protect public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. The CAA requires that regional plans be prepared for non-attainment areas illustrating how the federal air quality standards could be met. The CARB approved the most recent revision of the SIP in 1994, and submitted it to the U.S. EPA. The SIP, approved by the U.S. EPA in 1996, consists of a list of ROG and NO_x control measures for demonstrating future attainment of ozone standards. The steps to achieve attainment will continue to require significant emissions reductions in both stationary and mobile sources.

State

California Air Resources Board

The CARB, a part of the California EPA (Cal/EPA) is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the CARB conducts research, sets state ambient air quality standards, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. The CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. The CARB also has primary responsibility for the development of California's SIP, for which it works closely with the federal government and the local air districts.

California Clean Air Act

The CCAA of 1988 requires non-attainment areas to achieve and maintain the state ambient air quality standards by the earliest practicable date and local air districts to develop plans for attaining the state ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide standards. The CCAA also requires that by the end of 1994 and once every three years thereafter, the air districts are to assess their progress toward attaining the air quality standards. The triennial assessment is to report the extent of air quality improvement and the amounts of emission reductions achieved from control measures for the preceding three year period.

Air Toxics Hot Spots Information and Assessment Act

The Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588), California Health and Safety Code Section 44300 et seq., provides for the regulation of over 200 air toxics and is the primary air contaminant legislation in the state. Under the Act, local air districts may request that a facility account for its TAC emissions. Local air districts then prioritize facilities on the basis of emissions, and high priority designated facilities are required to submit a health risk assessment and communicate the results to the affected public. The TAC control strategy involves reviewing new sources to ensure compliance with required emission controls and limits, maintaining an inventory of existing sources of TACs, and developing new rules and regulations to reduce TAC emissions. The purpose of AB 2588 is to identify and inventory toxic air emissions and to communicate the potential for adverse health effects to the public.

Assembly Bill 1807

AB 1807, enacted in September 1983, sets forth a procedure for the identification and control of TACs in California. The CARB is responsible for the identification and control of TACs, except pesticide use. AB 1807 defines a TAC as an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. The CARB prepares identification reports on candidate substances under consideration for listing as TACs. The reports and summaries describe the use of and the extent of emissions in California resulting in public exposure, together with their potential health effects.

In 1998, the CARB identified diesel particulate matter as a toxic air contaminant under the AB 1807 program. Diesel particulate matter is emitted into the air via heavy-duty diesel trucks, construction equipment, and passenger cars. In October 2000, the CARB released a report entitled Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. This plan identifies diesel particulate matter as the predominant TAC in California and proposes methods for reducing diesel emissions.

Senate Bill 656

As a first step in the implementation of Senate Bill 656 (SB 656, Reducing Particulate Matter in California), the CARB approved a list of the most readily available, feasible, and cost-effective control measures that can be employed by air districts to reduce particulate matter PM_{10} and $PM_{2.5}$ (collectively referred to as PM) in 2004. The list is based on rules, regulations, and programs existing in California as of January 1, 2004, for stationary, area-wide, and mobile sources. As a second step air districts must adopt implementation schedules for selected measures from the list. The implementation schedules will identify the appropriate subset of measures, and the dates for final adoption, implementation, and the sequencing of selected control measures. In developing the implementation schedules, each air district will prioritize measures based on the nature and severity of the PM problem in their area and cost-

effectiveness. Consideration is also given to ongoing programs such as measures being adopted to meet national air quality standards or the state ozone planning process. The consideration and adoption of air district rules in their implementation schedules, coupled with CARB's ongoing programs, will ensure continued progress in reducing public exposure to PM and attainment of the state and federal standards.

Senate Bill 700

In September 2003, the California Legislature adopted SB 700: Agriculture and Air Quality Summary and Implementation. This bill removed a long-standing statute that exempted agricultural operations from obtaining operating permits for sources of air pollution. The bill requires agricultural sources with emissions greater than or equal to one-half the threshold for a federal major source to obtain a District permit, and sources that meet or exceed the threshold for a federal major source to obtain a federal operating permit from U.S. EPA or a local district with a federally approved federal operating permits program.

Assembly Bill 32

On September 27, 2006, AB 32, the California Global Warming Solutions Act, of 2006 was enacted by the State of California. The legislature stated that “global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California (AB 32).” The Act caps California’s GHG emissions at 1990 levels by 2020. The Act defines greenhouse gas emissions as all of the following gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. This agreement represents the first enforceable state-wide program in the U.S. to cap all GHG emissions from major industries that includes penalties for non-compliance. While acknowledging that national and international actions will be necessary to fully address the issue of global warming, AB 32 lays out a program to inventory and reduce greenhouse gas emissions in California and from power generation facilities located outside the state that serve California residents and businesses.

AB 32 charges the CARB with responsibility to monitor and regulate sources of greenhouse gas emissions in order to reduce those emissions. By July 1, 2007, CARB must adopt a list of discrete early action measures that can be adopted and implemented before January 1, 2010 to reduce greenhouse gas emissions. By January 1, 2008, CARB must define the 1990 baseline emissions for California, and adopt that baseline as the 2020 statewide emissions cap. CARB is then to conduct rulemaking, culminating in rule adoption by January 1, 2011, for reducing greenhouse gas emissions to achieve the emissions cap by 2020. The rules must take effect no later than 2012. In designing emission reduction measures, CARB must aim to minimize costs, maximize benefits, improve and modernize California’s energy infrastructure, maintain electric system reliability, maximize additional environmental and economic co-benefits for California, and complement the state’s efforts to improve air quality.

To date however, neither the CARB nor the FRAQMD have promulgated regulations or guidance aimed at assessing or reducing greenhouse gas emissions from commercial development.

Local

Feather River Air Quality Management District

The FRAQMD is a bi-county District that was formed in 1991 to administer local, State, and federal air quality management programs for Yuba and Sutter Counties. The mission of

FRAQMD is to promote and improve the air quality of Sutter and Yuba Counties through monitoring, evaluation, education, implementing control measures to reduce emissions from stationary sources, permitting and inspecting pollution sources, enforcing air quality regulations, and supporting and implementing measures to reduce emissions from motor vehicles.

FRAQMD also collaborates with other air districts in the NSVAB to address the non-attainment status for O_3 and PM_{10} in the greater Sacramento region. For example, FRAQMD prepared the 2003 NSVAB AQAP to discuss the progress made in implementing the previous 2000 plan and proposed modifications to the strategies necessary to attain the California ambient air quality standards at the earliest practicable date. The 2003 Plan also identified the air pollution problems to be cooperatively addressed on as many fronts as possible with the cooperation of other air districts.

Currently FRAQMD is proposing to adopt new and amend existing regulations regarding agricultural source emissions in accordance with passage of SB 700. As discussed above, SB 700 requires that major agricultural sources of air pollution and certain non-major agricultural sources of air pollution obtain stationary source permits from local districts. Existing FRAQMD Rule 4.3 exempts all agricultural sources from obtaining district permits. The proposed amendments to Rule 4.3 would remove those exemptions for these sources and will update FRAQMD rules and regulations to be consistent with State and federal law. The exemption will be such that FRAQMD rules will be equally, but not more stringent than state law requires.[10]

10 Feather River Air Quality Management District, Staff Report, Proposed Rule Amendment: Regulation IV Rule 4.3 Exemptions From Permit, http://www.fraqmd.org/Rules/Rule4-3_staffreport(draft).pdf, Accessed August 31, 2007.

4.5 VISUAL RESOURCES

INTRODUCTION

This section describes the existing visual character of Sutter County. This section lists local scenic resources, which include a variety of natural and man-made elements that give Sutter County its unique character. Information for this section was obtained from the California Department of Transportation and photographs from a field survey of the County.

Protection of Sutter County's scenic resources and open space areas is important to help define the visual character of the County and can provide opportunities for other facilities and services such as passive recreation opportunities, pedestrian and bike access, storm drainage, flood water conveyance, utility infrastructure, and land use buffering.

SUMMARY OF KEY FINDINGS

- There are no officially recognized scenic roadways in Sutter County, however many of the rural country roads offer unobstructed views of surrounding mountain ranges, expansive agricultural land, and miles of orchards.
- The most visually predominant natural element in the county is the Sutter Buttes. Sutter County also includes two large river corridors, a 70-mile segment of the Sacramento River and a 45-mile segment of the Feather River, which extend the length of the County.

EXISTING CONDITIONS

Visual resources are an important component to the quality of life and identity of any geographic area. When people experience a place, their primary sensory interaction with that place is visual in nature. The scenic resources within the county include a variety of elements and viewsheds such as the Sutter Buttes; the Feather, Sacramento and Bear Rivers; and the valley's orchards, all of which contribute to the unique character of the county.

"Aesthetic value" refers to the perception of the natural beauty of an area, as well as the elements that create or enhance its visual quality. While aesthetic value is subjective, it is typically included as a criterion for evaluating those elements that contribute to the quality that distinguishes an area. Most communities identify scenic resources as an important asset, although what is considered "scenic" may vary according to its environmental setting. "Scenic resources" can include natural open spaces, topographic formations, and landscapes. These are resources that can be maintained and enhanced to promote a positive image in the future. Many people associate natural landforms and landscapes with scenic resources, such as oak woodlands, lakes, rivers, streams, and some historical areas. Scenic resources can also include urban open spaces and the built environment. Examples of these would include parks, trails, pathways, nature centers, archaeological and historical resources, and architectural features. "Viewsheds" constitute the range of vision in which scenic resources may be observed. They are defined by physical features that frame the boundaries or context to one or more scenic resources.

Scenic Roadways

The California State Scenic Roadways Program, established in 1963 by the State legislature, identifies key roadways in California that contribute to the State's scenic resources by providing viewsheds with aesthetic value. The program establishes the State's responsibility for the protection and enhancement of California's natural scenic beauty through regulations pertaining to scenic roadways and their function.

There are no officially recognized scenic roadways in Sutter County, however many of the rural country roads offer unobstructed views of surrounding mountain ranges, expansive agricultural land, and miles of flowering fruit trees. In a state such as California with most of the population centered in and around highly urbanized areas, Sutter County offers residents and visitors the natural beauty of the great Central Valley.

Views and Vistas

Sutter County is characterized by relatively flat terrain with generally expansive viewsheds and valley elevations ranging from 35 to 80 feet above measured sea level.[1] The one prominent topographic feature within the county is the Sutter Buttes (32,000 acres), a remnant volcano with a peak elevation approximately 2,000 feet above the surrounding valley floor. Juxtaposed to the vast open farmland, the Sutter Buttes create a dramatic landmark that is visible throughout the County.



Views West

Views to the west span across the open valley's rich agricultural land and natural wildlife areas. The western portion of the County is predominantly agricultural with miles of emerald green rice paddies and fertile soils supporting row crops and orchards. The Sacramento River borders the western edge of the County creating a lush viewshed corridor providing recreation and visual beauty to the County. Looking beyond the valley's patchwork of farmland and the snaking Sacramento River, the scene is back-dropped by the California coastal mountains dotted with native oaks.



Views East

Most of Sutter County's population is located in the eastern side of the county with the cities of Yuba City and Live Oak forming a major economic hub. The eastern side of the county is bordered by the Feather River, which is a source of water and is a significant recreational amenity for the region. Just beyond the river are Yuba and Placer counties, which have a similar landscape character, with rolling oak-studded hills and views of the Sierra Nevada Mountain Range.



Views South

Much like the western part of the county, the southern area is predominantly farmland. Grain fields and state wildlife areas provide refuge for thousands of migratory birds each year. The southern part of the county is also where the Sacramento and the Feather Rivers converge with the Sutter Bypass, a major north-south floodway that extends through the County.



1 Sutter County, Multi-Hazard Mitigation Plan, May 2007.

Views North



Sprouting abruptly out of the base of the valley is the "smallest mountain range in the world" known by most as the Sutter Buttes. The mountain range is visible from most areas in the County and serves as a statewide destination for tourists, who can access the private mountain range through guided tours. The Buttes' landscape is predominantly characterized by grasslands and oak woodlands, with canyons that support natural drainage ways and riparian vegetation.

Natural Elements



The most visually predominant natural element in Sutter County is the Sutter Buttes, but the County is also bordered by the Feather River and the Sacramento River. The Sacramento River, the largest river in the state, extends for approximately 70 miles along the western border of Sutter County. The Feather River extends approximately 45 miles through Sutter County, forming part of the east Sutter County boundary.



The Bear River roughly parallels about 11 miles of the eastern County boundary, entering the County from Placer County to the east, and crossing the boundary at several points. The river flows in a south-southwest direction until it joins the Feather River, about one mile north of the town of Nicolaus. Although smaller than either the Sacramento or Feather Rivers, the Bear River also provides recreational opportunities, agricultural irrigation water, and a diverse wildlife habitat.

Open Space

A large percentage of the County is agricultural in nature, which creates vast viewsheds of undeveloped areas. However, land recognized by the General Plan as having an open space land use designation also exists through much of the County. These types of open space lands can be found along the miles of river corridors, as well as approximately 44,084 acres of wildlife areas that support abundant animal life.

Manmade Elements



The Sutter Bypass is a manmade canal system that provides water to agricultural lands throughout the County. It consists of two parallel canals that extend from the northern area of the County, along the western side of the Sutter Buttes, and to the southern border of Sutter and Yolo Counties. Sutter County is also home to historic buildings that have been home to the founding families of the region. Further discussion on these structures and correlating historic designations can be found in the Cultural Resources section of this document.

REGULATORY CONTEXT

Federal

Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act (16 U.S.C. 1271-1287) establishes a method for providing federal protection for certain free-flowing rivers remaining in the country. Its intent is to preserve them and their immediate environments for the use and enjoyment of present and future generations. Eligible rivers can be designated as Wild River Areas, Scenic River Areas, or Recreational River

The Wild and Scenic Rivers Act, under Section 10, includes management direction for designated rivers. Section 10(a) states the following:

> *....each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its aesthetic, scenic, historic, archaeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area.*

State

California Scenic Highway Program

In 1963, the State legislature established the California Scenic Highway Program through Senate Bill 1467. This Senate Bill added Section 260 et seq. to the Streets and Highway Code. In these statutes, the State proclaims its intent to:

> *...establish the State's responsibility for the protection and enhancement of California's natural scenic beauty. After it is determined that a proposed highway satisfies the qualifications for Scenic Highway designation, the local jurisdiction, with support of its citizens, must adopt a program to protect the scenic corridor. The zoning and land use along the highway must meet the State's minimum requirements for scenic highway corridor protection. The five legislatively required standards for scenic highways under Section 261 of the Streets and Highways Code are:*
>
> - *Regulation of land use and density of development (i.e., density classifications and types of allowable land uses),*
> - *Detailed land and site planning (i.e., permit or design review authority and regulations for the review of proposed developments),*
> - *Prohibitions of off-site outdoor advertising and control of on-site outdoor advertising,*
> - *Careful attention to and control of earthmoving and landscaping (i.e., grading, ordinances, grading permit requirements, design review authority, landscaping and vegetation requirements), and*
> - *The design and appearance of structures and equipment (i.e., placement of utility structures, microwave receptors, etc.).*

As stated in Section IV of Caltrans' "Guidelines for the Official Designation of Scenic Highways," a Scenic Corridor is defined as the area of land generally adjacent to and visible from the highway. It is usually limited by topography and/or jurisdictional boundaries.

Local

There are no local regulations that govern visual resources in the County.

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4.6 PREHISTORIC AND HISTORIC RESOURCES

INTRODUCTION

This chapter provides the history of Sutter County, and discusses the prehistoric and historic resources within the County. The history provides a context by which the resources in the County can be interpreted and evaluated for significance. Information for this section was obtained from the California Office of Historic Preservation, a records search at the Northeast Information Center, and a variety of cultural resources inventories, ethnographies, and archaeological surveys.

Many recorded resources are concentrated in just a few areas of the County demonstrating that many unknown prehistoric and historic sites/resources may be located throughout the County. Understanding the history and timelines for these known sites is an important part of obtaining a greater appreciation for the value of these resources. Planning for sensitive areas that may contain unknown prehistoric and historic resources is important for the preservation and conservation of sites and structures that may be important to the County's rich history and for putting together and understanding pieces of the past.

SUMMARY OF KEY FINDINGS

- A limited portion of the County has been surveyed for prehistoric, historic, cultural or archeological resources.
- There is a record of early explorers witnessing a large population of Native Americans within the Sacramento and San Joaquin Valleys.
- Agricultural uses and urban development may have compromised some prehistoric sites; however, previous studies have shown that resources are often found well below the common plow zone and it cannot be assumed that agricultural land does not contain valuable cultural resource.
- The Sutter Buttes have served as a point of cultural and historic significance in Sutter County.
- Sutter County has two registered California Historical Landmarks, twenty-one Points of Historic Interest recognized by the California Department of Parks and Recreation Office of Historic Preservation, and a number of other sites considered to have local or County-wide historic and cultural significance.
- The Northeast Information Center records included a total of 402 previously recorded/recognized cultural resources:
    - 263 of the 402 identified resources are historic-era resources.
    - 52 of the 402 identified resources are prehistoric.
    - 15 of the 402 identified resources have both historic and prehistoric components (multi-component).

EXISTING CONDITIONS

History

Ethnography

Sutter County is within the ethnographic territory of three Native American groups: the Nisenan (also called the Southern Maidu), the Patwin, and the Konkow (also known as Northeastern Maidu). The Nisenan's territory included the northeastern portion of the Sacramento Valley, from the Sacramento River to the crest of the Sierra Nevada. Along the Sacramento River, Nisenan territory was bounded by Patwin territory, which continued west to Chiles Valley, near Putah Creek (Johnson 1978). The Konkow were limited to the northeastern corner of Sutter County, around the present day town of Live Oak (Riddell 1978).

Ethnographic research suggests similar behavioral patterns and social organization for the Native American groups (Beals 1933; Dixon 1905; Duncan 1964; Kroeber 1925, 1929; Riddell 1978; Wilson and Towne 1978). Members of a tribelet lived in a village comprised of clustered or dispersed family groups. A tribelet is a small independent group of Native California people who shared one language. Three to five villages made up a village cluster, which were small, self-sufficient communities. Villages were located on natural rises along rivers and streams, though groups did relocate during the course of seasonal gathering rounds. Houses were typically semi-subterranean, dome-shaped, and covered with earth or vegetation (tule or grasses).

A variety of plants and animals comprised the Native American diet. Deer, antelope, elk, rabbits, fish, eels, quail, waterfowl were the primary game hunted. Plant resources exploited included acorns, pine nuts, seeds, roots, and hazel nuts. In the summer, groups would travel to the hills to hunt large game, and return to the valley to collect seeds in the spring. Such a large, abundant resource base allowed these groups to attain a high population density.

Trade with nearby and distant groups was regular and well established. Exchange networks that extended from the coast to the eastern slope of the Sierra Nevada allowed the distribution of extra-local materials, including obsidian and marine shell, across the Sacramento Valley.

Prehistory

The cultural chronology for the Sacramento Valley has witnessed little revision since archaeologists first proposed a sequence of cultural change for the Delta, Sacramento Valley, and San Joaquin Valley (Lillard and Purves 1936; Lillard et al. 1939). This sequence was revised by Beardsley (1948; 1954), and based the Central California Taxonomic System (CCTS), on central California archaeology. More than 20 years later, Fredrickson (1973), realizing the limitation of the CCTS, revised the sequence to its current form. A sequence is a series of distinct cultures separated by time and distinguished from each other in the archaeological record by physical differences (assemblage composition, artifact types, settlement practices, mortuary practices). A pattern is a general way of life shared by peoples within a defined geographic area. It is characterized by the presence of similar technologies, trade networks, ceremonies, mortuary practices.

Although it has been established that prehistoric groups inhabited parts of California prior to 6,000 years ago, the **Windmiller Pattern** (ca. 3,000 B.C. – 500 B.C.) is the earliest recognized cultural assemblage for the Sacramento Valley. These deposits contain a variety of flaked and ground stone artifacts, baked clay, and shell artifacts, suggesting that populations exploited a diverse resource base during this period.

The **Berkeley Pattern** (ca. 500 B.C. – A.D. 500) suggests a shift in subsistence practices and technology. Technological changes include the increased use of mortar and pestles, extensive use of bone tools, shifts in flaked stone reduction technologies, and the occurrence of certain type of shell beads and pendants. The switch to mortar and pestle indicates acorn became a diet staple. The addition of acorns, a high-cost resource due to the time-consuming leaching process, implies greater diet breadth than that observed during Windmiller times.

The **Augustine Pattern** (ca. A.D. 500- A.D. 1880) is a time of resource intensification, and increasing sedentism, territoriality, and social complexity. Technological innovations, such as shift from the dart and atlatl to the bow and arrow, occurred during this period. Assemblages from this period include flaked and ground stone artifacts, shell beads and pendants, bone tools, and steatite objects. Bedrock milling features also are present, either in association with mounds or as a component of smaller task-oriented locations.

European Exploration and Settlement

The first European to see the Sutter Buttes was Gabriel Moraga, a Spaniard trying to locate mission sites in 1808. Another Spaniard, Luis Arguello, led an expedition in 1817 to explore Northern California by water. He called the Buttes “Los Picachos” or “the peaks.” He also named the Feather River (“El Rio de las Plumas”) because he saw many feathers of wild fowl floating on the water. In 1828, Jedediah Smith trapped in the vicinity of the Buttes. It was in 1833 that a brigade of French fur trappers from the Hudson Bay Company first referred to these mountains as the “buttes.” This contingent is believed responsible for the introduction of the small pox virus to the Native American population. This devastating illness is attributed with killing up to 75 percent of the Maidu and resulting in the abandonment of many villages in a single year.

Sutter County derives its name from one of its first settlers, John Augustus Sutter. Sutter received a grant from the Mexican government of approximately 50,000 acres and named it New Helvetia. In 1841, after settling at Sutter's Fort, he established Hock Farm, believed to be a corruption of the German word "hoch" or "upper", on the site of a Nisenan village originally located on the west bank of the Feather River about eight miles south of Yuba City. In establishing the Hock Farm he created the first large-scale agricultural settlement in this part of the state. Sutter planted grapes, pomegranates, fig trees, grain, and the first peach orchard on his land at Hock Farm, as well as using it as a stock ranch for cattle.

With the 1848 discovery of gold at Sutter's sawmill in Coloma on the south fork of the American River and the rapid spread of mining to all foothill areas, the culture and life style of the Nisenan were severely disturbed. Widespread disruption of the people and destruction of their villages and other sites occurred with the resulting influx of miners and mining activities. At the same time, farming was begun in the Valley, impacting native culture in the lowlands.

Sutter County itself experienced little mining, but was attractive for its agricultural potential and was primarily settled by former miners who became interested in agriculture after 1860. Early activities included the cutting of wild hay, herding of stock and the harvesting of lumber along the rivers. It has been reported that when the early settlers arrived, a belt of woodland extended along all the major rivers from one-quarter to two miles in width, consisting of oaks, sycamores, cottonwoods, and willows. This growth was soon cleared to provide lumber fuel for steamboats, as well as for building supplies, and also to clear land for farming.

During the Gold Rush, as hundreds of thousands of new immigrants flooded into California, hostilities between these new immigrants and the Native Americans rapidly accelerated. The new immigrant miners, ranchers and farmers came to see the Native Americans as threats to

their prosperity and security, an obstacle blocking progress, as well as primitive. There is a traceable evolution of attitudes based on the changing needs of the immigrants. The unfortunate events that followed included the massacre of many remaining villages. In 1863 some 461 Native Americans, mostly Maidu, were force-marched 125 miles to the Round Valley Reservation during which many were killed or died. Only 277 completed the journey, most in poor health. The Round Valley Reservation is located to the northwest of Sutter County in Mendocino County.

During the 1870's and 1880's, valuable farmland in Sutter County was lost to the silting up of the rivers caused by hydraulic gold mining in the Sierras. Local farmers formed the Anti-Debris Association, and in 1884, they won a landmark suit halting the practice of hydraulic mining. Once land was cleared, river bottom land claimed and hydraulic mining stopped, agriculture developed rapidly. Several famous agricultural varieties were developed in Sutter County, including Proper Wheat in 1868, which opened up the wheat exporting market in Sutter County; the Thompson Seedless Grape in the 1870's, which led to a thriving raisin industry; and the Phillips Cling Peach in the 1880's, which paved the way for a surge in the canning industry, with three local canneries established. Several organizations, important to the prosperity of Sutter County, were created as a result of agriculture. The Farmers' Cooperative Union of Sutter County grew out of the farmers concerns about speculators who worked together to keep the prices paid to farmers low, regardless of the market. These speculators also worked in concert to drive up the price of transportation of agricultural products. The Farmers' Cooperative Union, begun by S.E. Wilson, B.F. Walton, George Ohleyer, A.L. Chandler, Francis Hamlin, George Brittan and Henry Elmer, enabled the farmers to join together and act to improve prices paid to farmers. Other organizations included: the Farmers' Union Bank, the financial branch of the Farmers' Cooperative Union; Producers' Bank of Yuba City; the Nicolaus Farmers' Grain Warehouse; the California Fruit Canners Association, now known as the Californian Packing Corporation.

Agriculture and the promise of a stable and prosperous future brought many different kinds of people to Sutter County. One of these groups of people was the East Indian Sikhs of the Punjab province of India. Beginning around 1910, East Indians moved to the Central Valley of California to work on roadbeds for the electric railroads. Eventually, the East Indians turned their attention to orchard and farm work.

Many people had an impact on the way in which Sutter County has developed. They include: B.F. Walton, largely responsible for the development of the peach canning industry in the County; J.T. Bogue, the first nurseryman to propagate the Phillips cling peach commercially; E.T. Thornbrough of Meridian, who first brought prune trees to the area; George Ohleyer, founder and editor of the Sutter County Farmer newspaper and one time supervisor; Allen Noyes, who acquired land on the west side of the Buttes, creating the village of Noyesburg and deeding, upon his death, land to the school and cemetery districts; Frederick Peter Tarke and Frederick Hoke, who as young men were drawn to the gold fields but soon decided that they might better make their living in a ranching and agricultural partnership that encompassed several thousand acres of land on the southwest side of the Buttes; Harry Stabler, one of the first County Agricultural Commissioners; William Thompson, a Sutter resident and propagator of the seedless grape; and John Paxton Onstott, responsible for establishing the raisin industry in the United States.

Sutter County was one of the 27 original counties of California, set up by the first Legislature on February 18, 1850. Originally, Sutter County included portions of what are now Placer and Colusa counties; the boundaries were fixed at their current location around 1856. Prior to 1900, Live Oak, Meridian, and Nicolaus were noted as shipping points and South Butte, Pennington,

West Butte, Kirkville, and Pleasant Grove had post offices and a few stores and shops. Many of these communities were short lived.

Senator Thomas J. Green purchased land from John Sutter, which he called Oro. Green convinced the State to name Oro the County seat in 1850. Unfortunately Oro, located approximately two miles from Nicolaus in the southern portion of the County, consisted of a single building. Since there was no suitable building in Oro, however, the County seat was moved to Nicolaus the same year. In 1851, the Seat was moved to Auburn, but when Placer County was formed later that year the town of Vernon (now called Verona) was selected. As Vernon's growth declined, the Seat moved back and forth between Nicolaus and Yuba City. In 1856, Yuba City became the permanent County Seat for Sutter County.

Yuba City was named after and founded upon the site of a Nisenan village in 1849 by Sam Brannan, Pierson Reading, and Henry Cheever. A year later Yuba City was nearly abandoned as neighboring Marysville on the east side of the Feather River grew rapidly, becoming a major supply point for the gold mines in the Sierras. As the Gold Rush continued and many miners became less enchanted with the gold fields, many of them began moving into Sutter County to develop the rich agricultural land, and Yuba City flourished again to eventually become the larger city. In 1908 Yuba City became incorporated.

Live Oak evolved as a commercial center to serve the agricultural population where alfalfa, dairying, fruit and nuts were quite prominent. Live Oak became an incorporated community in 1947, the second and last incorporated community in Sutter County to date.

The town of Sutter traces its origins to 1849 when Edward Thurman and a partner built a cabin at the east end of the Sutter Buttes. Four years later G.E. Brittan purchased the Thurman land and built a two-story home out of the Butte rock. As the agricultural industry developed and thrived, the community continued to grow. In 1887, real estate speculator and developer P.D. Gardemeyer arrived on the scene with a grand view of the future of "Sutter City". Plans were laid out for a large and modern city but unlawful land deals caused Gardemeyer to quietly and quickly leave town. Shortly thereafter Sutter dropped the "City" from its name.

There are two Registered Historical Landmarks located within Sutter County. No. 346 is the site of John Sutter's Hock Farm, the first non-Native American settlement in Sutter County. No. 929 is the site where William Thompson settled and propagated what has come to be known as the Thompson Seedless Grape. There are also twenty-one (21) Points of Historical Interest in Sutter County as identified by the California Department of Parks and Recreation Office of Historic Preservation.

Sutter County has continued to rely on its agricultural resources as the primary economic base. The cropping patterns have evolved into two predictable types. Those areas nearer the rivers with the coarser soils are extremely well suited to orchard crops while the lowlands farther from the rivers with the clayey soils are well suited to the production of rice. A variety of truck crops and grains are also grown in various locations. Grazing is the predominant agricultural use in the Buttes with scattered grain and orchard farming.

Summary

Earlier studies have suggested that many prehistoric sites in Sutter County could have intact deposits that would contribute to the archaeological record. A significant portion of Sutter County has not been systematically surveyed for prehistoric or historic resources. Although previously recorded prehistoric sites are concentrated along present-day levees along rivers or in close proximity to the Sutter Buttes, Native Americans regularly gathered grasses, seeds, and

other resources from the valley floor (Johnson 1978). Before the levees were constructed, winter storms and spring run-offs regularly deposited sediments over the valley floor, covering any archaeological resources that may exist; it is possible that currently unknown archaeological sites exist in these contexts. While this may reflect a bias in inventory sampling, it may also reflect Native American settlement patterns. Early ethnographers noted that the typical Nisenan village was situated upon natural rises along rivers and streams (Kroeber 1925:395; Powers 1877:316; Wilson and Towne 1978:388). Villages were placed on natural rises as winter storms and spring run-off frequently turned the valley between the Sacramento and Feather rivers into an inland sea (Johnson 1978). During these times, the Sutter Buttes became a place of refuge for Native Americans (California Department of Parks and Recreation 2007).

In Sutter County, levees were often built on top of midden deposits and mounds (Bouey 1990, 1993; Glover and Bouey 1990; Jewell and Clemmer 1958; Johnson and Johnson 1974a; Wilson 1979). There have been limited attempts to relocate some of these resources (Bouey 1989, 1990, 1993; Glover and Bouey 1990; Jewell and Clemmer 1958; Johnson and Johnson 1974a; 1974b; Shapiro et al. 1997) but a significant number could not be relocated, either due to the destruction of the resource, or a possible error in the location information. Among the prehistoric sites that were relocated and excavated, several were partially impacted, but many retained enough integrity and data potential to be eligible for the National Register of Historic Places (Bouey 1990, 1993; Glover and Bouey 1990; Jewell and Clemmer 1958; Johnson and Johnson 1974a; Wilson 1979).

In addition to using the Sutter Buttes as a refuge, it was also a place of reverence to the Maidu, who called the formation Histum Yani, which translated to “Middle Mountain of the Earth” or “Spirit Mountain.” The Maidu believed that after death, a person rested at the Sutter Buttes before journeying to the afterlife (California Department of Parks and Recreation 2007).

Known Resources

A review of the records at the Northeast Information Center identified 402 previously recorded/recognized resources, 132 of which included Trinomials or Primary Numbers. Of these, 263 are historic-era, 52 are prehistoric, and 15 resources have historic and prehistoric components (multi-component); documentation is missing for three resources. More information on the location of historic resources is provided on Figure 4.6-1. Specific locational information of archaeological resources and prehistoric sites is confidential and not provided in this TBR or any public document.

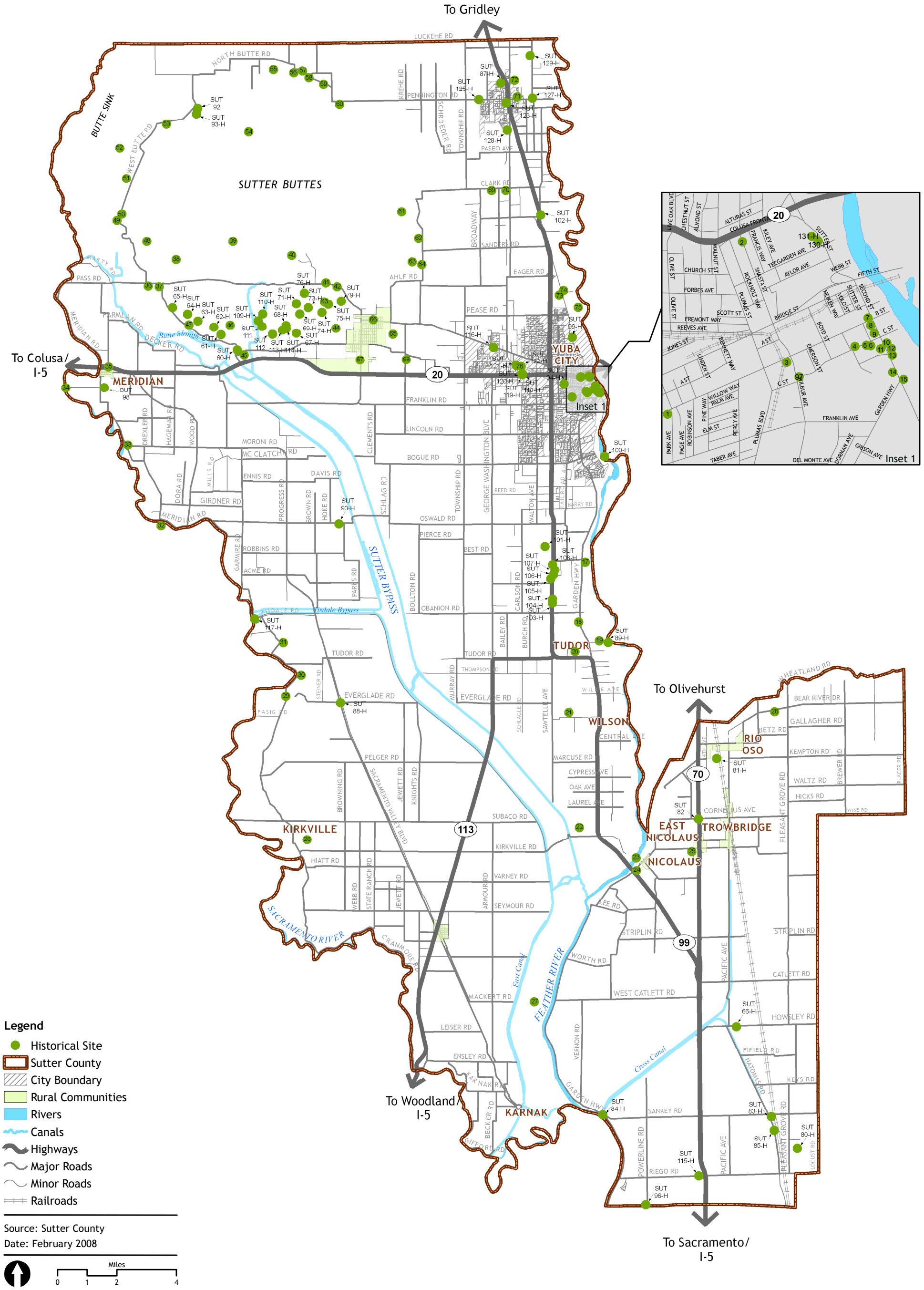
Historic resources include residential and commercial buildings, bridges, canals, rock walls, and levees. Many of the historic resources are clustered along Highway 99 and in Yuba City as well as the smaller towns and previous known settlement areas throughout the county such as Sutter, Meridian, Kirkville, Rio Oso, and the Nicolaus/Trowbridge area.

Of the 52 prehistoric and 15 multi-component resources, 31 sites contain midden deposits. Bedrock mortars were observed at 23 sites, burials were identified at 17 locales, and mounds were noted in 16 instances. These sites are generally located along water courses with a high concentration of sites in the Sutter Buttes.

Sutter County has two registered California Historical Landmarks, twenty-one Points of Historic Interest, recognized by the California Department of Parks and Recreation Office of Historic Preservation, and a number of other sites considered to have local or county-wide historic and cultural significance.

SUTTER COUNTY
General Plan Update

SUTTER COUNTY
GENERAL PLAN UPDATE



Legend

- Historical Site
- Sutter County
- City Boundary
- Rural Communities
- Rivers
- Canals
- Highways
- Major Roads
- Minor Roads
- Railroads

Source: Sutter County
Date: February 2008

Miles
0 1 2 4

PBS&J

HISTORIC RESOURCES
Figure 4.6-1

Currently, the status of many resources in Sutter County is unknown. At the time of documentation, 21 resources were partially or completely destroyed; many had been impacted by levee or building construction, while other sites were known pot-hunting locations. Most sites have not been visited since initial recordation. Records indicate that 63 sites have not been visited since 1990. Of these, 21 have not been visited since the 1950s. Many of the built resources had not been visited in several years and their condition is also unknown.

REGULATORY CONTEXT

Federal, state, and local governments have developed laws and regulations designed to protect significant cultural resources that may be affected by actions they undertake or regulate. The National Historic Preservation Act (NHPA) and CEQA are the basic federal and state laws governing the preservation of historic and archaeological resources of national, regional, state and/or local significance.

Federal

Federal regulations for cultural resources are primarily governed by Section 106 of the NHPA of 1966, which applies to actions taken by federal agencies. The goal of the Section 106 review process is to offer a measure of protection to sites that are listed in or determined eligible for listing in the NRHP. The criteria for determining NRHP eligibility are found in 36 Code of Federal Regulations (CFR) Part 60. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and affords the federal Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementing regulations, "Protection of Historic Properties," are found in 36 CFR Part 800. The NRHP criteria (contained in 36 CFR 60.4) are used to evaluate resources when complying with NHPA Section 106. Those criteria state that eligible resources comprise districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

a) are associated with events that have made a significant contribution to the broad patterns of our history; or

b) are associated with the lives of persons significant in our past; or

c) embody the distinctive characteristics of a type, period, or method of construction, or that possess high artistic values, or that represent a significant distinguishable entity whose components may lack individual distinction; or

d) have yielded or may be likely to yield, information important to history or prehistory.

Archaeological site evaluation assesses the potential of each site to meet one or more of the criteria for NRHP eligibility based upon visual surface and subsurface evidence (if available) at each site location, information gathered during the literature and records searches, and the researcher's knowledge of and familiarity with the historic or prehistoric context associated with each site.

The American Indian Religious Freedom Act, Title 42 United States Code, Section 1996, protects Native American religious practices, ethnic heritage sites, and land uses.

State

Under CEQA, public agencies must consider the effects of their actions on both "historical resources" and "unique archaeological resources." Pursuant to Public Resources Code, Section 21084.1, a "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment."

"Historical resource" is a term with a defined statutory meaning (see Public Resources Code, Section 21084.1 and CEQA Guidelines Section 15064.5 (a) and (b)). The term embraces any resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR). The CRHR includes resources listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest. A project is deemed to have a significant effect on the environment if it would cause a substantial adverse change in the significance of an historical resource (CEQA Section 15064.5 (b)). A substantial adverse change with regards to an historical resource is defined under CEQA as "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Section 15064.5 (b) (1). CEQA Guidelines Section 15064.5 (b) (2) provides further detail regarding substantial adverse change.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be "historical resources" for the purposes of CEQA unless a preponderance of evidence indicates otherwise (Public Resources Code, Section 5024.1; California Code of Regulations, Title 14, Section 4850). Unless a resource listed in a survey has been demolished, lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource to be potentially eligible for the CRHR.

In addition to assessing whether historical resources potentially impacted by a proposed project are listed or have been identified in a survey process, lead agencies have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project's impacts on historical resources (Public Resources Code, Section 21084.1; CEQA Guidelines, Section 15064.5 (a)(3)). In general, an historical resource, under this approach, is defined as any object, building, structure, site, area, place, record, or manuscript that:

a) is historically or archeologically significant; or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political or cultural annals of California; and

b) meets any of the following criteria:

   1. is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

   2. is associated with the lives of persons important in our past;

   3. embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

   4. has yielded, or may be likely to yield, information important in prehistory or history.

CEQA Guidelines Section 15064.5 (b) (3) indicates that a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving,

Rehabilitating, Restoring, and Reconstructing Historic Buildings, or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995) shall mitigate impacts to a level of less than significant. Potential eligibility also rests upon the integrity of the resource. Integrity is defined as the retention of the resource's physical identity that existed during its period of significance. Integrity is determined through considering the setting, design, workmanship, materials, location, feeling, and association of the resource.

As noted above, CEQA also requires lead agencies to consider whether projects would impact "unique archaeological resources." Public Resources Code, Section 21083.2 (g) states that "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. Is directly associated with a scientifically recognized important prehistoric or historic event or person" (Public Resources Code, Section 21083.2 (g)).

Treatment options under Section 21083.2 of the Public Resources Code include activities that preserve such resources in place in an undisturbed state. Other acceptable methods of mitigation under Section 21083.2 include excavation and curation or study in place without excavation and curation (if the study finds that the artifacts would not meet one or more of the criteria for defining a "unique archaeological resource").

Advice on procedures to identify cultural resources, evaluate their importance, and estimate potential effects is given in several agency publications, such as the series produced by the Governor's Office of Planning and Research (OPR). The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including but not limited to, museums, historical commissions, associations and societies, be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains.

Section 7050.5 (b) of the California Health and Safety code specifies protocol when human remains are discovered. The code states:

> In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

CEQA Guidelines Section 15064.5 (e) requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the NAHC must be contacted within 24 hours. At that time, the lead agency is required to consult with the appropriate Native Americans as identified by the NAHC and directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

Local

The Sutter County Zoning Code includes Division 65 – Historic Preservation Combining District (HP), which provides for the establishment of a Historic Preservation Combining District in combination with any other zoning district classification. Applications for HP zoning are reviewed by the Historic Preservation Review Committee.

Chapter 5 COMMUNITY AND SAFETY HAZARDS

Being aware of the community and safety hazards that can affect Sutter County is an important part of planning for future development. There are unique considerations for each hazard area, and proper preparation and compliance with applicable regulations and safety management plans is an important part of ensuring the health and safety of those that live, work, and visit Sutter County. This chapter describes the existing conditions and safety hazards and highlights the key regulatory requirements necessary for protection of residents in the County.

The Community and Safety Hazards chapter is divided into the following sections:

5.1 Geologic and Seismic Hazards

5.2 Fire Hazards

5.3 Hazardous Materials Management

5.4 Noise

5.5 Flood Hazards

5.1 GEOLOGIC AND SEISMIC HAZARDS

This chapter includes a review of the geologic and seismic hazards in Sutter County with information on potential effects of seismic activity. This chapter reviews structural hazards and critical facilities, fire hazards, emergency response, flood hazards and dam safety, solid and hazardous waste management, and airport safety. The County's seismic hazards, flood hazards, fire hazards, noise, and hazardous materials are also addressed. Information for this section is based upon the Sutter County Multi-Hazard Mitigation Plan, the County's current General Plan for overall background information, information published by the Department of Conservation, California Geology Survey (CGS, formerly Division of Mines and Geology), and information from the Natural Resources Conservation Service (NRCS).

INTRODUCTION

Although all of California is typically regarded as seismically active, the Central Valley region does not commonly experience strong ground shaking resulting from earthquakes along known and previously unknown active faults. Though no active earthquake faults are known to exist in Sutter County, active faults in the region could generate ground motion felt within the county. Numerous earthquakes of magnitude 5.0 or greater on the Richter scale have occurred on regional faults, primarily those within the San Andreas Fault System in the region.[1] There are several potentially active faults underlying the Sutter Buttes which are associated with deep-seated volcanism.

According to CGS, Sutter County is fairly safe from geologic hazards. There are, however, isolated areas within the County that have soils and other conditions which could result in structural damage induced by seismic activity. The County is located upon an alluvial plain

1 Quad Knopf, SYSCO Draft EIR, June 2000.

which contains some low-lying, poorly consolidated to unconsolidated sediment that are often water-saturated and, therefore, subject to seismically induced ground disturbance. A discussion of potential seismic hazards is presented below.

SUMMARY OF KEY FINDINGS

- The faults identified in Sutter County include the Quaternary Fault located in the northern section of the County within the Sutter Buttes. The second area is the Pre Quaternary Fault located in the southeastern corner of the County just east of where Highway 70 enters in to the County. Both Faults are listed as non-active faults, but have the potential for seismic activity.
- Erosion does occur in Sutter County and is especially a concern along the banks of rivers and drainages during winter storm events.
- Relatively localized problems due to landslides have occurred in the County during periods of heavy precipitation with minimal impact to residents.
- Several soil types in the County have been identified with a combination shrink-swell potential, changing at varying soil depths, which can cause significant damage including structural damage, cracked driveways and sidewalks, heaving of roads and highway structures; and disruption of pipelines and other utilities. Based on this data, 34 percent of soil types in Sutter County have a high shrink-swell potential and 23 percent have a low shrink-swell potential.
- The sandy layers paralleling the Sacramento River, Feather River, and Bear River have lower soil densities, a high overall water table, and are potentially a higher risk area for liquefaction if major seismic activity were to occur. Areas of bedrock, including the Sutter Buttes, have high density compacted soils and contain no liquefaction potential, although localized areas of valley fill alluvium can have moderate to high liquefaction potential.

EXISTING CONDITIONS

Topography and Geology

Sutter County is located in the flat surface of the Great Valley geomorphic province of California. The Great Valley is an alluvial plain approximately 50 miles wide and 400 miles long in the central portion of California. The Great Valley's northern portion is the Sacramento Valley, drained by the Sacramento River, and its southern portion is the San Joaquin Valley, drained by the San Joaquin River.

The geology of the Great Valley is typified by thick sequences of alluvial sediments derived primarily from erosion of the mountains of the Sierra Nevada to the east, and to a lesser extent, erosion of the Klamath Mountains and Cascade Range to the north. These sediments were transported downstream and subsequently laid down as a river channel, floodplain deposits, and alluvial fans.

Soil Hazards

Erosion

Erosion is a two-step process by which soils and rocks are broken down or fragmented and then transported. The breakdown processes include mechanical abrasion, dissolution, and

weathering. Erosion occurs naturally in most systems, but is often accelerated by human activities that disturb soil and vegetation. The rate at which erosion occurs is largely a function of climate, soil cover, slope conditions, and inherent soil properties such as texture and structure. Water is the dominant agent of erosion and is responsible for most of the breakdown processes as well as most of the transport processes that result in erosion. Wind may also be an important erosion agent. The rate of erosion depends on many variables including the soil or rock texture and composition, soil permeability, slope, extent of vegetative cover, and precipitation amounts and patterns.

Erosion increases with increasing slope, increasing precipitation, and decreasing vegetative cover. Erosion can be extremely high in areas where vegetation has been removed by fire, construction, or cultivation. High rates of erosion may have several negative impacts including degradation and loss of agricultural land, degradation of streams and other water habitats, and rapid silting of reservoirs.

The vulnerability of erosion of natural soil types (erodibility) has been mapped by the U.S. Soil Conservation Service in a Soil Survey for Sutter County. Potential erodibility has been grouped in the following three generalized categories.

- **Slight –** 83 percent of Sutter County soil types have been identified in the Soil Survey as having slight erodibility and generally consist of those soil types with slopes of 0-9 percent.
- **Moderate –** 10 percent of Sutter County soil types have been identified in the Soil Survey as having moderate to high erodibility and generally consist of those soil types with slopes of 9 to 30 percent.
- **High –** 5.5 percent of Sutter County soil types have been identified in the Soil Survey as having high to very high erodibility and generally consist of those soil types with slopes of 30 to 75 percent.

More specific information by soil type is contained in TBR Section 4.2, Agriculture, Soils, and Mineral Resources. The moderate and high groups contain soil types found in the Sutter Buttes. It should be noted that there are some naturally erodible soil types in the moderate and high groups which do not have slopes as high as 9 to 75 percent.

With the exception of moderate to high erosion in the Sutter Buttes, the following factors make Sutter County an area of low erosion activity:

- 1 percent of Sutter County is water;
- Sutter County's average annual precipitation is 15 to 20 inches;
- with the exception of the Sutter Buttes, Sutter County does not have slopes in excess of 9 percent; and
- the naturally erodible soil types are located in the Sutter Buttes.

Expansive Soils

Expansive soils are prone to change in volume due to the presence of moisture. Soft clay soils have the tendency to increase in volume when moisture is present and shrink when it is dry (shrink-swell). Swelling soils contain high percentages of certain kinds of clay particles that are capable of absorbing large quantities of water, expanding up to 10 percent or more as the clay becomes wet. The force of expansion is capable of exerting pressures of 20,000 per square

foot (psf) or greater on foundations, slabs, and other confining structures.[2] Soils composed predominantly of sand and gravel have a low volume change and are classified in the three following designations:

1. **Low absorption soils** include sands and silts with relatively low amounts of clay minerals. Sandy clays may also have low expansion potential, if the clay is kaolinite. Kaolinite is a common clay mineral.

2. **Moderate absorption soils** include silty clay and clay textured soils if the clay is kaolinite and also includes heavy silts, light sandy clays, and silty clays with mixed clay minerals.

3. **High absorption soils** are clay with mixed montmorillonite, a clay mineral which expands and contracts more than kaolinite.

Expansive soils can cause damages including structural damage; cracked driveways, sidewalks, heaving of roads and highway structures; and disruption of pipelines and other utilities. Building can occur successfully on expansive soils with proper mitigation to offset the vertical and horizontal forces of the soil type. Expansive soils are most likely to occur in basins and on basin rims with non expansive soils accruing along the river and river valley and steep mountain slopes. Several soil types in the County have been identified with a combination shrink-swell potential changing at varying soil depth. Based on this data, 34 percent of soil types in Sutter County have a high potential and 23 percent have a low potential.[3]

Subsidence

Subsidence is the sinking of a large area of ground surface in which the material is displaced vertically downward, with little or no horizontal movement. Subsidence is usually a direct result of groundwater, oil, or gas withdrawal. These activities are common in several areas of California, including parts of the Sacramento Valley and in large areas of the San Joaquin Valley.

Subsidence is a greater hazard in areas where subsurface geology includes compressible layers of silt and clay. Subsidence due to groundwater withdrawal generally affects larger areas and presents a more serious hazard than does subsidence due to oil and gas withdrawal. However, localized subsidence due to oil and gas withdrawal has been observed at numerous locations in California, primarily in the Los Angeles basin.

In portions of the San Joaquin Valley, subsidence has exceeded 20 feet over the past 50 years. In the Sacramento Valley, preliminary studies suggest that much smaller levels of subsidence, up to two feet may have occurred. In most of the valley, elevation data are inadequate to determine positively if subsidence has occurred. However, groundwater withdrawal in the Sacramento Valley has been increasing and groundwater levels have declined in some areas.

The amount of subsidence caused by groundwater withdrawal depends on several factors, including: (1) the extent of water level decline, (2) the thickness and depth of the water-bearing strata tapped, (3) the thickness and compressibility of silt-clay layers within the vertical sections where groundwater withdrawal is occurring, (4) the duration of maintained groundwater level decline, (5) the number and magnitude of water withdrawals in a given area, and (6) the general geology and geologic structure of the groundwater basin.

2 Sutter County Multi-Hazard Mitigation Plan, May 2007.

3 Sutter County, Multi-Hazard Mitigation Plan, May 2007.

The damaging effects of subsidence include gradient changes in roads, streams, canals, drains, sewers, and dikes. Many such systems are constructed with slight gradients and may be significantly damaged by even small elevation changes. Other effects include damage to water wells resulting from sediment compaction and increased likelihood of flooding of low-lying areas.

Sutter County is not subject to high subsidence. A number of the previously described factors needed to cause subsidence do not exist in Sutter County. A list of the factors contributing to the low subsidence potential is described below.

1. Although Sutter County contains several natural gas withdrawal locations in the western and southern portions of the county, these gas fields are spread out over a large area (not producing concentrated drawdowns) and do not individually generate a high volume of gas.

2. Although Sutter County does have groundwater drawdowns for domestic and agricultural water supply, the subsurface geology of the county has a significant recharge capability from the Sacramento River, the Feather River, and runoff from the Sierra Nevada snow melt.

3. A large portion of Sutter County households (in the cities of Yuba City and Live Oak) do not rely on groundwater because the public water supply is delivered from surface water withdrawal from the Feather River.

4. Sutter County does not have oil withdrawal drawdowns.

Future potential for subsidence in Sutter County could result from prolonged periods of drought and significant increases in natural gas withdrawal.

Seismic Hazards

Earthquakes are due to a sudden slip of plates along a fault. Seismic shaking is typically the greatest cause of losses to structures during earthquakes. Earthquakes can cause structural damage, injury and loss of life, as well as damage to infrastructure networks such as water, power, gas, communication, and transportation lines. Other damage-causing effects of earthquakes include surface rupture, fissuring, settlement, and permanent horizontal and vertical shifting of the ground. Secondary impacts can include landslides, seiches, liquefaction, and dam failure.

Seismicity

Earthquake magnitude is a quantitative measure of the strength of an earthquake or the strain energy released by it, as determined by the seismographic or geologic observations. It does not vary with distance or the underlying earth material. This differs from earthquake intensity, which is a qualitative measure of the effects a given earthquake has on people, structures, loose objects, and the ground at a specific location. Intensity generally increases with increasing magnitude and in areas underlain by unconsolidated materials and decreases with distance from the hypocenter.

Several magnitude scales have been developed with the most commonly used scale called the moment magnitude (Mw) scale. Moment magnitude is related to the physical size of fault rupture and the movement or displacement across the fault, and as such is more uniform measure of the strength of an earthquake. Another measure of earthquake size is seismic moment. The seismic moment determines the energy that can be radiated by an earthquake.

The moment magnitude of an earthquake is defined relative to the seismic moment for that event.

Earthquake intensity in a given locality is typically measured using the Modified Mercalli intensity scale with values of this scale ranging from I to XII (Table 5.1-1). The most commonly used adaptation covers the range of intensities from the conditions of a value of I that is defined as not felt except by very few, favorably situated, to XII that is defined as damage total, lines of sight disturbed, and objects thrown into the air. While an earthquake has only one magnitude, it can have much intensity, which typically decreases with distance from the epicenter.

Table 5.1-1. Earthquake Magnitude Scales

Richter Scale	Modified Mercalli Scale	Effects
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; may 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 and direction. Sleepers awaken, liquids spill, objects displaced, weak materials crack.
5.6 – 6.4	VII	People frightened and wall unsteady. Pictures and books thrown, dishes/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 thrown down. Hard to drive, trees broken, damage to foundation and frames. Reservoirs damaged. Underground pipelines broken.
7.5 – 7.9	X	General panic, ground cracks, masonry and frame buildings destroyed. Bridges dams, dikes and embankments damaged. Railroads bent slightly.
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: Sutter County General Plan, Background Report, November 1996.

In populated areas, the greatest potential for loss of life and property damage can come as a result of ground shaking from a nearby earthquake. The degree of damage depends on many interrelated factors. Among these are the Richter magnitude, focal depth, distance from the causative fault, source mechanism, duration of shaking, high rock accelerations, type of surface deposits or bedrock, degree of consolidation of surface deposits, presence of high ground water, topography, and finally, the design, type, and quality of building construction.

Active faults, as defined by the California Mining and Geology Board, are those faults which have caused soil and strata displacement with evidence of surface displacement within the Holocene epoch; that is, within the last 11,000 years. Some faults are characterized as active based on surface displacements within historic time, approximately the last 200 years, while others are characterized as active based on surface displacements in rocks or sediments which

are less than 11,000 years old. Some faults may have been active in this time period, but did not result in identifiable surface displacements, while other faults may still be active although they have not been active during the Holocene. Several documented high magnitude earthquakes have occurred on faults not previously recognized as active.

Potentially active faults are also defined by the California Mining and Geology Board and are those for which there is evidence of surface displacement within the Quaternary period, that is, within the last 1.6 million years. Faults that have experienced movement in the last 11,000 to 750,000 years are conditionally active faults.

The faults identified in Sutter County include the Quaternary Faults, located in the northern section of the County within the Sutter Buttes, and the Pre Quaternary Fault, located in the southeastern corner of the Planning Area, just east of where Highway 70 enters in to the County (Figure 5.1-1). Both Faults are listed as non active faults, but have the potential for seismic activity. Table 5.1-2 provides the most recent regional seismic activity for Sutter County.

Table 5.1-2. Local and Regional Faults

Fault	Most Recent Activity; Richter Scale Magnitude
Sutter Buttes	Quaternary
Dunnigan Hills (near Arbuckle)	Holocene
Foothills Suture Zone Cleveland Hill Swain Ravine-Spenceville	1975; M 5.7
Midland	Quaternary
Unnamed (1892 epicenters between Vacaville and Winters)	
Green Valley-Concord –Calaveras	
Rodgers Creek-Hayward	1968; M 6.8 1936; M 7.0
San Andreas	1989; M 7.1 (Loma Prieta) 1906; M 8.3
Eastern Sierra Nevada Sulphur creek Stampede valley Genoa	 1875 1966 Holocene
Source: Environmental Science Associates, Proposed Ach Landfill EIR, 1992.	

Ground Shaking

Although the County has felt ground shaking from earthquakes with epicenters located elsewhere, no major earthquakes or earthquake related damage has been recorded within the County. Notable regional earthquake events include those detailed below.

- A potential earthquake source is the Midland Fault Zone on the western side of Sacramento Valley, where in 1892 an earthquake centered between the cities of Vacaville and Winters caused minor damage in surrounding areas.
- An estimated 4.0+ Richter magnitude earthquake occurred between Auburn and Folsom in nearby Placer County in 1908 with an epicenter possibly associated with the Bear Mountain fault.
- To the east in Nevada, there are several faults associated with a series of earthquakes in 1954, especially the major (7.1 Richter magnitude) December 16,

1954 Fairview Peak event (about 100 miles east of Carson County). These events caused no damage in Reno, but there was some damage in Sacramento, probably because of the soft soil conditions.

- An active fault in the western Sierra Nevada foothills called the Cleveland Hills fault. This fault was the source of the 1975 Oroville earthquake (Richter Magnitude: 5.7), which was felt strongly in neighboring areas.
- According to the Hazard Mitigation Planning Committee (HMPC), the 1989 San Francisco earthquake was felt in the Sutter County Planning Area.

Based on historic data and known active or potentially active faults in the region, Sutter County has the potential to experience low to moderate ground shaking. The intensity of ground shaking at any specific site depends on the characteristics of the earthquake, the distance from the earthquake fault, and on the local geologic and soils conditions. Fault zone maps are used to identify where such hazards are more likely to occur based on analyses of faults, soils, topography, groundwater, and the potential for earthquake shaking sufficiently strong to trigger landslide and liquefaction.[4]

Liquefaction Potential

Liquefaction, which can occur in earthquakes with strong ground shaking, is mostly found in areas with sandy soil or fill and a high water table located 50 feet or less below the ground surface. Liquefaction can cause damage to property with the ground below structures liquefying making the structure unstable causing sinking or other major structural damage. Evidence of liquefaction may be observed in "sand boils," which are expulsions of sand and water from below the surface due to increased pressure below the surface.[5]

Liquefaction during an earthquake requires strong shaking and is not likely to occur in the county due to the relatively low occurrence of seismic activity in the area; however, the clean sandy layers paralleling the Sacramento River, Feather River, and Bear River have lower soil densities and high overall water table are potentially a higher risk area if major seismic activity were to occur. Areas of bedrock, including the Sutter Buttes have high density compacted soils and contain no liquefaction potential, although localized areas of valley fill alluvium can have moderate to high liquefaction potential.

Landslides

Landslides are downward and outward movements of slope forming materials which may be rock, soil, artificial fill, or combinations of such materials. The size of landslides varies from those containing less than a cubic yard of material to massive ones containing millions of cubic yards. Large landslides may move down slope for hundreds of yards or even several miles. A landslide may move rapidly or so slow that a change of position can be noted only over a period of weeks or years. A similar, but much slower movement is called creep.

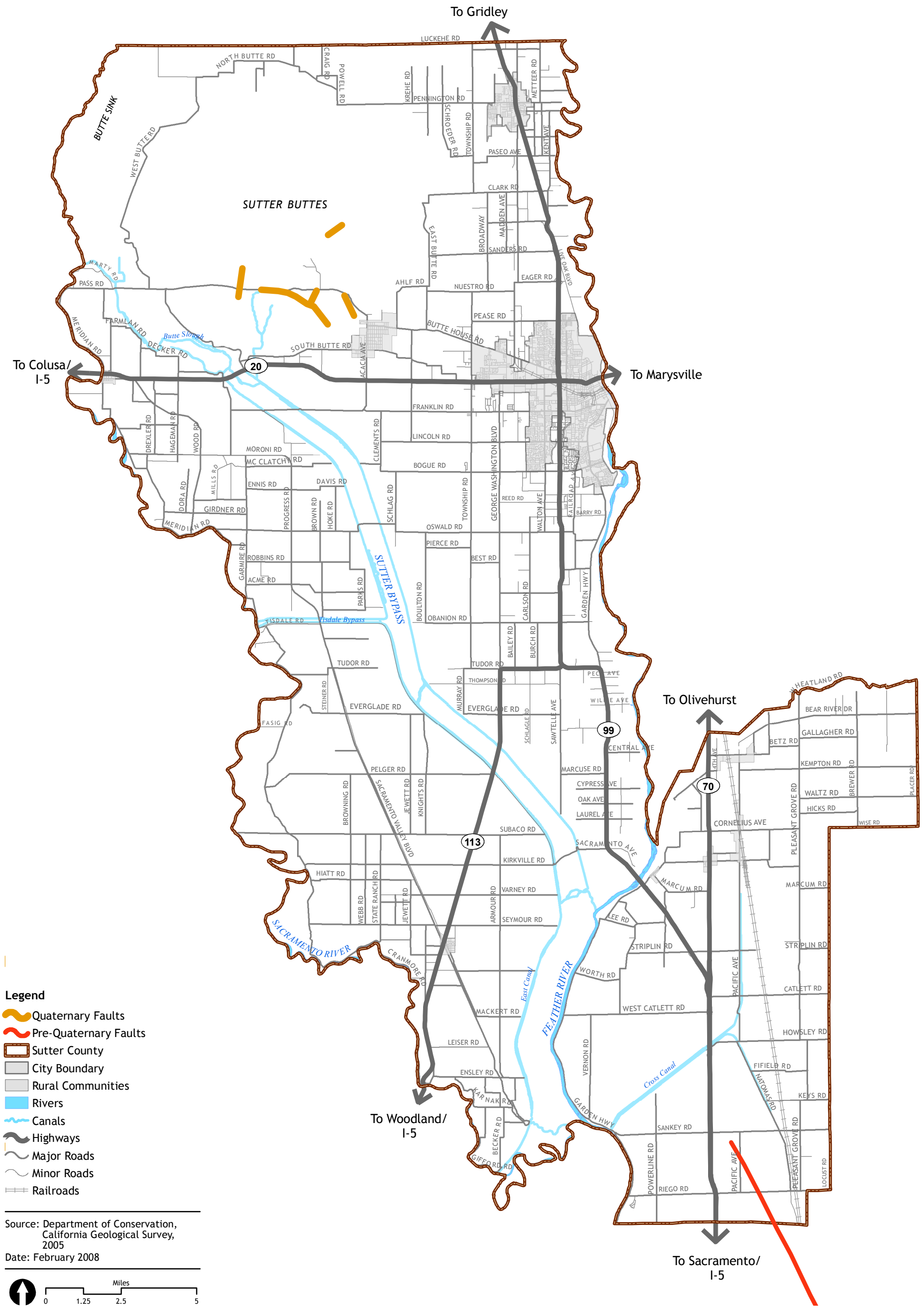
The susceptibility of a given area to landslides depends on a great many variables. However, the general characteristics which influence landslide hazards are well understood and thus it is possible to map areas in terms of general susceptibility to landslides. Among the important factors which govern the formation of landslides are:

4 Sutter County, Multi-Hazard Mitigation Plan, May 2007.

5 Sutter County, Multi-Hazard Mitigation Plan, May 2007.

SUTTER COUNTY
General Plan Update

SUTTER COUNTY
GENERAL PLAN UPDATE



Legend

- Quaternary Faults
- Pre-Quaternary Faults
- Sutter County
- City Boundary
- Rural Communities
- Rivers
- Canals
- Highways
- Major Roads
- Minor Roads
- Railroads

Source: Department of Conservation, California Geological Survey, 2005
Date: February 2008

Miles
0 1.25 2.5 5

PBS&J

SEISMIC HAZARDS
Figure 5.1-1

- **Steepness of slope** - landslides usually occur on moderate to steep slopes.
- **Type of slope material** - loose, unconsolidated soils and soft, weak rocks are more hazardous than are firm, consolidated soils or hard bedrock.
- **Structure and physical properties of materials** - the orientation of layering and zones of weakness relative to slope direction strongly affect landslide potential.
- **Water content** - increasing water content increases landslide hazard because water decreases resistance to sliding and adds weight to the materials on a slope.
- **Amount of vegetation** - abundant vegetation with deep roots increases slope stability.
- **Proximity to areas undergoing rapid erosion or man-made cuts** - undercutting slopes may greatly increase landslide potential.
- **Earthquake ground motions** - strong ground motion may trigger landslides in marginally stable slopes or loosen slope materials and thus increase the risk of future landslides.

With the exception of the Sutter Buttes, Sutter County is located in a landslide-free zone due to the flat topography. The Sutter Buttes are considered to be in a low landslide hazard zone as shown in Bulletin 198 by the California Division of Mines and Geology.

Volcanic Hazards

The most probable centers of future volcanic eruptions generally lie along the eastern margin of California, with the greatest concentrations in northeastern California and along the eastern margin of the Sierra Nevada. There have been few losses in California from volcanic eruptions. Mount Lassen, an active volcano, is the southernmost volcano in the Cascade Range. There are numerous active volcanoes in the Cascades including Mount Shasta in California and several others in Oregon and Washington. Mount Lassen last erupted between 1914 and 1921; and included steam and ash eruptions as well as a small lava flow. Like the other volcanoes in the Cascades, Mount Lassen is considered dormant, or not currently erupting, but may erupt again in the future. Mount Lassen has erupted at least seven times within the past 1,200 years.

The Sutter Buttes are volcanic in origin. However, neither the Sutter Buttes nor Sutter County is identified as being located in an area of potential volcanic hazards by the State. The Buttes erupted between 1.60 and 1.35 million years ago. During their eruption, melted rock, or magma pushed its way upward beneath the flat valley layers of sandstone, shale, gravel beds, and marine deposits. The magma solidified into large lava domes of the Castellated Core of the Buttes. Sediments eroded over time, leaving only tiny remnants in the Castellated Core. As the lava domes breached the surface, they released great volumes of hot, pressurized volcanic gases and steam with explosive force. When the volcanic action stopped, the long process of erosion began to carve away the softer materials of the volcano.

There are four main hazards that may accompany volcanic eruptions: (1) ash and cinder falls, (2) explosive blasts, (3) lava flows, and (4) mud flows. Despite the general severity of volcanic hazards, potential volcanic hazards for Sutter County are unlikely. In historic times there are no records of significant ash falls, explosive effects, lava flows or mud flows in Sutter County. Further, impending volcanic eruptions generally give numerous advance warning signs and thus it is usually possible to evacuate residents in areas subject to volcanic hazards.

REGULATORY CONTEXT

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Special Studies Act was signed into law in 1972 (in 1994 it was renamed the Alquist-Priolo Earthquake Fault Zoning Act). The primary purpose of the Act is to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy across the trace of an active fault. This State law was passed in direct response to the 1971 San Fernando earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. Surface rupture is the most easily avoided seismic hazard. The Act requires the State Geologist to delineate "Earthquake Fault Zones" along faults that are "sufficiently active" and "well defined." The Act dictates that cities and counties withhold development permits for sites within an Earthquake Fault Zone until geologic investigations demonstrate that the sites are not threatened by surface displacements from future faulting. No portion of Sutter County is within an Earthquake Fault Zone.

California Building Code (CBC)

All development within the State of California must comply with the provisions of the California Building Code at a minimum. The CBC provides minimum requirements for grading, building siting, development, and seismic design. Typically, most local jurisdictions adopt building standards that are at least as stringent, if not more stringent than the CBC.

California Code of Regulations (CCR), Title 24, Part 2, the California Building Code (CBC), provides minimum standards for building design. Local codes are permitted to be more restrictive than Title 24, but are required to be no less restrictive. Chapter 16 of the CBC deals with General Design Requirements, including (but not limited to) regulations governing seismically resistant construction. Chapter 18 deals with site demolition, excavations, foundations, retaining walls, and grading, including (but not limited to) requirements for seismically resistant design, foundation investigations, stable cut and fill slopes, and drainage and erosion control. Construction activities are subject to occupational safety standards for excavation, shoring, and trenching as specified in Cal-OSHA regulations (CCR, Title 8).

Among other things, the CBC defines different building regions in the State and ranks them according to their seismic hazard potential. The County is in Seismic Site Class D; accordingly, any future development would be required to comply with all design standards applicable to Seismic Site Class D.

Sutter County implements the CBC through the building permit process (County Code, Title 13, Building Safety Codes).

Seismic Hazards Map Act

Under the Seismic Hazards Mapping Act, seismic hazard zones are to be identified and mapped to assist local governments in land use planning. The intent of this publication is to protect the public from the effects of strong ground shaking, liquefaction, landslides, ground failure, or other hazards caused by earthquakes. In addition, CGS's Special Publications 117, "Guidelines for Evaluating and Mitigating Seismic Hazards in California," provides guidance for the evaluation and mitigation of earthquake-related hazards for projects within designated zones of required investigations. The Sutter County region has not been subject to any seismic hazards mapping by CGS.

Local

The California Building Code is used to regulate structural stability for the health and safety of persons in Sutter County.

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5.2 FIRE HAZARDS

INTRODUCTION

This section provides a general description of the urban and wildland fire hazards that exist within Sutter County. Information for this section is based on information provided by CALFIRE (formerly the California Department of Forestry (CDF) and Fire Protection) and the County's 2007 Multi-Hazard Mitigation Plan. Fire protection and emergency services are discussed in Chapter 3.0, Infrastructure and Community Services.

SUMMARY OF KEY FINDINGS

- The Sutter Buttes are the primary concern of wildland fire hazard, with their limited access, steep terrain, and remote location. The Sutter County Fire Department responded to 34 wildfires in the Sutter Buttes totaling 413 acres from 2002 to 2007.
- According to CALFIRE, from 1994 to 1999, over 90 percent of fires in California were attributed to human causes. Further, recent studies conclude that the greater the population density in an area, the greater the chance of an ignition. With population continuing to grow throughout Sutter County, the risk from wildland fire also continues to grow.

Overview

Wildfires are of concern throughout California with fires generally classified as either an urban fire or a wildland fire. The typical fire season starts in early spring and extends to late fall, brought on by a combination of hot weather, accumulated dry vegetation, and low moisture in the air. These conditions along with high winds and drought can increase the severity and likelihood of a major fire.

The U.S. Department of Forestry records show that wildland fires occur on a regular basis almost every year, while large fires occur fairly regularly every ten years. The occurrence of major wildfires in a particular region corresponds to the age of its vegetation. Often, renewed growth of vegetation after a major fire tends to pose a lesser risk during the first ten years of growth. However, as dead vegetation accumulates, the potential for a major wildfire increases as these materials are more susceptible to ignition and facilitate the spreading of flames. Therefore, the occurrence of wildland fires tends to be cyclical, where a decade will pass with few fires followed by a decade with several large fires. Additionally, the occurrence of the largest fires also corresponds to periods of extremely high wind conditions.

Factors such as fuel, topography, and weather are found to be the three major indicators of the areas potential to burn. Fuel feeds the fire and is classified by type and volume and can include everything from dead tree needles and leaves, twigs, and branches to dead standing trees, live trees, brush, cured grasses and man-made structures. The fuel source directly influences the behavior of wildfire. Light fuels such as grasses burn quickly and serve as a catalyst for fire spread. The volume of available fuel is described in terms of fuel loading. An area's terrain and land slopes, or topography, affect its susceptibility to wildfire spread. Fire intensities and rates of spread increase as slope increases due to the tendency of heat from a fire to rise. The natural arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes. Weather components such as temperature, relative humidity, wind, and lightening also

affect the potential for wildfire. High temperatures and low relative humidity dry out the fuels that feed the wildfire. With high winds fire will move fast and have a greater intensity.

EXISTING CONDITIONS

Wildland Fires

Wildland fire is an ongoing concern for Sutter County. While urban fires are predominantly located within the incorporated areas of the County, fires can also occur in rural areas where urbanization meets natural areas that are not used for agricultural purposes. Wildland fires pose the greatest threat to the County with much of the natural vegetated areas located along river ways and in the mountains of the Sutter Buttes. Much of the County is heavily agricultural maintaining large areas of lower fire risk with the regular irrigation that prevents vegetation from drying.

The Sutter Buttes are the primary concern of wildland fire hazard, with their limited access, steep terrain and remote location. The Sutter County Fire Department responded to 34 wildfires in the Sutter Buttes totaling 413 acres from 2002 to 2007. In other areas, large concentrations of highly flammable brush located in flat open spaces and crops that require drying, such as safflower, are also quite susceptible to wildland fire. From 2004 to 2007, the Sutter County Fire Department responded to 15 river bottom fires in their jurisdiction for a total of 17 acres. The "river bottoms" are those areas along the Sacramento, Feather and Bear Rivers within the levee system, where much of the area inside these levees are left in a natural state, allowing combustible fuels to accumulate over long periods of time. The remainder of the wildland fires in the County were associated with open fields and agricultural land.

Figure 5.2-1 shows the fire threat as designated by CALFIRE in Sutter County. Areas around the Sutter Buttes, the Sacramento, Feather, and Bear Rivers, and the Sutter Bypass are categorized as a moderate fire threat. Fire threat is a combination of two factors: (1) fire frequency, or the likelihood of a given area burning; and (2) potential fire behavior or hazard. These two factors combine to create the four threat classes ranging from moderate to extreme fire threat.

According to CALFIRE, vegetation wildland fires occur within their jurisdiction on a regular basis; however, most are controlled and contained early with limited damages. For those that are not contained and become wildfires, damages can be extensive, with potential loss of human life, structures, cultural resource, natural elements, as well as economic impacts. Smoke and air pollution from wildfires can also be a severe health hazard. In addition, catastrophic wildfire can lead to secondary impacts or losses such as future flooding, landslides, and erosion during the rainy season.

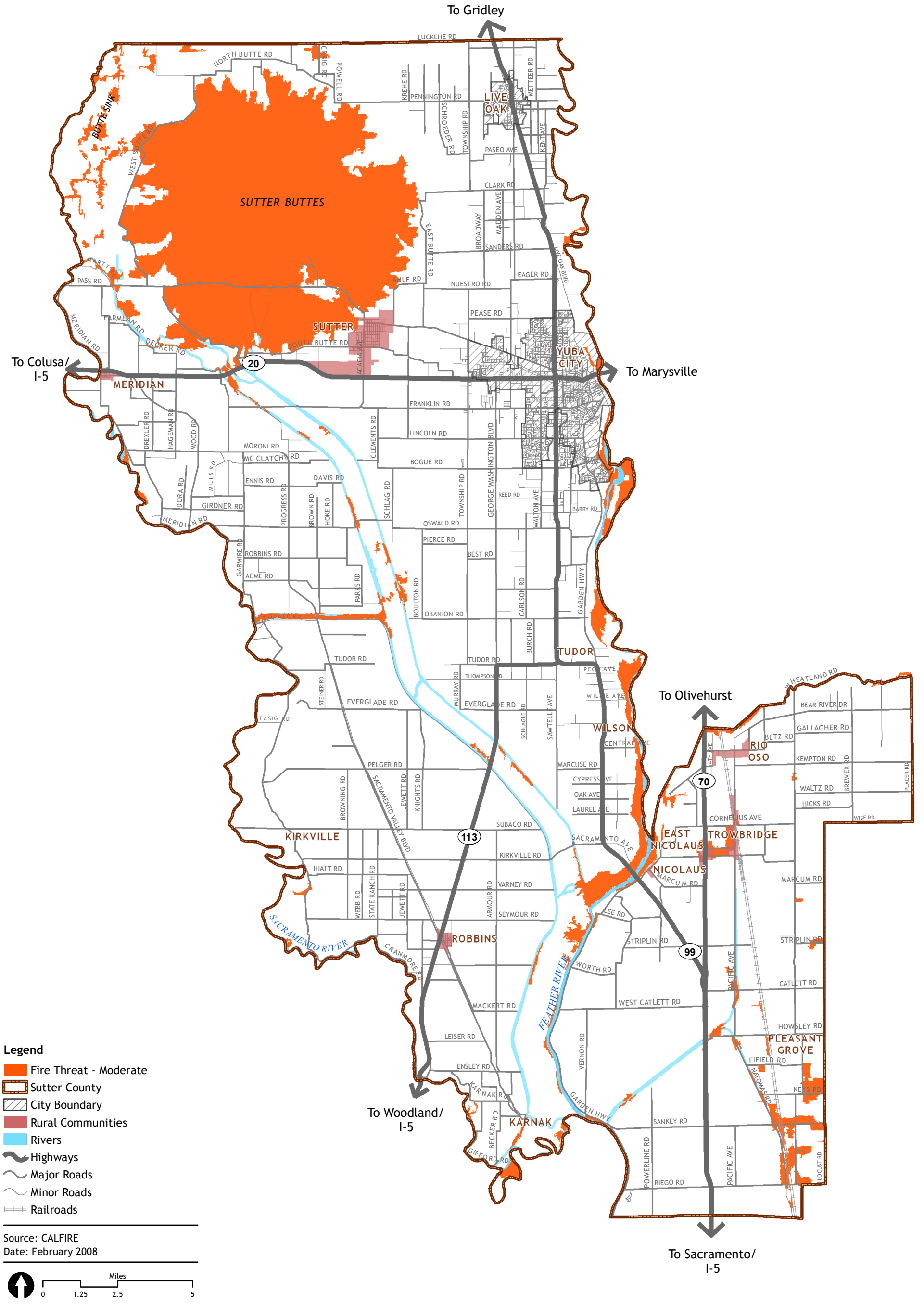
There are many causes of wildfire from naturally caused lightning fires to human-caused fires linked to activities such as smoking, campfires, equipment use and arson. According to CALFIRE, from 1994 to 1999, over 90 percent of fires in California were attributed to human causes. Further, recent studies conclude that the greater the population density in an area, the greater the chance of an ignition. With population continuing to grow throughout California and Sutter County, the risk from wildland fire also continues to grow.

Urban Fire Hazard

Although fires can occur in any structure it is found that generally non-sprinkled or older structures are especially susceptible to fire hazard. Dwelling units in lower socio-economic areas also appear to be more susceptible to fires, due to the age of the structures, use of old fire codes, non-fire-resistive construction materials, and no internal sprinklers or other fire safety systems in place.

SUTTER COUNTY
General Plan Update

SUTTER COUNTY
GENERAL PLAN UPDATE



Legend

- Fire Threat - Moderate
- Sutter County
- City Boundary
- Rural Communities
- Rivers
- Highways
- Major Roads
- Minor Roads
- Railroads

Source: CALFIRE
Date: February 2008

Miles
0 1.25 2.5 5

PBS&J

FIRE THREAT
Figure 5.2-1

REGULATORY CONTEXT

State

California Fire Code (Title 24, Part 9, California Code of Regulations)

The California Fire Code is Part 9 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. The California Fire Code incorporates the Uniform Fire Code with necessary California amendments. This Code prescribes regulations consistent with nationally recognized good practice for the safeguarding to a reasonable degree of life and property from the hazards of fire explosion, and dangerous conditions arising from the storage, handling and use of hazardous materials and devices, and from conditions hazardous to life or property in the use or occupancy of buildings or premises and provisions to assist emergency response personnel.

Local

Local regulations abide by and enforce the California Fire Code.

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5.3 HAZARDOUS MATERIALS MANAGEMENT

INTRODUCTION

This section provides information on hazardous materials transportation, contaminated sites, and emergency response in Sutter County. Information is based upon information from agency databases, including as the U.S. Environmental Protection Agency's (U.S. EPA) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database, the California Department of Toxic Substances Control's (DTSC) EnviroStor database, the Central Valley Regional Water Quality Control Board's (CVRWQCB) Spills, Leaks, and Investigations and Cleanup (SLIC) Program database, and the CVRWQCB's Leaking Underground Storage Tank (LUST) database. Websites for the U.S. EPA, DTSC, CVRWQCB, California Environmental Protection Agency (Cal/EPA), California Integrated Waste Management Board (CIWMB), as well as various Sutter County department websites containing information regarding hazardous materials use, wastes, and environmental contamination were also used to compile the following information.

Definitions

The term "hazardous materials" is defined in different ways for different regulatory programs. For purposes of this document, the definition of "hazardous materials" is that from the California Health and Safety Code, Section 25501, where "…because of their quantity, concentration, or physical or chemical characteristics, (they) pose a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment."

"Hazardous waste" is a subset of hazardous materials. For the purposes of this document, the definition of "hazardous waste" is that from the California Health and Safety Code, Sections 25117 and 25141, as well as the California Code of Regulations (CCR), Title 22, Section 66261.3, where "…because of their quantity, concentration, or physical, chemical, or infectious characteristics, (they) may either cause, or significantly contribute to, an increase in mortality or serious illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed."

FINDINGS

- The Environmental Health Division of the Sutter County Community Services Department enforces hazardous waste regulations and serves as the Certified Unified Program Agency (CUPA) for the County.
- There are three sites located within Sutter County that are listed on the U.S. EPA CERCLIS (Comprehensive Environment Response, Compensation and Liability Information System) database listing contaminated and potentially contaminated sites; however, none of them are on the National Priority List (NPL), which lists sites in need of remediation.
- There are 10 sites within the County listed on the Department of Toxic Substances Control's EnviroStor site cleanup database. Some sites require no further action.
- The Central Valley Regional Water Quality Control Board's Spills, Leaks, and Investigations and Cleanup Program database lists 21 sites in Sutter County. Each of the sites is in various stages of remediation.

- The Central Valley Regional Water Quality Control Board Leaking Underground Storage Tank database lists 107 sites in the County that are in various stages of remediation.
- According to the Sutter County Hazardous Waste Management Plan (HWMP), the total annual hazardous waste materials produced by the County annually including waste from current hazardous clean up is approximately 2,500 tons per year. Waste oil is the largest contributor accounting for almost 71 percent of the total coming from small generator sources.

EXISTING CONDITIONS

Hazardous Materials Use

Hazardous materials are routinely used, stored, and transported in the County in industrial and commercial/retail businesses as well as in educational facilities, hospitals, and households. Hazardous materials use and waste generators in the County include industries, businesses, public and private institutions, and households. Federal, State, and local agency databases maintain comprehensive lists of the locations of facilities that use or store large quantities of hazardous materials, as well as facilities that generate hazardous waste. Some of these facilities use certain classes of hazardous materials that require accidental release scenario modeling and risk management plans to protect surrounding land uses.

Hazardous materials / chemicals can be released into the environment through a number of means. Accidents can happen at railroads, highways and manufacturing plants. In the event of an emergency, the California Office of Emergency Services (OES) along with other public safety agencies will provide information to the public via radio or television emergency alert stations (EAS). The OES also prepares and maintains emergency plans and training programs to respond to emergencies if they arise.

Transportation of Hazardous Waste

The transport of hazardous materials through the County is regulated by the California Department of Transportation (Caltrans) and the California Highway Patrol (CHP). Transporters must receive a license from the CHP, comply with all federal and state regulations, and travel with a route map. In California, transporters of hazardous wastes must have a valid registration to do such issued by DTSC. According to DTSC, there are two registered hazardous waste transporters in Sutter County: Singh Trucking, located in Yuba City, and Holt of California, located in Pleasant Grove.[1] Although these are the only two companies located in the County to transport hazardous wastes, companies based in other counties may transport hazardous wastes through the County as long as they have a valid DTSC registration.

In Sutter County, the primary routes used for the transport of hazardous materials or wastes are synonymous with the major transportation corridors, including Highway 99, Highway 70, and State Route 20. In addition to highways, any major road may serve as a route for hazardous materials transport, as long as transporters comply with regulations, as described above. In addition to automobile transport, hazardous materials may be routinely transported through the County via the Union Pacific Railroad, located in the southern portion of the County. In most cases, the County is not notified of every shipment of hazardous materials or wastes within its jurisdiction. Compliance with all applicable laws and regulations is intended to minimize the risk of potential hazardous materials spills or releases.

1 California Department of Toxic Substances Control, Registered Hazardous Waste Transporter Database, http://www.dtsc.ca.gov/database/Transporters/trans_cnty.cfm, accessed 12/16/07.

Certified Unified Program Agency Evaluation (CUPA) Business Monitoring

The Environmental Health Division of the Sutter County Community Services Department is the Certified Unified Program Agency (CUPA) for Sutter County. The CUPA is responsible for the administration of the "Unified Hazardous Waste and Hazardous Materials Management Regulatory Program" (Unified Program) within its jurisdiction. Elements of this program include hazardous waste generators and hazardous waste on-site treatment, underground storage tanks, above-ground storage tanks, hazardous material release response plans and inventories, risk management and prevention program, and Uniform Fire Code hazardous materials management plans and inventories. These hazardous materials management plans and inventories are also known as business plans. While the Environmental Health Division is the CUPA for Sutter County, the County Agricultural Department serves as a Participating Agency (PA) for reviewing Hazardous Materials Business Plans for agricultural businesses, hazardous waste generators, and above ground storage tanks for agricultural users. The Agricultural Department also implements the underground storage tank (UST) program for all underground storage tank facilities in the County.

In 2006, the CUPA distributed business plan packages to all known hazardous materials handlers. As a result, the CUPA has obtained new business plans from a majority of their hazardous materials handlers. As of June 2007, the CUPA is following up on those few businesses that failed to submit the annual inventory to either bring into compliance or assist them in obtaining appropriate exemptions under the Unified Program.

Sites with Known Contamination

Business practices and the laws that regulate hazardous materials use and disposal have changed dramatically over the years. Many businesses through intentional action, lack of awareness or accidental occurrences, or those that pre-date current requirements, have caused contamination on and around their properties. The County contains properties that were once contaminated and are now clean as well as a few properties that are contaminated with a clean-up process underway. Federal and State agencies responsible for hazardous materials management maintain databases of such sites.

The information regarding sites included in the following discussion is based on databases current as of December 2007. These sites are those that are listed by one or more of the databases shown below. Sites may be actively investigated and/or remediated under the oversight of one or more agencies, while other sites may have completed remediation activities.

Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)

The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), is a regulatory or statute law developed to protect the water, air, and land resources from the risks created by past chemical disposal practices. Under CERCLA, the U.S. EPA maintains a list of all contaminated sites in the nation that are currently, or have in the past, undergoing clean-up activities. This list is known as the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). CERCLIS contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities, including sites that are on the NPL or being considered for the NPL ("Superfund"). The NPL identifies sites or other releases that appear to warrant remedial actions. The three sites within the County listed on the CERCLIS database are not listed on the NPL. According to the CERCLIS database, one of the sites is listed as having no further action planned. The other two sites, although not currently listed on the NPL, may be reassessed at a later time. All of the

sites are within incorporated areas of Yuba City and Live Oak. These sites are listed below in Table 5.3-1.

Table 5.3-1. U.S. EPA, Region IX - U.S. Superfund Sites, National Priority List

Site Name	City	NPL listed
905 Parcel	Yuba City	No
Bowles Flying Service Inc	Live Oak	No
Onstott Dusters Inc (1)	Yuba City	No

Source: United States Environmental Protection Agency. CERCLIS database, http://cfpub.epa.gov/supercpad/cursites/srchrslt.cfm, accessed 9/26/07.

California Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC) maintains a database containing information on properties in California where hazardous substances have been released, or where the potential for a release exists. This database is known as EnviroStor and is one of a number of lists that comprise the "Cortese List" (a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5). EnviroStor provides a brief history of cleanup activities, contaminants of concern, and scheduled future cleanup activities. The Cal-Sites database also includes properties that have been remediated and certified by DTSC.

Table 5.3-2 below lists the 10 sites found on the EnviroStor database. As shown, remediation and cleanup activities are in different stages throughout the County. As noted above, sites are frequently listed and de-listed over time, so this list is subject to change.

Table 5.3-2. DTSC EnviroStor Site List

Site Name	Site Type	Cleanup Status	Address Description	City/County
Beale Titan Site 1b	State Response	Refer to: RWQCB	46.7 Acres; No Side Of The Sutter Buttes	Yuba City
Custom Chrome and Bumper Company	State Response	Certified	335 Garden Highway	Yuba City
Golden Gate Hop Ranch	State Response	Certified	12035 Garden Highway	Yuba City
H & B Machinery (1)	Voluntary Cleanup	No Further Action	1781 Colusa Hwy	Yuba City
Helena Chemical	State Response	Certified	921 N George Washington Blvd	Yuba City
Lomo Airstrip	State Response	* De-Listed	1111 Koch Lane	Live Oak
Sutter County Agricultural Commissioner	Haz Waste - Non-Operating	Inactive	142 Garden Highway	Yuba City
Sutter By-Pass	State Response	Certified	Near Junction Of Tisdale & Sutter Bypass	Sutter
UP Right of Way, Yuba City	Voluntary Cleanup	Active	Clark And Cooper Streets	Yuba City
Yuba City Steel Products Company	State Response	Refer: Rwqcb	526 Stevens Ave	Yuba City

Source: Department of Toxic Substance Control. EnviroStor Site List. http://www.envirostor.dtsc.ca.gov/public/search.asp, accessed 12/16/07.

Regional Water Quality Control Board (RWQCB) Spills, Leaks, Investigation and Cleanup (SLIC) Program

The Central Valley Regional Water Quality Control Board (CVRWQCB) Spills, Leaks, Investigations and Cleanup (SLIC) Program was established by the State Board Water Resources Control Board (SWRCB) so that Regional Boards could oversee cleanup of illegal discharges, contaminated properties, and other unregulated releases adversely affecting the State's waters but not covered by another program. Sites managed within the SLIC Program include sites with pollution from recent or historic spills, subsurface releases (e.g., pipelines, sumps), complaint investigations, and all other unauthorized discharges that pollute or threaten to pollute surface and/or ground waters. Soil or groundwater contamination is typical of former industrial facilities and dry cleaners, where chlorinated solvents were spilled, or have leaked into the soil or groundwater, or in agricultural areas, where pesticide and herbicide use may have resulted in contamination. The SLIC database lists 21 sites in Sutter County, all spill sites, each in different phases of remediation and cleanup. These sites and the constituents requiring cleanup are listed below in Table 5.3-3.

Leaking Underground Storage Tanks

Leaking underground storage tanks (LUSTs) are one of the greatest environmental concerns of the past several decades. In California, regulations aimed at protecting against UST leaks have been in place since 1983, one year before the Federal Resource Conservation and Recovery Act (RCRA) was amended to add Subtitle I requiring UST systems to be installed in accordance with standards that address the prevention of future leaks. State law and regulations pertaining to LUST are found in the California Health and Safety Code, Chapter 6.7, and the California Code of Regulations (CCR) Title 23, commonly referred to as the "California Underground Storage Tank Regulations." Federal and State programs include leak reporting and investigation regulations, and standards for clean up and remediation. UST cleanup programs exist to fund the remediation and contaminated soil and groundwater caused by leaking tanks. California's program is more stringent than the federal program, requiring that all tanks be double walled, and prohibiting gasoline delivery to non-compliant tanks. The SWRCB has been designated the lead regulatory agency in the development of UST regulations and policy. The State of California now requires replacement of older tanks with new double-walled tanks, with flexible connections and monitoring systems. Many older tanks were single-walled steel tanks that have leaked as a result of corrosion and detached fittings. Extensive federal and State legislation addresses LUSTs, including replacement and cleanup. The California Regional Water Quality Control Board, in cooperation with the Office of Emergency Services, maintains an inventory of LUSTs in a statewide database.

The CVRWQCB maintains a listing of the known LUSTs and remediation actions occurring within the County. As of December 2007, there were 107 LUST cases in Sutter County. Table 5.3-4 provides a list of LUST sites in the County.

Hazardous Waste Stream

According to the California Integrated Waste Management Board Sutter County households produce 43 tons of hazardous wastes annually just in the unincorporated areas of Sutter County alone. Commercial hazardous waste accounts for 13 tons of the County's waste stream each year with paint being the number one contributor at 11 tons annually.[2] Sutter County's total

2 California Integrated Waste Management Board, Waste Stream Profiles, http://www.ciwmb.ca.gov, accessed October 22, 2007.

Table 5.3-3. CVRWQCB Site Cleanup List – Sutter County

Facility	Address	Status	Constituents
H&B Machinery (Former)**	1781 Colusa Highway, Yuba City	Preliminary Assessment	xylene, toluene, heavy metals
Helena Chemical Company	3056 Colusa Highway, Yuba City	Closed by RB (Remediation Complete)	Nitrate
Puregro (Unocal)/Robbins	4900 Del Monte Ave, Robbins	Remediation Underway	TPH, nitrate, ammonia, pesticides
Costa Property	1716 Elmer Rd, Yuba City	Remedial Investigation	PCE, TCE, DCE
Wellhead Electric Co. (Karnak Facility)	Ensely and Irmour Rds, east of Knights Landing, Knights Landing	Remediation Underway	TPH
Slack's Wheel, Brake & Automotive	236 Garden Highway, Yuba City	Closed	N/A
Custom Chrome & Bumper Comp.	335 Garden Highway , Yuba City	Phase II Remedial Investigation	Metals
John Taylor Fertilizer-Yuba City	300 George Washington Blvd, N Yuba City	IRM	nitrate, ammonia, 1,2-DCP, 1,2,3-TCP
Hydraulic Equipment Specialty**	921 George Washington Blvd, N Yuba City	Closed (Remediation Complete)	TPH, PCE, dichloromethane
Harter Packing / Home Depot	Hooper Rd and Live Oak Blvd, Yuba City	Closed by RB (Remediation Complete)	arsenic
Lomo Airstrip	1111 Koch Ln, Live Oak	Closed (Remediation Complete)	pesticides
Property at Krehe Road	Krehe Road, Live Oak	Preliminary Assessment	TPH-d
Williams Tank Lines Gasoline Spill	Oswald Rd & Highway 99, Yuba City	Closed by RB (Remediation Complete)	TPH - g
HOLT of California (Formerly Tenco Tractor, Inc.)	7310 Pacific Ave, Pleasant Grove	Closed by RB (Remediation Complete)	Benzene
Beneto Tank Lines Tanker Spill	4444, 4454 Sawtelle Rd, Yuba City	Closed by RB (Remediation Complete)	TPH, BTEX
Yuba City Steel Products Company	526 Stevens Ave, Yuba City	Preliminary Assessment	VOCs, TPH, As, Ba, Cd, Cr, Co, Cu, Ni, Pb, Vn, Zn
Pacific Bell Yuba City Site	1301 Tharp Rd, Yuba City	Remediation Underway	TPH, Cd, Pb
H & B Machinery**	1501 Tharp Rd, Yuba City	Preliminary Assessment	N/A
Bowles Flying Service	10600 Township Rd, Live Oak	Phase I Remedial Investigation	pesticides
AAA Salvage Yard**	3094 Township Rd N Yuba City	Preliminary Assessment	TPH - mo, battery acid, Freon
Wagner Estate	1777 Tudor Rd, Yuba City	Closed by RB (Remediation Complete)	TPH - g, d, benzene

Source: Central Valley Regional Water Quality Control Board, Sacramento Office – Site Cleanup List, Sorted by County and Address, April 2005, http://www. waterboards.ca.gov/rwqcb5/water_issues/site_cleanup/index.html, accessed 12/16/07.

Table 5.3-4. Leaking Underground Storage Tanks in Sutter County

Facility	City/Community	Gasoline/Diesel	Case Type
TOMS SIERRA BULK PLANT	YUBA CITY	GASOLINE	A
GILL LEWIS	YUBA CITY	GASOLINE	W
PAUL YOUNG	YUBA CITY	GASOLINE	S
GASAMAT #952	YUBA CITY	GASOLINE	A
BEALE AIR FORCE BASE TITAN 1B SUTTER CO.	SUTTER BUTTES	UNKNOWN	UNKNOWN
SUTTER FOOD AND GAS	SUTTER	UNKNOWN	A
CA DWR SUTTER MAINTENANCE STN	SUTTER	GASOLINE	A
YUBA CITY CHEVERON-CASE #2	YUBA CITY	DIESEL	O
BIDEGAIN FARMSTEAD	LIVE OAK	UNKNOWN	A
MORE FOR LESS	LIVE OAK	GASOLINE	A
SIERRA GOLD NURSERY	YUBA CITY	DIESEL	S
EAST NICOLAUS MARKET	NICOLAUS	GASOLINE	A
CITY CORPORATION YARD	YUBA CITY	GASOLINE	A
NEWHALL LAND & FARM	MERIDIAN	GASOLINE	S
SUTTER MUTUAL WATER CO	ROBBINS	GASOLINE	A
ARCO #0489 (CASE # 2)	YUBA CITY	GASOLINE	A
BIRLA TIRES (FORMER MINI MART)	LIVE OAK	GASOLINE	A
VAN DYKE'S RICE DRYER	PLEASANT GROVE	GASOLINE	A
EXXON (A&R)	YUBA CITY	GASOLINE	A
SUTTER COUNTY CORP YARD	YUBA CITY	GASOLINE	A
MR PAUL'S MARKET	YUBA CITY	GASOLINE	S
SUTTER-YUBA MOSQUITO ABATEMENT	YUBA CITY	GASOLINE	A
DEL HEFFLEY CHEVRON	YUBA CITY	GASOLINE	S
WELLS FARGO BANK	YUBA CITY	GASOLINE	A
UNOCAL #3848	YUBA CITY	GASOLINE	S
SUTTER DIST 3 SHOP	NICOLAUS	GASOLINE	S
DHILLEN FARM	YUBA CITY	GASOLINE	A
HYDRAULIC EQUIPMENT	YUBA CITY	GASOLINE	S
BROWN'S ELEM. SCHOOL	RIO OSO	GASOLINE	S
TIFF'S MARKET	LIVE OAK	GASOLINE	A
QUESTION MARKET	YUBA CITY	GASOLINE	A
SHELL	YUBA CITY	GASOLINE	A
QUICK-N-SHOP	YUBA CITY	GASOLINE	A
ROUSE ESTATE	YUBA CITY	UNKNOWN	O
ROUSE ESTATE	YUBA CITY	GASOLINE	O
ARCO #6001	YUBA CITY	GASOLINE	A
SEARS AUTOMOTIVE CENTER	YUBA CITY	DIESEL	O
PEPSI COLA BOTTLING CO	YUBA CITY	GASOLINE	A
MARLENE BROCKER	YUBA CITY	DIESEL	S
FARM AIR FLYING SERVICE	PLEASANT GROVE	GASOLINE	A
1ST STOP	YUBA CITY	UNKNOWN	A
STANGHELLINI RANCH	ROBBINS	GASOLINE	A
C.J'S SERVICE CENTER	LIVE OAK	UNKNOWN	A
CHEVRON #9-8338	YUBA CITY	DIESEL	A
YUBA CITY TRUCK STOP	YUBA CITY	GASOLINE	A
ARCO #0489 (CASE # 1)	YUBA CITY	GASOLINE	A
ROY RIEGELS CHEM	ROBBINS	GASOLINE	S
ROTO ROOTER (FORMER)	YUBA CITY	GASOLINE	S
MECHANICS SHOP	YUBA CITY	DIESEL	S
MTL TERMINALS	YUBA CITY	GASOLINE	A
ROBBINS STATION	ROBBINS	GASOLINE	A
FORMER CHEVRON #9-4859	YUBA CITY	GASOLINE	A
SUTTER COUNTY SHERIFF'S DEPT	YUBA CITY	UNLEADED GASOLINE	A
VACANT (FORMERLY) MEYERS ROOFING	YUBA CITY	GASOLINE	A
R.G. TUCKER & SONS	ROBBINS	GASOLINE	A
PLEASANT GROVE FIRE	PLEASANT GROVE	GASOLINE	S
LAMON CONSTRUCTION	YUBA CITY	GASOLINE	S
WILLARD LEE FARM	LIVE OAK	DIESEL	S
RESIDENCE	YUBA CITY	DIESEL	S

Table 5.3-4. Leaking Underground Storage Tanks in Sutter County

Facility	City/Community	Gasoline/Diesel	Case Type
LAKEVIEW PETROLEUM CARDLOCK	YUBA CITY	GASOLINE	A
YUBA CITY CAR WASH	YUBA CITY	GASOLINE	A
LIVE OAK HIGH SCHOOL	LIVE OAK	GASOLINE	A
PG&E RIO OSO SUBST	RIO OSO	GASOLINE	S
LIBERTY TRACTOR	LIVE OAK	DIESEL	S
FORMER PALACE MEATS	YUBA CITY	DIESEL	U
FAR WEST HOMES	YUBA CITY	GASOLINE	S
SUNSWEET GROWERS	YUBA CITY	DIESEL	S
BIHLMAN PROPERTY	LIVE OAK	GASOLINE	S
POWER THRUST AUTO REPAIR (FORMER)	YUBA CITY	UNKNOWN	O
CONTINENTAL CABLEVISION	YUBA CITY	GASOLINE	A
SUTTER DIST SHOP 3	SUTTER	GASOLINE	S
YUBA CITY HS	YUBA CITY	UNLEADED GASOLINE	S
RAMOS OIL	YUBA CITY	UNKNOWN	O
PACIFIC BELL	YUBA CITY	DIESEL	S
JACK'S TACKS	YUBA CITY	GASOLINE	A
HOLT OF CALIFORNIA	PLEASANT GROVE	REGULAR GASOLINE	A
PUREGRO	ROBBINS	REGULAR GASOLINE	A
SHELL STATION	YUBA CITY	GASOLINE	W
HOLLY OAK GROCERY AND GAS	YUBA CITY	GASOLINE	S
EAST 99 SS (FORMER)	LIVE OAK	GASOLINE	A
#01156	YUBA CITY	GASOLINE	A
BOONE'S MINI MART	LIVE OAK	GASOLINE	A
ASSOCIATED TRANSPORT	YUBA CITY	GASOLINE	A
BILL HAMON TOYOTA	YUBA CITY	GASOLINE	S
MARLER'S SERVICE	YUBA CITY	GASOLINE	S
RECLAIM DISTRICT 1500	ROBBINS	GASOLINE	A
SOUTHERN PACIFIC - LIVE OAK	LIVE OAK	UNKNOWN	S
SBC	PLEASANT GROVE	UNKNOWN	O
VACANT COMMERCIAL BUILDING	YUBA CITY	GASOLINE	A
CHEVRON #9-4712	YUBA CITY	GASOLINE	A
MINTAN MINI MART	YUBA CITY	GASOLINE	A
CORNELL PROPERTY	SUTTER	GASOLINE	S
ROBBINS MERCHANTILE	YUBA CITY	GASOLINE	U
OSWALD MARKET	ROBBINS	GASOLINE	A
VERONA STORE	YUBA CITY	GASOLINE	S
ROBERT MOHAMMED	NICOLAUS	GASOLINE	S
YUBA CITY TOWN CENTER	YUBA CITY	GASOLINE	A
99 NORTH FOOD & GAS (FORMER)	YUBA CITY	DIESEL	A
MAGGIE'S RESTAURANT	NICOLAUS	GASOLINE	A
RAINBO THRIFT STORE/DEPOT	YUBA CITY	GASOLINE	S
ORR PROPERTY	YUBA CITY	DIESEL	A
GARNER PROPERTY	YUBA CITY	GASOLINE	A
BUCKLEY PROPERTY	ROBBINS	GASOLINE	A
B & D MARKET	KNIGHTS LANDING	GASOLINE	A
WAGNER AIRPORT	YUBA CITY	DIESEL	S
SUTTER FIRE DEPT	ROBBINS	GASOLINE	S
VACANT COMMERCIAL BUILDING	SUTTER	GASOLINE	S

Source: Central Valley Regional Water Quality Control Board, Leaking Underground Storage Tank Quarterly Report, October 2007.

W = Drinking water well impacted.
A = Aquifer used for drinking water.
S = Soil contamination only.
F = Surface water, lake, fish, etc.
O = Other groundwater contamination.
U = Undefined (test not available).

hazardous waste generated for the entire County including incorporated areas is estimated at 162 tons of household waste and 135 tons of commercial waste annually.[3]

Hazardous Waste Stream

According to the California Integrated Waste Management Board Sutter County households produce 43 tons of hazardous wastes annually just in the unincorporated areas of Sutter County alone. Commercial hazardous waste accounts for 13 tons of the County's waste stream each year with paint being the number one contributor at 11 tons annually.[4] Sutter County's total hazardous waste generated for the entire County including incorporated areas is estimated at 162 tons of household waste and 135 tons of commercial waste annually.[5]

The 1990 Sutter County Hazardous Waste Management Plan (HWMP), in accordance with *California Health and Safety Code Section* 25135 et seq., identifies hazardous waste generators within the County, amounts and types of waste produced, and projected waste generation. The primary goal of the HWMP is to reduce the need for new hazardous waste facilities by reducing waste at its source through recycling, reduced use of hazardous materials, and public education. According to the HWMP the total annual hazardous waste materials produced by the County annually including waste from current hazardous clean up is approximately 2,500 tons per year. Waste oil is the largest contributor accounting for almost 71% of the total coming from small generator sources.

Emergency Response

The release of a hazardous material to the environment could cause a multitude of problems to the environment, property, or human health, the significance of which is dependent on the type, location, and quantity of the material released. Although hazardous material incidents can happen almost anywhere, certain areas of the State are at higher risk. Sutter County is primarily agricultural in nature, with few areas that contain large quantities of hazardous materials, so the risk of major upset would be unlikely. In any case, the Sutter County Emergency Services Division is responsible for planning for and implementing response and recovery activities associated with both natural and man-made disasters and emergencies occurring in the County, including hazardous materials releases. Emergency response routes may be located on any major road within the County, and are subject to change, depending on the specific characteristics of an emergency or disaster. Media such as radio, television, and the internet may be used to ensure the most up-to-date and accurate information is conveyed to the public in the event that evacuation becomes necessary or advised.

REGULATORY CONTEXT

A number of federal, State, and local laws and regulations have been enacted to regulate the management of hazardous materials. For purposes of this report, the term "hazardous materials" refers to both hazardous substances and hazardous wastes.[6] Implementation of

3 California Integrated Waste Management Board, Waste Stream Profiles, http://www.ciwmb.ca.gov, accessed October 22, 2007.

4 California Integrated Waste Management Board, Waste Stream Profiles, http://www.ciwmb.ca.gov, accessed October 22, 2007.

5 California Integrated Waste Management Board, Waste Stream Profiles, http://www.ciwmb.ca.gov, accessed October 22, 2007.

6 This report uses the definition stated in the California Health and Safety Code (CHSC) § 25501: "A hazardous material is any material that, because of its quantity, concentration, or physical, chemical characteristics poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. 'Hazardous materials' include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering

these laws and the management of hazardous materials are regulated independently of the CEQA process through programs administered by various agencies at the federal, State, and local levels. An overview of the key hazardous materials laws and regulations that apply to the Policy Area is provided below.

Federal

Several federal agencies regulate hazardous materials. These include the U.S. EPA, the Occupational Safety and Health Administration (OSHA), and the Department of Transportation (DOT). Applicable federal regulations are contained primarily in Titles 10, 29, 40, and 49 of the Code of Federal Regulations (CFR). The U.S. DOT has developed regulations pertaining to the transport of hazardous materials and hazardous wastes by all modes of transportation. The U.S. Postal Service (USPS) has developed additional regulations for the transport of hazardous materials by mail. DOT regulations specify packaging requirements for different types of materials. U.S. EPA has also promulgated regulations for the transport of hazardous wastes. These more stringent requirements include tracking shipments with manifests to ensure that wastes are delivered to their intended destinations.

State

California Environmental Protection Agency

The California Environmental Protection Agency (Cal/EPA) has broad jurisdiction over hazardous materials management in the State. Within Cal/EPA, the DTSC has primary regulatory responsibility for hazardous waste management and cleanup, while enforcement of regulations has been delegated to local jurisdictions, such as the Sutter County Department of Environmental Health. Along with the DTSC, the Regional Water Quality Control Board (RWQCB) is responsible for implementing regulations pertaining to management of soil and groundwater investigation and cleanup. RWQCB regulations are contained in Title 27 of the CCR. Additional State regulations applicable to hazardous materials are contained in Title 22 of the California Code of Regulations (CCR). Title 26 of the CCR is a compilation of those sections or titles of the CCR that are applicable to hazardous materials.

Hazardous Materials Management Plans

In 1994, Cal/EPA adopted regulations implementing a "Unified Hazardous Waste and Hazardous Materials Management Regulatory Program" (Unified Program). The six program elements of the Unified Program are hazardous waste generators and hazardous waste on-site treatment, underground storage tanks, above-ground storage tanks, hazardous material release response plans and inventories, risk management and prevention program, and Uniform Fire Code hazardous materials management plans and inventories.

The program is implemented at the local level by a local agency – the CUPA. The CUPA is responsible for consolidating the administration of the six program elements within its jurisdiction. On October 1, 2004, the Environmental Health Division of the Sutter County Community Services Department became certified as the CUPA by Cal/EPA. While the Environmental Health Division of the Sutter County Community Services Department is the CUPA for Sutter County, the County Agricultural Department serves as a Participating Agency (PA) for reviewing Hazardous Materials Business Plans for agricultural businesses, hazardous waste generators, and above ground storage tanks for agricultural users. The Agricultural Department also implements the underground storage tank (UST) program for all underground storage tank facilities in the County.

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agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment."

State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and, in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. California's Hazardous Materials Release Response Plans and Inventory Law, sometimes called the "Business Plan Act," aims to minimize the potential for accidents involving hazardous materials and to facilitate an appropriate response to possible hazardous materials emergencies. The law requires businesses that use hazardous materials to provide inventories of those materials to designated emergency response agencies, to illustrate on a diagram where the materials are stored on site, to prepare an emergency response plan, and to train employees to use the materials safely.

Department of Toxic Substances Control

The DTSC regulates hazardous waste in California primarily under the authority of the federal Resource Conservation and Recovery Act (RCRA) of 1976, and the California Health and Safety Code. Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning. In addition, DTSC reviews and monitors legislation to ensure that the position reflects the DTSC's goals. From these laws, DTSC's major program areas develop regulations and consistent program policies and procedures. The regulations spell out what those who handle hazardous waste must do to comply with the laws. Under RCRA, DTSC has the authority to implement permitting, inspection, compliance, and corrective action programs to ensure that people who manage hazardous waste follow State and federal requirements. As such, the management of hazardous waste in the County would be under regulation by the DTSC to ensure that State and federal requirements pertaining to hazardous waste are complied with. California law provides the general framework for regulation of hazardous wastes by the Hazardous Waste Control Law (HWCL) passed in 1972. DTSC is the State's lead agency in implementing the HWCL. The HWCL provides for State regulation of existing hazardous waste facilities, which include "any structure, other appurtenances, and improvements on the land, used for treatment, transfer, storage, resource recovery, disposal, or recycling of hazardous

Business Plan Act

State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and, in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. California's Hazardous Materials Release Response Plans and Inventory Law, sometimes called the "Business Plan Act," aims to minimize the potential for accidents involving hazardous materials and to facilitate an appropriate response to possible hazardous materials emergencies. The law requires businesses that use hazardous materials to provide inventories of those materials to designated emergency response agencies, to illustrate on a diagram where the materials are stored on site, to prepare an emergency response plan, and to train employees to use the materials safely.

The State of California requires the owner or operator of any business that handles hazardous materials in quantities equal to or greater than 55 gallons, 500 pounds, or 200 cubic feet of gas at standard temperature and pressure, to develop and submit a business plan. The State of California Office of Emergency Services (OES), acting pursuant to Health and Safety Code Section 25503.3, has developed a single comprehensive hazardous materials inventory form for businesses to use to submit their individual hazardous materials inventories. This form contains all state and federally required inventory information. Use of this form is mandatory.

California Accidental Release Prevention Program (CalARP)

The CalARP program (CCR Title 19, Division 2, Chapter 4.5) covers certain businesses that store or handle more than a certain volume of specific regulated substances at their facilities. The CalARP program regulations became effective on January 1, 1997, and include the

provisions of the federal Accidental Release Prevention program (Title 40, CFR Part 68) with certain additions specific to the State pursuant to Article 2, Chapter 6.95, of the Health and Safety Code.

The list of regulated substances is found in Article 8, Section 2770.5 of the CalARP program regulations. The businesses that use a regulated substance above the noted threshold quantity must implement an accidental release prevention program, and some may be required to complete a Risk Management Plan (RMP). An RMP is a detailed engineering analysis of the potential accident factors present at a business and the mitigation measures that can be implemented to reduce this accident potential. The purpose of a RMP is to decrease the risk of an off-site release of a regulated substance that might harm the surrounding environment and community. An RMP includes the following components: safety information, hazard review, operating procedures, training, maintenance, compliance audits, and incident investigation. The RMP must consider the proximity to sensitive populations located in schools, residential areas, general acute care hospitals, long-term health care facilities, and child day-care facilities, and must also consider external events such as seismic activity.

Worker and Workplace Hazardous Materials Safety

Occupational safety standards exist in federal and State laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Division of Occupational Safety and Health (Cal/OSHA) is responsible for developing and enforcing workplace safety standards and assuring worker safety in the handling and use of hazardous materials. Among other requirements, Cal/OSHA obligates many businesses to prepare Injury and Illness Prevention Plans and Chemical Hygiene Plans. The Hazard Communication Standard requires that workers be informed of the hazards associated with the materials they handle. For example, manufacturers are to appropriately label containers, Material Safety Data Sheets are to be available in the workplace, and employers are to properly train workers.

Hazardous Materials Transportation

The California Highway Patrol (CHP) and Caltrans are the enforcement agencies for hazardous materials transportation regulations. Transporters of hazardous materials and waste are responsible for complying with all applicable packaging, labeling, and shipping regulations. The California Office of Emergency Services (OES) also provides emergency response services involving hazardous materials incidents. Both Yuba City and Sutter County Fire Departments respond to hazardous materials spills.

Investigation and Cleanup of Contaminated Sites

The oversight of hazardous materials release sites often involves several different agencies that may have overlapping authority and jurisdiction. The DTSC and RWQCB are the two primary State agencies responsible for issues pertaining to hazardous materials release sites. Air quality issues related to remediation and construction at contaminated sites are also subject to federal and State laws and regulations that are administered at the local level. Investigation and remediation activities that would involve potential disturbance or release of hazardous materials must comply with applicable federal, State, and local hazardous materials laws and regulations. DTSC has developed standards for the investigation of sites where hazardous materials contamination has been identified or could exist based on current or past uses. The standards identify approaches to determining if a release of hazardous wastes/substances exists at a site and delineating the general extent of contamination; estimating the potential threat to public health and/or the environment from the release and providing an indicator of relative risk; determining if an expedited response action is require to reduce an existing or potential threat; and completing preliminary project scoping activities to determine data gaps and identifying possible remedial action strategies to form the basis for development of a site strategy.

Siting of Schools

The California Education Code (Section 17210 et seq.) outlines the requirements of siting school facilities near or on known or suspected hazardous materials sites, or near facilities that emit hazardous air emissions, handle hazardous or acutely hazardous materials, substances, or waste. The code requires that, prior to commencing the acquisition of property for a new school site, an environmental site investigation be completed to determine the health and safety risks (if any) associated with a site. Recent legislation and changes to the Education Code identify DTSC's role in the assessment, investigation, and cleanup of proposed school sites. All proposed school sites that will receive State funding for acquisition and/or construction must go through a comprehensive investigation and cleanup process under DTSC oversight. DTSC is required to be involved in the environmental review process to ensure that selected properties are free of contamination, or if the property is contaminated, that it is cleaned up to a level that is protective of students and faculty who will occupy the new school. All proposed school sites must be suitable for residential land use, which is DTSC's most protective standard for children.

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5.4 NOISE

INTRODUCTION

This section describes the existing noise environment throughout Sutter County and the potential of the General Plan Update to significantly increase noise levels due to population growth and land use decisions. This section also describes the relevant scientific findings on noise effects and regulations applicable to environmental noise control, major findings on the implications of noise exposure and noise control regulations on development in the County, and existing ambient noise sources/levels throughout Sutter County. Information used in the preparation of this section was derived from consultation with County staff, literature review of research findings and regulations, and a field survey with measurements of noise affecting noise-sensitive land uses in the county.

The noise environment experienced by sensitive land uses is an important consideration for planning purposes. People who live, work, and visit Sutter County can be affected by excessive noise and vibration levels. Being sensitive to siting land uses next to noise generating stationary sources or roads with high traffic volumes can quell, not only annoyance levels experienced by sensitive users, but the health effects excessive noise and vibration can have on hearing.

SUMMARY OF KEY FINDINGS

- Following the guidance offered by the U.S. Environmental Protection Agency (EPA), Federal Transit Administration (FTA), Federal Aviation Administration (FAA), Federal Inter-Agency Committee on Noise (FICON), and the California Office of Planning and Research (OPR) while updating the County's General Plan Noise Element will assure that noise will not pose a significant threat to County residents' health and/or welfare.

- Ambient noise levels in rural residential and agricultural communities, such as in Meridian and Robbins, are well below the noise levels recommended by Federal and State regulations. These communities are not expected to experience much growth or new development; thus, noise due to an increase in traffic is not expected to occur. Agricultural operations are also expected to remain the same as they are at present. Current ambient noise levels would likely be similar to noise levels upon buildout of the Sutter County General Plan Update.

- Many existing residential and other noise-sensitive uses along the County's main surface transportation corridors are already exposed to noise levels that exceed the optimal recommendations of Federal and State environmental agencies. This includes the communities of Rio Oso and East Nicolaus along Highway 70, the community of Sutter along Highway 20, the unincorporated area outside of the City of Live Oak along Highway 99, and the unincorporated area outside of the City of Yuba City along Highway 20 and Highway 99. An increase in traffic due to future development could further increase noise levels currently experienced in these areas. Appropriate siting guidelines and/or acoustic insulation features can assure compatibility of proposed noise-sensitive uses in these areas.

- Proposed residential uses near the Sacramento International Airport (e.g., Sutter Pointe Specific Plan) could be located within the airport's 65 dBA Community Noise Equivalent Level (CNEL) contour. Single-event aircraft noise within this

contour can occasionally cause significant interference with outdoor activities (and indoor activities when windows are open) in quieter residential neighborhoods. In addition, there are existing residential uses near the Sutter County Airport that are located within the airport's 65 dBA CNEL contour. Any proposed residential, or other sensitive land uses, within these contours would require appropriate acoustic insulation features and/or ventilation systems that can assure compatibility of interior spaces of proposed noise-sensitive uses in this area.

- There are existing rural residential areas of the County that are located near noise-generating industrial uses. This includes residential uses near the Calpine Sutter Energy Center and residential uses south of the City of Live Oak where industrial uses also exist. Appropriate land use compatibility standards and/or acoustic insulation features can assure a safe and tranquil physical environment for proposed residential uses near/in industrial areas.

Characteristics of Sound, Noise, and Vibration

Sound

Sound is created when vibrating objects produce pressure variations that move rapidly outward into the surrounding air. The main characteristics of these air pressure waves are amplitude, which we experience as a sound's loudness, and frequency, which we experience as a sound's pitch. The standard unit of sound amplitude is the decibel (dB), which is a measure of the physical magnitude of the pressure variations relative to the human threshold of perception. The human ear's sensitivity to sound amplitude is frequency-dependent; it is more sensitive to sound with a frequency at or near 1000 cycles per second than to sound with much lower or higher frequencies.

Most "real world" sounds (e.g., a dog barking, a car passing, etc.) are complex mixtures of many different frequency components. When the average amplitude of such sounds is measured with a sound level meter, it is common for the instrument to apply different adjustment factors to each of the measured sound's frequency components. These factors account for the differences in perceived loudness of each of the sound's frequency components relative to those that the human ear is most sensitive to (i.e., those at or near 1000 cycles per second). This practice is called "A-weighting." The unit of A-weighted sound amplitude is also the decibel. However, when reporting measurements to which A-weighting has been applied, an "A" is appended to dB (i.e., dBA) to make this clear. Table 5.4-1 lists representative environmental sound levels.

Noise

Noise is the term generally given to the "unwanted" aspects of intrusive sound. Many factors influence how a sound is perceived and whether or not it is considered annoying to a listener. These include the physical characteristics of a sound (e.g., amplitude, frequency, duration, etc.), but also non-acoustic factors (e.g., the acuity of a listener's hearing ability, the activity of the listener during exposure, etc.) that can influence the judgment of listeners regarding the degree of "unwantedness" of a sound.

Table 5.4-1. Representative Environmental Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock Band
Jet Fly-over at 100 feet		
	—100—	
Gas Lawnmower at 3 feet		
	—90—	
		Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	
		Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Source: California Department of Transportation, 1998.

All quantitative descriptors used to measure environmental noise exposure recognize the strong correlation between the high acoustical energy content of a sound (i.e., its loudness and duration) and the disruptive effect it is likely to have as noise. Because environmental noise fluctuates over time, most such descriptors average the sound level over the time of exposure, and some add "penalties" during the times of day when intrusive sounds would be more disruptive to listeners. The most commonly used descriptors are:

Equivalent Energy Noise Level (L_{eq}) is the constant noise level that would deliver the same acoustic energy to the ear of a listener as the actual time-varying noise over the same exposure time. No "penalties" are added to any noise levels during the exposure time; L_{eq} would be the same regardless of the time of day during which the noise occurs.

Day-Night Average Noise Level (L_{dn}) is a 24-hour average L_{eq} with a 10 dBA "penalty" added to noise levels during the hours of 10:00 p.m. to 7:00 a.m. to account for increased sensitivity that people tend to have to nighttime noise. Because of this penalty, the L_{dn} would always be higher than its corresponding 24-hour L_{eq} (e.g., a constant 60 dBA noise over 24 hours would have a 60 dBA L_{eq}, but a 66.4 dBA L_{dn}).

Community Noise Equivalent Level (CNEL) is an L_{dn} with an additional 5 dBA "penalty" for the evening hours between 7:00 p.m. and 10:00 p.m.

L_{MAX} is the maximum instantaneous noise level experienced during a given period of time.

L_{MIN} is the minimum noise level experienced during a given period of time.

Community noise exposures are typically represented by 24-hour descriptors, such as a 24-hour L_{eq} or L_{dn}. One-hour and shorter-period descriptors are useful for characterizing noise caused by short-term activities, such as the operation of construction equipment.

Noise caused by natural sources and human activities is usually well represented by median noise levels during the day, night, or over a 24-hour period. Environmental noise levels are generally considered low when the L_{eq} is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of settings with low daytime background noise levels are isolated, natural settings that can provide noise levels as low as 20 dBA and quiet, suburban, residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA at night can potentially disrupt sleep. People may consider louder environments adverse, but most people living or working in urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA) accept the higher noise levels commonly associated with these land uses.

When evaluating changes in community noise levels, or L_{dn}, a difference of 3 dBA is a barely perceptible increase to most people. A 5 dBA increase is readily noticeable, while a difference of 10 dBA would be perceived as a doubling of loudness.

Noise levels from a particular source decline as distance to a receptor increases. The weather and even the makeup of intervening terrain can also help intensify or reduce noise levels at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the source, the noise level is reduced by about 3 dBA at acoustically “hard” locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dBA at acoustically “soft” locations (i.e., the area between the source and receptor is normal earth or has vegetation, including grass). Noise from stationary or point sources is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively. Noise levels may also be reduced by intervening structures, such as a row of buildings, a solid wall, or a berm located between the receptor and the noise source. California homes built prior to 1970 generally provide an exterior-to-interior noise level reduction up to about 20 dB with closed windows. Homes built within the last 30 years generally provide an exterior-to-interior reduction up to about 30 dB with closed windows.

Fundamentals of Ground-borne Noise and Vibration

Vibrating objects in contact with the ground radiate energy. If a vibrating object is massive enough and/or close enough to an observer, its vibrations are perceptible. Vibration magnitude is measured in vibration decibels (VdB) relative to a reference level of 1 micro-inch per second, the human threshold of perception. The background vibration level in residential areas is usually 50 VdB or lower, well below the threshold of perception for humans, which is around 65 VdB. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where damage can occur in fragile buildings. Common vibration sources and the human and structural response to ground-borne vibration are illustrated in Table 5.4-2.

Table 5.4-2 Typical Sources and Responses to Ground-borne Vibration

Human/Structural Response	Velocity Level (VdB)	Typical Sources (50 feet from source)
Threshold, minor cosmetic damage to fragile buildings	—100—	Blasting from construction projects
	95	Bulldozers and other heavy tracked construction equipment
Difficulty with tasks such as reading a VDT screen	—90—	
	85	High speed rail, upper range
Residential annoyance, infrequent events (e.g. commuter rail)	—80—	Rapid transit, upper range
		High speed rail, typical
Residential annoyance, frequent events (e.g. rapid transit)		Bus or truck over bump
	—70—	
Limit for vibration sensitive equipment/ Approximate threshold for human perception of vibration		
		Bus or truck, typical
	—60—	
	55	Typical background vibration
	—50—	

Source: U.S. Department of Transportation Federal Railroad Administration, *High-Speed Ground Transportation Noise and Vibration Impact Assessment*, October 2005, pages 6-7.

Accurate estimates of ground-borne vibration are complicated due to the many factors that influence vibration levels at potential receivers. Main factors that have significant effects on levels of ground-borne vibration are:

Geology: Soil conditions are known to have a strong influence on the levels of ground-borne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock. Experience has shown that vibration propagation is more efficient in clay soils as well as areas with shallow bedrock. The latter condition seems to channel or concentrate the vibration energy close to the surface, resulting in ground-borne vibration problems at large distances from the source. Factors such as layering of the soil and depth to water table can also have significant effects on the propagation of ground-borne vibration.

Receiving Building: Ground-borne vibration problems occur almost exclusively inside buildings. Therefore, the characteristics of the receiving building are a key component in the evaluation of ground-borne vibration. Vibration may be perceptible to people who are outdoors, but it is very rare for outdoor vibration to cause complaints. The vibration levels inside a building depend on the vibration energy that reaches the building foundation, the coupling of the building foundation to the soil, and the propagation of the vibration through the building structure. The general guideline is that the more massive a building is, the lower its response to incident vibration energy in the ground.[1]

1 U.S. Department of Transportation Federal Railroad Administration, *High-Speed Ground Transportation Noise and Vibration Impact Assessment*, October 2005, page 6-7.

EXISTING CONDITIONS

Sources of Noise

Land uses within the County include a range of residential, commercial, institutional, industrial, recreational, agricultural, and open space areas. Although there are many noise sources within Sutter County, the primary noise source is traffic. Significant noise also occurs from airplane traffic, railroads, and various stationary sources as described below. Existing noise contours in the County are shown on Figure 5.4-1.

Freeways and Highways

Motor vehicle noise commonly causes sustained noise levels in the vicinity of busy roadways or freeways. Several highways run through Sutter County. These include State Route (SR) 20, SR 70, SR 99, and SR 113. Sutter County also has many local roads that experience very high traffic volumes, particularly high truck traffic volumes that contribute to traffic noise. Many noise receptors throughout the County, such as older residences, are located near these high-traffic corridors and typically do not have a structure to help attenuate noise levels, such as a sound wall or barrier. However, newer residences built within or near incorporated cities such as Yuba City do have some level of noise attenuation through the construction of sound walls and through the advantages of modern construction techniques and insulation.

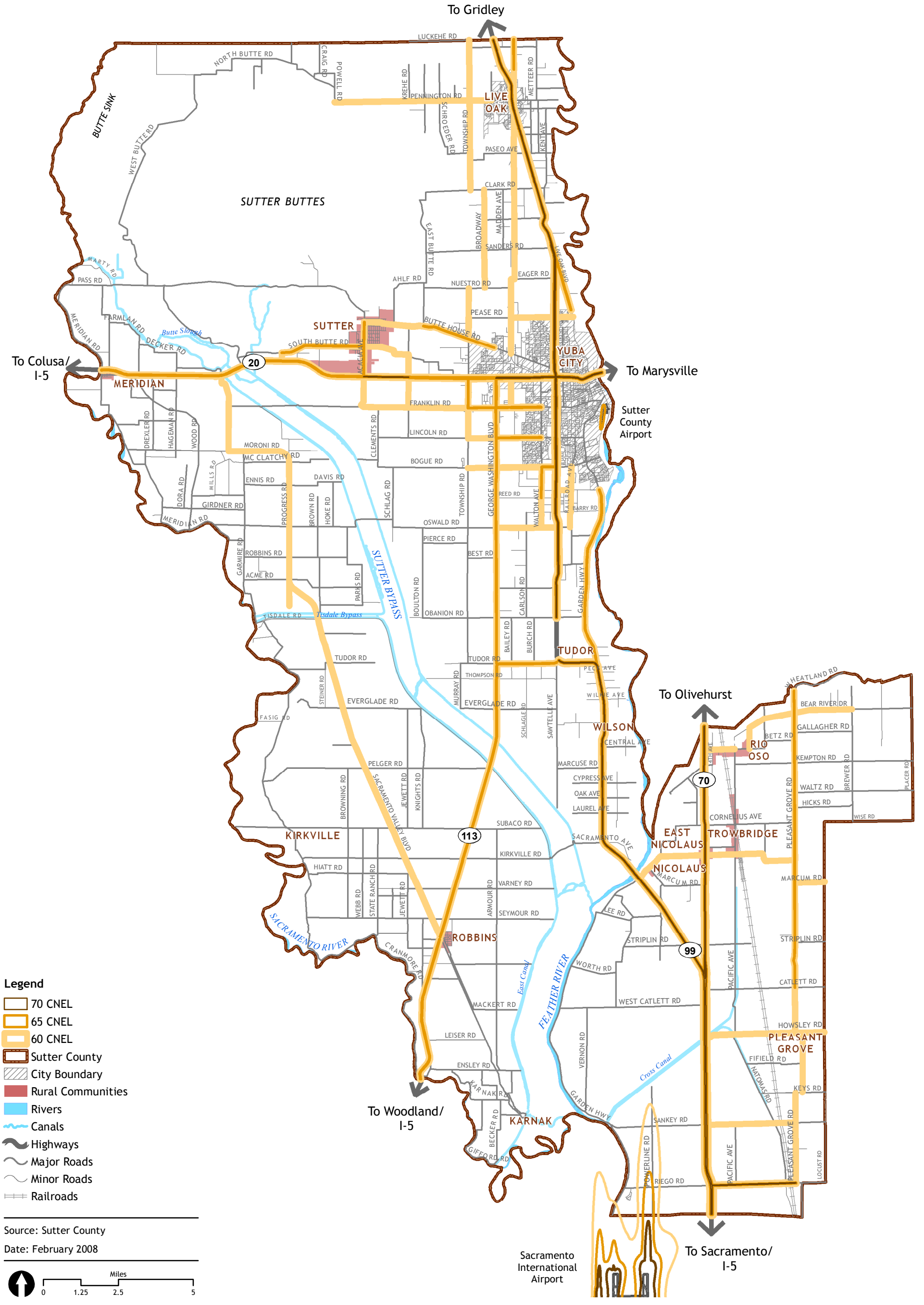
Noise levels affecting proposed new residences are reviewed on a project-by-project basis during the environmental review process. Residential projects that are proposed near major noise sources within the County are evaluated to determine whether they will be exposed to noise levels that will exceed applicable noise standards.

Aircraft Noise

Sutter County is served by one publicly owned and operated airport, the Sutter County Airport. The Sutter County Airport is located on approximately 170 acres of land with a single paved runway 3,040 feet long and 75 feet wide. The airport is operated by the Sutter County Public Works Department. A major portion of the airport operations are a result of agricultural aircraft involved in crop dusting activities. No commuter airlines utilize the Sutter County airport. Due to Sutter County's proximity to the Sacramento International Airport south of Sutter County, commercial service has not expanded into the County. The noise contour for the Sutter County Airport is shown on Figure 5.4-1.

Sacramento International Airport is located in the northwest corner of Sacramento County, less than a half mile from Sutter County. The airport has two parallel runways oriented in a north/south direction. The airport is owned and operated by Sacramento County. Because Sacramento International Airport accommodates the commercial air service demands of the greater Sacramento region, a number of commercial flights arrive and depart from the airport frequently. The noise contour for the Sacramento International Airport is shown on Figure 5.4-1.

There are a number of small privately owned landing strips and airports located throughout the County. Because flight activity at these private landing strips would be highly variable, particularly where landing strips are used for crop dusting, determining CNEL contours is not practical. Table 5.4-3 shows the typical sound levels of single and twin engine aircraft.



Legend

- 70 CNEL
- 65 CNEL
- 60 CNEL
- Sutter County
- City Boundary
- Rural Communities
- Rivers
- Canals
- Highways
- Major Roads
- Minor Roads
- Railroads

Source: Sutter County

Date: February 2008

Miles
0 1.25 2.5 5

EXISTING ROADWAY AND AIRPORT NOISE CONTOURS
Figure 5.4-1

Table 5.4-3 Typical Sound Levels Generated by Small Aircraft (dBA)

Slant Distance (feet)	Single Engine		Twin Engine	
	Takeoff	Landing	Takeoff	Landing
500	74	66	80	72
1,000	71	63	77	69
2,000	67	59	73	65
4,000	63	55	69	61
8,000	58	50	64	56

Source: Sutter County General Plan Background Report, November 1996, Chapter 12 Noise, Table 12.1-3.

Railway Noise

There are two active rail lines that pass through Sutter County. One is a Union Pacific (UP) route that is generally oriented in the north/south direction and enters Sutter County from Sacramento County in the south, crosses through the communities of Trowbridge and Rio Oso, and exits into Yuba County in the north. The second route is a UP route (previously a Southern Pacific Transportation Company route) that is generally oriented in the north/south direction and enters Sutter County from Yuba County in the east near Yuba City, runs parallel to State Route 99, crosses through Live Oak, and exits into Butte County to the north. In addition to the noise generated by the trains themselves, noise is generated where trains intersect roadways by the warning bells used to alert motorists of a train's arrival.

Stationary Sources

A wide variety of stationary noise sources are present in Sutter County. Residential areas can generate noise through the use of heating and cooling equipment, and through landscape maintenance activities such as leaf-blowing and gasoline-powered lawnmowers. Commercial uses can also generate noise through the operation of rooftop heating and cooling equipment, and other operational activities. Daily activity of industrial uses can generate noise as well, especially those that utilize heavy equipment as part of normal operations such as shipping and loading facilities, concrete crushing facilities, and recycling centers. Other stationary sources of noise are natural gas extraction facilities which are located throughout the County. Although gas wells have the potential to affect nearby sensitive receptors, special noise-control measures may be required if a well is located within 500 feet of a residence.

Another stationary source in the County is the Calpine owned and operated Sutter Energy Center located southwest of Yuba City. The plant produces electricity using "combined-cycle" technology, integrating two combustion turbines and a single steam turbine. The Sutter Energy Center began operation in 2001 in response to the statewide energy shortages at that time. The center sells electricity to WECC Northern California.

Agricultural Operations

As incorporated cities such as Yuba City and Live Oak continue to grow, it is anticipated that conflicts between agricultural operations and urban development will continue. Active agricultural activities can generate elevated noise levels due to operation of large agricultural equipment. In addition, depending on the type of crop, certain harvest techniques often generate loud machine noise and require lighting for night work. For example, row crops often use large machines to harvest and work through the night. These activities can be a nuisance to adjacent urban uses.

Noise-Sensitive Receptors

Some land uses are more sensitive to noise than others. These sensitive uses are commonly referred to as "sensitive receptors," and normally include residences, hospitals, churches, libraries, schools, and retirement homes. Noise sensitive land uses are typically given special attention because activities at these uses require relatively quiet environments.

Sensitive noise receptors typically include residences, schools, child care centers, hospitals, long-term health care facilities, convalescent centers, and retirement homes. Each of these land use types is present in the County.

In certain circumstances, jurisdictions may allow uses to be built in areas where applicable noise standards may be exceeded. In these cases, a jurisdiction may find "conditionally acceptable" noise levels to be appropriate, as long as other measures conditions are met. For example, a jurisdiction may accept conditionally acceptable exterior noise levels (usually measured at outdoor activity areas of a receptor) as long as an acoustic analysis is conducted showing that interior noise levels would be within the "acceptable" range. The acceptable noise level may differ depending on the type of receptor and its location. Residents living in very urban environments will usually accept a higher level of noise than residents in quieter suburban areas.

Various standards have been promulgated to address the compatibility of land uses and noise levels in Sutter County. The applicable standards are presented under the heading "Regulatory Context" below. Special emphasis is placed on land uses that are considered to be sensitive to high noise levels.

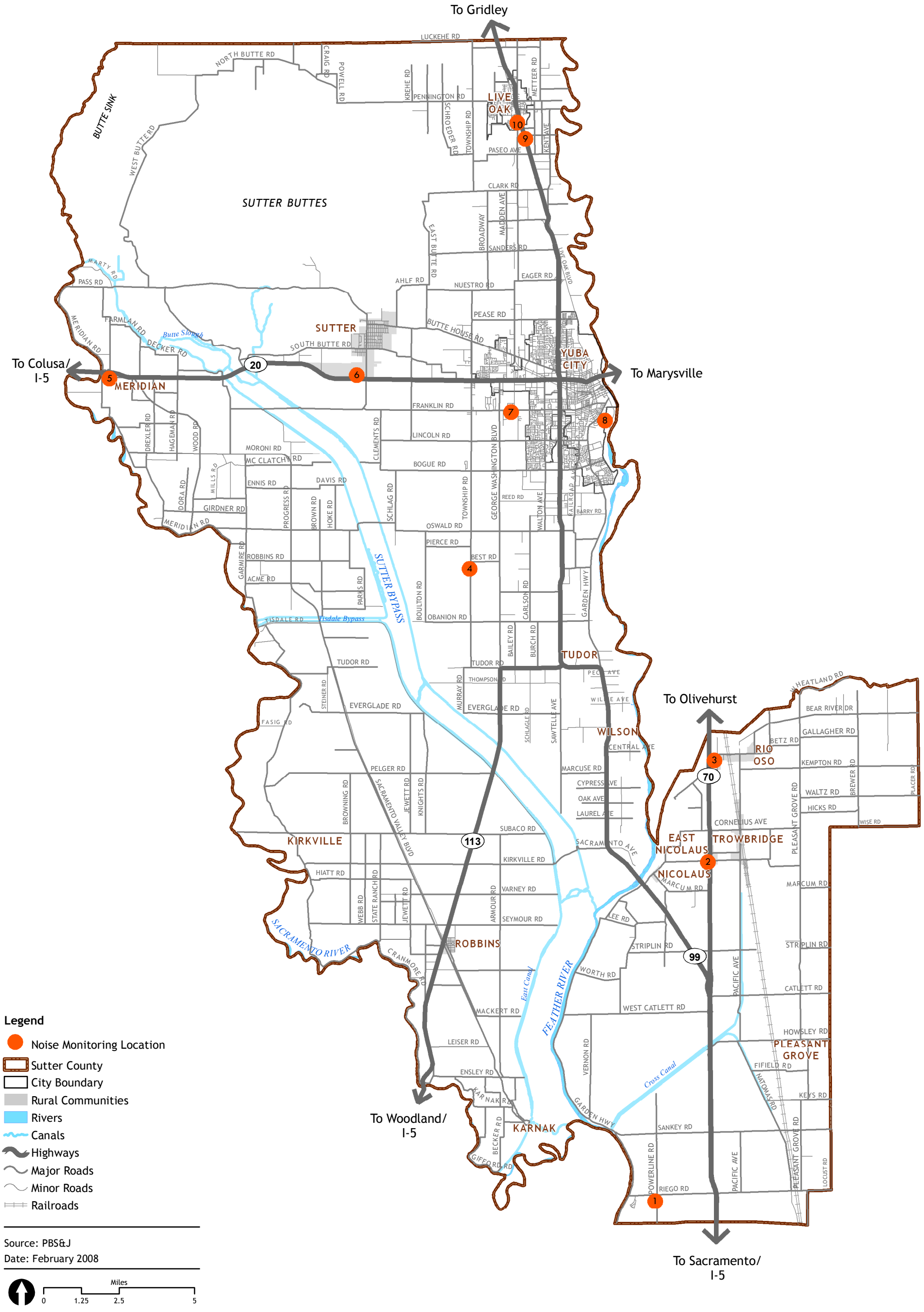
Existing Noise Levels

Monitored Daytime Noise Levels

Existing ambient daytime noise levels were measured at ten selected locations in order to determine representative noise levels for certain sources in various portions of Sutter County. These locations are shown on Figure 5.4-2.

The noise levels were monitored using a Larson-Davis Model 720 sound level meter, which satisfies the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. Measured noise levels for each location are identified in Table 5.4-4. Monitoring conditions and a more detailed description of each location can be found below:

Location 1 – Sacramento International Airport. Monitoring was conducted immediately north of the Sutter County/Sacramento County line, approximately one mile from the Sacramento International Airport on Power Line Road between Riego Road and Elverta Road. The measurement was taken for 20 minutes at 1 second intervals in order to show the relative occurrence of airplane flyovers compared with the ambient noise level in the area. Figure 5.4-3 (graph A) shows the L_{eq} at each second of the 20 minute reading. Table 5.4-4 also shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading. Because the reading was done in a primarily agricultural area, the ambient noise level was as low as 33 dBA with larger spikes (up to approximately 40 dBA due to agricultural operations in the distance on Riego Road. This can be seen in Figure 5.4-3 (graph A) where the baseline remains steadily at approximately 35 dBA. While certain peaks can be attributed to plane flyovers (four planes flew over during the reading), other peaks are attributed to the few vehicle trips on Power Line Road.



Legend

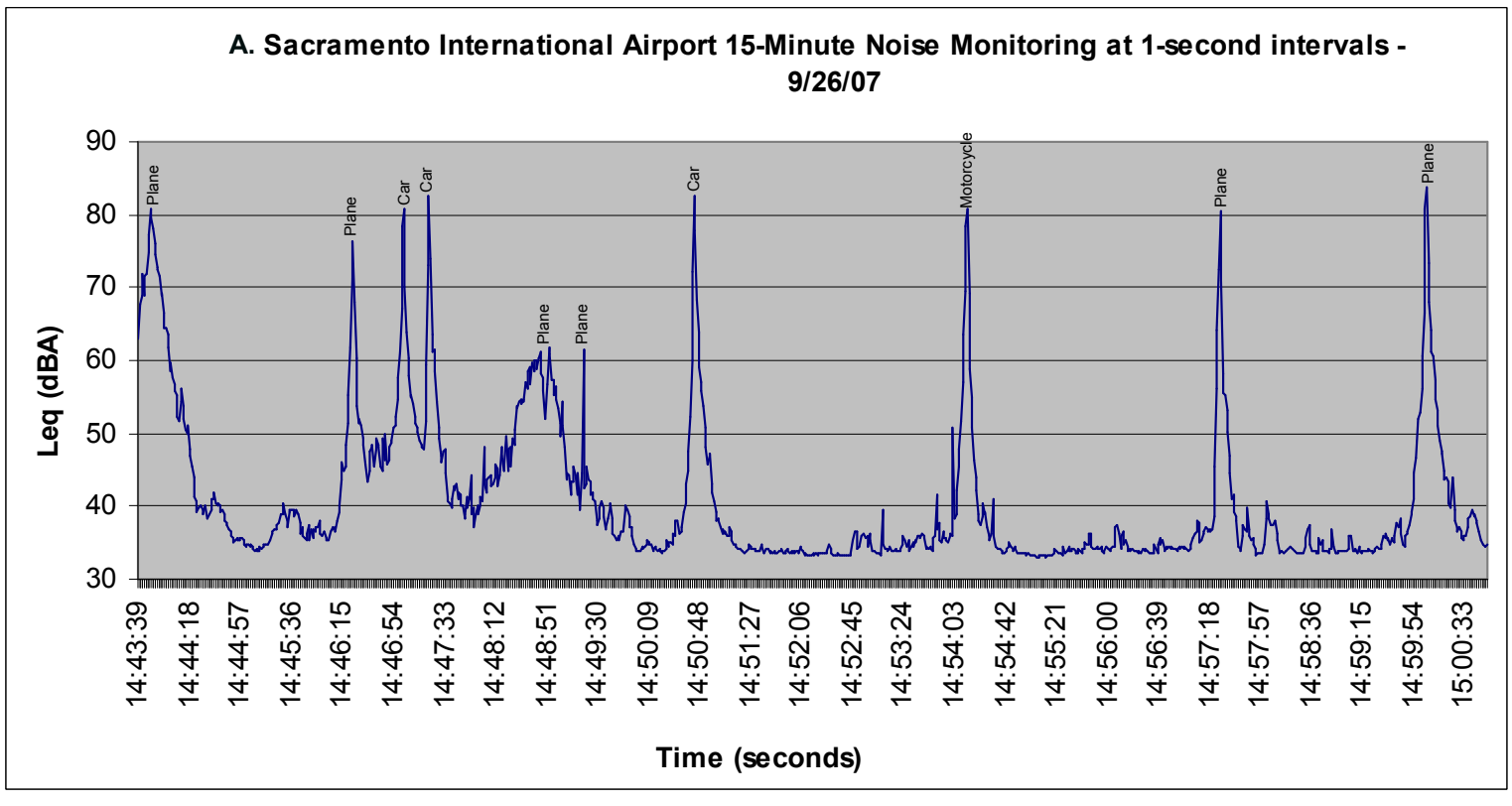
- Noise Monitoring Location
- Sutter County
- City Boundary
- Rural Communities
- Rivers
- Canals
- Highways
- Major Roads
- Minor Roads
- Railroads

Source: PBS&J
Date: February 2008

Miles
0 1.25 2.5 5

PBS&J

Noise Monitoring Locations
Figure 5.4-2


A. Sacramento International Airport 15-Minute Noise Monitoring at 1-second intervals - 9/26/07
Leq (dBA)
90
80
70
60
50
40
30
Plane
Plane
Car
Car
Plane
Plane
Car
Motorcycle
Plane
Plane
14:43:39
14:44:18
14:44:57
14:45:36
14:46:15
14:46:54
14:47:33
14:48:12
14:48:51
14:49:30
14:50:09
14:50:48
14:51:27
14:52:06
14:52:45
14:53:24
14:54:03
14:54:42
14:55:21
14:56:00
14:56:39
14:57:18
14:57:57
14:58:36
14:59:15
14:59:54
15:00:33
Time (seconds)

B. Sutter County Airport 20-Minute Noise Monitoring at 1-Second Intervals - 9/27/07
Leq (dBA)
80
75
70
65
60
55
50
45
40
Plane
Car
Beeping from construction equipment
Plane
Car
Car
Construction equipment
15:09:55
15:10:28
15:11:01
15:11:34
15:12:07
15:12:40
15:13:13
15:13:46
15:14:19
15:14:52
15:15:25
15:15:58
15:16:31
15:17:04
15:17:37
15:18:10
15:18:43
15:19:16
15:19:49
15:20:22
15:20:55
15:21:28
15:22:01
15:22:34
15:23:07
15:23:40
15:24:13
15:24:46
Time (seconds)

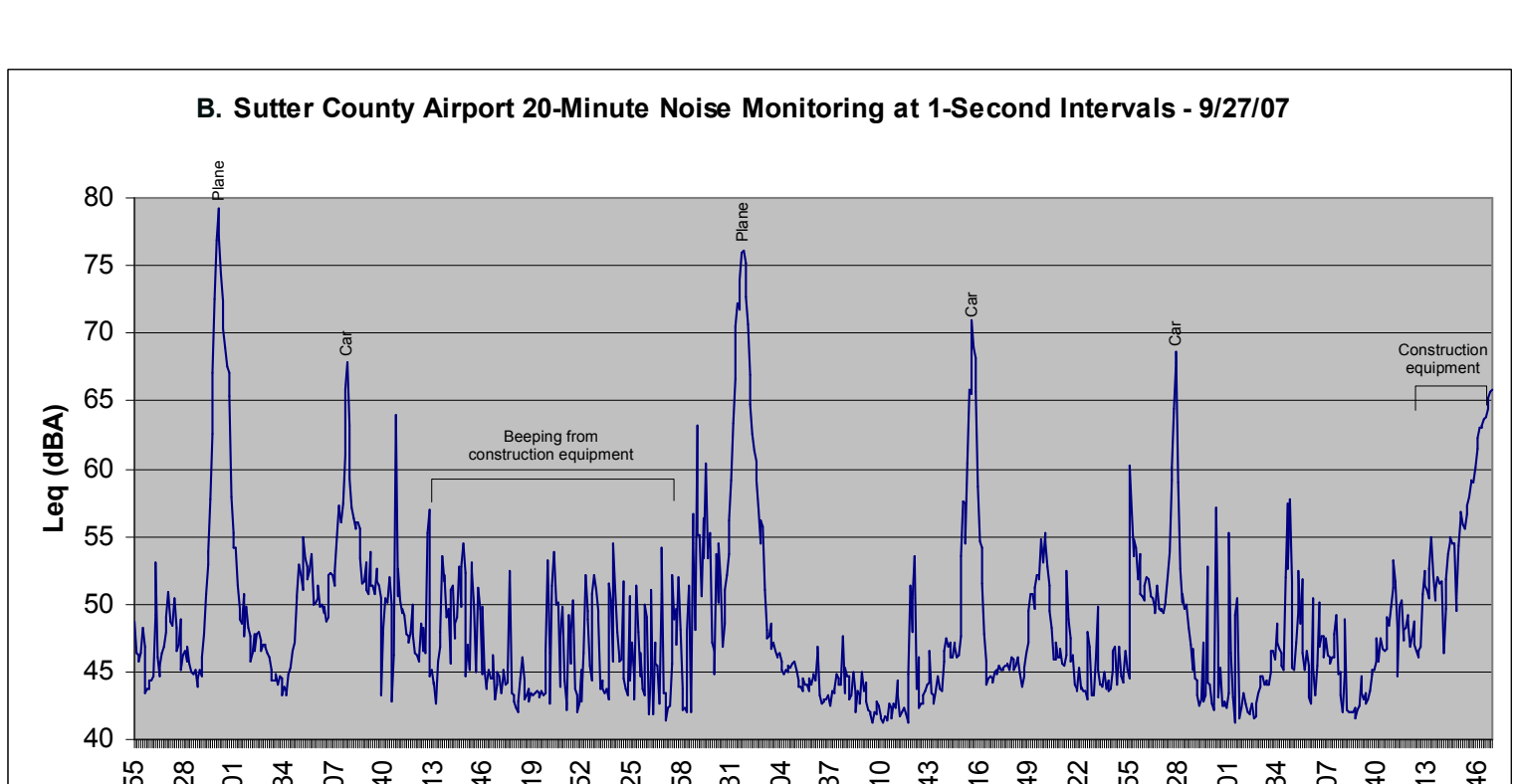

C. Union Pacific Railroad 24-Hour Noise Monitoring in Live Oak at 5-Minute Intervals - 11/28/07
Leq (dBA)
90
85
80
75
70
65
60
55
Train
Train
Train
Train
Train
Train
Train
Train
Train
Train
Train
Train
Train
Train
Train
Train
PM Peak Hour
AM Peak Hour
13:07:26
14:02:26
14:57:26
15:52:26
16:47:26
17:42:26
18:37:26
19:32:26
20:27:26
21:22:26
22:17:26
23:12:26
0:07:26
1:02:26
1:57:26
2:52:26
3:47:26
4:42:26
5:37:26
6:32:26
7:27:26
8:22:26
9:17:26
10:12:26
11:07:26
12:02:26
12:57:26
13:52:26
Time (Minutes)

Table 5.4-4. Daytime Noise Measurements at Selected Locations in Sutter County[1]

Noise Measurement Location/Time		Noise Sources	Noise Level Statistics[2] L_{eq}	L_{min}	L_{max}
#1	Sacramento International Airport. Start time: 2:43 pm on 9/26/07.	Primary: Airplane flyovers. Secondary: Vehicular traffic on Power Line Road.	40.9	32.7	87.3
#2	East Nicolaus on Nicolaus Avenue near residential uses. Start: 1:45 pm on 9/26/07.	Primary: Vehicular traffic on Nicolaus Avenue. Secondary: Vehicular traffic on Highway 70	69.3	42.7	94.0
#3	Rio Oso on Highway 70 near residential uses. Start: 12:45 pm on 9/26/07.	Moderate vehicular traffic on Highway 70 with a high percentage of vehicles being heavy trucks.	69.4	46.7	84.2
#4	Calpine Sutter Energy Center near rural residential uses. Start: 11:35 am on 9/26/07.	Primary: Industrial operations at the Calpine power-generating facility. Secondary: Vehicular traffic on South Township Road	63.0	51.5	87.3
#5	Meridian on 4th Street near residential and agricultural uses. Start: 12:35 pm on 9/27/07.	Distant construction activities and traffic from Highway 20.	45.3	34.6	66.4
#6	Sutter on Highway 20 near residential uses. Start: 4:03 pm on 9/27/07.	Primary: Vehicular traffic on Highway 20. Secondary: Vehicular traffic on Acacia Avenue.	69.3	49.9	87.9
#7	Franklin Boulevard southwest of Yuba City. Start: 5:40 pm on 9/27/07.	Vehicular traffic on Franklin Boulevard.	70.4	44.6	86.8
#8	Sutter County Airport. Start: 2:40 pm on 9/27/07.	Primary: Airplane flyovers. Secondary: Vehicular traffic on Samuel Drive and construction noise in background.	48.7	79.9	40.4
#9	Live Oak on Highway 99 near residential uses. Start: 4:55 pm on 9/27/07.	Heavy vehicular traffic on Highway 99.	76.3	49.3	88.8
#10	Live Oak on UP Rail Line near residential uses. Start: 1:07 pm on 11/28/07.	Primary: Train pass-bys. Secondary: Vehicular traffic on Highway 99.	69.6	38.4	115.3

Source: PBS&J, 2007.
[1]Measurements were made on September 26 and 27, 2007. Each measurement was 15 minutes in duration with the exception of Location 1 which was a 20-minute reading. Location 10 was a 24-hour reading starting on November 28, 2007.
[2]L_{eq} is the average noise level over the measurement period; L_{min} is the minimum instantaneous noise level during the measurement period; L_{max} is the maximum instantaneous noise level during the measurement period.

The airplane flyovers resulted in L_{eq}s ranging from approximately 62 dBA to 83 dBA depending on which direction the airplanes went after take-off. The location was set back from major roads (Elverta Road and Highway 99), so only five vehicles driving on Power Line Road influenced the reading. This area is slated for development of the Sutter Point Specific Plan which will contain a number of noise-sensitive residential uses.

Location 2 – Community of East Nicolaus – residential uses. Monitoring was conducted on Nicolaus Avenue approximately 24 feet from the centerline of the two-lane road. The major noise source was vehicle traffic traveling on Nicolaus Avenue and traffic at the intersection of Nicolaus Avenue and Highway 70 east of the monitoring location. Although the traffic on Nicolaus Avenue is not considered heavy, a high percentage of vehicles were heavy trucks. The heavy trucks likely contributed to the high L_{MAX} value shown in Table 5.4-4. The meter was

approximately 25 feet from a single-family home. The potential for an increase in traffic on Highway 70 due to growth in Yuba County could contribute to an increase in noise along smaller two-lane roads with residential neighborhoods off of the highway in Sutter County. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

Location 3 – Community of Rio Oso – residential uses along Highway 70. Monitoring was conducted on Highway 70 in the community of Rio Oso. Major sources of noise were vehicular and truck traffic on Highway 70. The noise meter was placed approximately 93 feet from the centerline of the road, while the residential home was located an additional 55 feet away from the centerline. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

Location 4 – Calpine Sutter Energy Center – rural residential uses. The Calpine Sutter Energy Center is located at the intersection of South Township Road and Best Road, southwest of Yuba City. Monitoring was conducted along South Township Road just outside of the main entrance to the facility. The major source of noise was from operations at the Calpine plant. Noise emitted from the plant was continuous, meaning that the noise level was constant and uninterrupted. Secondary sources of noise were from the few vehicles driving by on South Township Road. The area is primarily a rural residential and agricultural area, so traffic does not currently contribute to the ambient noise level in the area. The closest rural residential home to the plant is approximately 1,126 feet north. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

Location 5 – Community of Meridian – residential and agricultural uses. Monitoring was conducted along 4th Street in the community of Meridian. This reading was taken to determine the ambient noise level of an existing agricultural community that is not expected to grow significantly over the course of the Sutter County General Plan Update horizon date. The reading was taken near single-family residential homes that are adjacent to agricultural fields and orchards. The major source of noise was from construction activities in the distance and from traffic on Highway 20. Obtaining the ambient noise level of an agricultural community like Meridian is indicative of other agricultural communities in the county such as Robbins in the southwestern portion of the county, and Nicolaus, which is west of the community of East Nicolaus. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

Location 6 – Community of Sutter – residential uses along Highway 20. Noise monitoring was conducted along Highway 20 near its intersection with Acacia Avenue, the main entrance to the community of Sutter. The noise meter was located approximately 100 feet north of a residence facing Highway 20 while the centerline of the road was an additional 75 feet north of the meter. The major source of noise was from traffic on Highway 20. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

Location 7 – Southwest of Yuba City – residential uses along Franklin Boulevard. Monitoring was conducted along Franklin Boulevard between El Margarita Road and Butte Road. Franklin Road is lined with single-family residential uses with the occasional rural residential lot that includes orchards. The noise meter was placed 24 feet south of the centerline of Franklin Boulevard. The primary noise source was from traffic along Franklin Boulevard. This area is within the Yuba City Urban Area, but is not within the city limits. In the future, Yuba City is likely to expand into areas southwest of the current city limits. Existing residential neighborhoods similar to this location will likely experience an increase in noise due to new development and increased traffic in the future. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

Location 8 – Sutter County Airport. Monitoring was conducted immediately west of the Sutter County Airport on Samuel Drive. This location is in a residential neighborhood with a combination of single- and multi-family residential units and a few commercial/warehouse uses. The closest single-family residential home is approximately 400 feet from the closest edge of the runway. Similar to the reading done for Location 1, this measurement was taken for 15 minutes at 1 second intervals in order to show the relative occurrence of airplane flyovers compared with the ambient noise level in the area. Figure 5.4-3 (graph B) shows the Leq at each second of the 15 minute reading. Table 5.4-4 also shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading. As shown in Figure 5.4-3 (graph B), two planes took off from Sutter County Airport during the 15 minute reading. The first plane resulted in the LMAX reading of 79.9 dBA. Various other spikes can be seen in the figure which can be attributed to vehicle traffic passing by the noise monitor on Samuel Drive. There was also construction activity nearby that contributed to the variable baseline ranging from as low as 40.4 dBA to approximately 60 dBA. This area was monitored because there is an existing compatibility issue between the airport and residential uses. Any increase in activity at the airport could result in an increase in noise experience by the nearby sensitive receptors.

Location 9 – South of the City of Live Oak – residential uses along Highway 99. Noise monitoring was conducted along Highway 99 south of the City of Live Oak near residential uses. The noise meter was placed approximately 75 feet north of a residential home located on the corner of Highway 99 and Bishop Avenue. At this point, Highway 99 is a two-lane highway with a middle lane for left turns onto Bishop Avenue. The primary noise source for this reading was vehicular traffic on Highway 99. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading. Because this area outside of the City of Live Oak has the potential to experience future development, increases to traffic, and thus, noise levels, would be expected and would affect existing sensitive noise uses, such as the single-family residential and rural residential uses currently along Highway 99. This area south of Live Oak is also designated as industrial land uses which could create compatibility issues between industrial operations and future residential development.

Location 10 – South of the City of Live Oak – residential uses along UP Railroad. Noise monitoring was conducted along the UP rail line which is generally oriented in the north/south direction and enters Sutter County from Yuba County in the east near Yuba City, runs parallel to Highway 99, crosses through Live Oak, and exits into Butte County to the north. The noise meter was placed approximately 50 feet east of the rail line. Because growth is expected to occur south of the City of Live Oak, train operations on the rail line are a concern for residential or other noise-sensitive receptors, which may be constructed near the railroad tracks. A 24-hour measurement was done for this location so that train activity, particularly at night, could be monitored to find the maximum noise level that could be experienced by a receptor. Figure 5.4-3 (graph C) shows the 24-hour measurement done at 5 minute intervals. The gradual rise and fall of the baseline noise levels represents the rise and fall of traffic during peak am and pm hours on Highway 99. The individual peaks on the figure represent trains passing by the noise monitor. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

REGULATORY CONTEXT

The purpose of the section is to briefly summarize any regulations that are applicable to the topical area.

Federal

Noise Control Act

The federal Noise Control Act (1972) addressed the issue of noise as a threat to human health and welfare, particularly in urban areas. In response to the Noise Control Act, the U.S. Environmental Protection Agency (EPA) published *Information of Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (*Levels*). Table 5.4-5 summarizes U.S. EPA recommendations for residential and other noise-sensitive land uses. Essentially, the yearly average L_{eq} should not exceed 70 dBA to prevent measurable hearing loss over a lifetime, and the L_{dn} should not exceed 55 dBA outdoors and 45 dBA indoors to prevent significant activity interference and annoyance in noise-sensitive areas. The U.S. EPA did not promote these findings as universal standards or regulatory goals with mandatory applicability to all communities, but rather as advisory exposure levels below which there would be no reason to suspect that people would be at risk from any of the identified health or welfare effects of noise. The U.S. EPA *Levels* report also identified a 5 dBA increment as an adequate margin of safety relative to a baseline noise exposure level of 55 dBA L_{dn} before a noticeable increase in adverse community reaction would be expected.

Table 5.4-5. Summary of Noise Levels Identified as Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety[1]

Effect	Level	Area
Hearing	Leq(24 hr.) < 70 dBA	All areas.
Outdoor activity interference and annoyance	Ldn < 55 dBA	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
Outdoor activity interference and annoyance	Leq(24 hr) < 55 dBA	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	Ldn < 45 dBA	Indoor residential areas.
Indoor activity interference and annoyance	Leq(24 hr) < 45 dBA	Other indoor areas with human activities such as schools, etc.

Source: U.S. Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, March 1974.
[1]Yearly average equivalent sound levels in decibels; the exposure period which results in hearing loss at the identified level is a period of forty years.

The FTA has developed an extensive methodology and significance criteria to evaluate noise impacts from surface transportation modes (i.e., private motor vehicles, trucks, buses, and rail), as presented in *Transit Noise Impact and Vibration Assessment* (May 2006). The scientific rationale for FTA's criteria is clearly explained and is widely accepted by acoustic scientists. The FTA incremental noise impact criteria are presented in Table 5.4-6. These criteria are based on the U.S. EPA findings (as presented in *Levels* and summarized in Table 5.4-5) and subsequent studies of annoyance in communities affected by transportation noise. Starting from the U.S. EPA's definition of minimal noise impact as a 5 dBA change from a "safe" ambient level of 50 dBA (L_{dn} or peak hour L_{eq}, depending on the FTA's Land Use Category), the FTA extended the incremental impact criteria to higher baseline ambient levels by requiring that increased adverse community reaction be kept below a defined minimal level (i.e., a 2 percent increase in the number of residents reporting a "high" level of annoyance, as measured by survey). As baseline ambient levels increase, it takes a smaller and smaller increment to

produce the same increase in annoyance (e. g., in residential areas with a baseline ambient noise level of 50 dBA L_{dn}, a 5 dBA increase in noise levels would be expected to increase community annoyance by 2 percent, but at a baseline ambient noise level of 70 dBA L_{dn}, a 1 dBA increase in noise levels would be expected to have the same effect on community annoyance levels).

Table 5.4-6: FTA Impact Criteria for Noise-Sensitive Uses (dBA)

	Land Use Categories 1 & 2			Land Use Category 3		
Existing Noise Level	Project Impact Threshold	Combined Noise Level	Allowable Noise Increment	Project Impact Threshold	Combined Noise Level	Allowable Noise Increment
45	52	53	8	57	57	12
50	53	55	5	58	59	9
55	55	58	3	60	61	6
60	58	62	2	63	65	5
65	61	66	1	66	68	3
70	64	71	1	69	73	3
75	65	75	0	70	76	1
80	65	80	0	70	80	0

Source: Federal Transit Administration, *Transit Noise Impact and Vibration Assessment*, May 2006.

Notes:

Impact criteria are L_{dn} or L_{eq} (peak hour) depending on Land Use Category given below:

Land Use Category 1: Tracts of land where quiet is an essential element in their intended purposes. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor uses. Also included are recording studios and concert halls. The noise metric for Category 1 is the outdoor L_{eq} during the noisiest hour of activity.

Land Use Category 2: Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance. The noise metric for Category 2 is the outdoor L_{dn}.

Land Use Category 3: Institutional land uses with primarily daytime and evening uses. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities can also be considered in this category. Certain historical sites and parks are also included. The noise metric for Category 3 is the outdoor L_{eq} during the noisiest hour of activity.

Federal Aviation Regulations Part 150

Federal Aviation Regulations Part 150, Airport Noise Compatibility Planning, prescribes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving these programs. Part 150 also prescribes a system for measuring airport noise impacts and presents guidelines for identifying incompatible land uses. The noise exposure maps are to be depicted in terms of average annual L_{dn} or CNEL contours around the airport. For the purposes of federal regulations, all land uses are considered compatible with noise levels less than 65 dB L_{dn}. At higher noise exposures, increasing restrictions are applied depending upon the nature of the use and the degree of structural noise attenuation expected to be achieved in their interior spaces.

The effect of aviation noise on sleep is a long-recognized concern of those interested in addressing the impacts of noise on people. Based on substantial field research carried out on sleep disturbance, the Federal Interagency Committee on Aviation Noise (FICAN) has recommended the adoption of a dose-response curve based on single event noise levels (i.e.,

SEL) for predicting the maximum percent of an exposed population (not including children) expected to be awakened in long-term residential settings. In order to reduce potential aviation-related sleep disruption to acceptable levels in areas near airports, it may be necessary to install additional acoustic insulation above that required to maintain interior L_{dn} or CNEL at the generally accepted 45 dBA interior standard.

State

California General Plan Guidelines

The State of California *General Plan Guidelines 2003* (*Guidelines*) promotes use of L_{dn} or CNEL for evaluating noise compatibility of various land uses with the expected degree of noise exposure, as illustrated by Table 5.4-7. The designation of a level of noise exposure as "normally acceptable" for a given land use category implies that the expected interior noise would be acceptable to the occupants without the need for any special structural acoustic treatment. The *Guidelines* identify the suitability of various types of construction relative to the range of customary outdoor noise exposures. The *Guidelines* provide each local community some leeway in setting local noise standards that allow for the variability in individual perceptions of noise in that community. Findings presented in the U.S. EPA's document, *Levels* (see discussion above under "Noise Control Act"), have had an obvious influence on the recommendations of the State *Guidelines*, most importantly in the latter's choice of noise exposure metrics (i.e., L_{dn} or CNEL) and in the upper limits for the "normally acceptable" exposure of noise-sensitive uses (i.e., no higher than 60 dBA L_{dn} or CNEL for low-density residential, which is just at the upper limit of the 5 dBA "margin of safety" define by the U.S. EPA for noise-sensitive land use categories).

California Noise Insulation Standards

The California Noise Insulation Standards (California Code of Regulations, Title 24) codifies Sound Transmission Control requirements, which establishes uniform minimum noise insulation performance standards for new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family dwellings. Specifically, Title 24 states that interior noise levels attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room of new dwellings. Acoustical studies must be prepared for proposed multiple unit residential and hotel/motel structures where L_{dn} or CNEL is 60 dBA or greater. The studies must demonstrate that the design of the building will reduce interior noise to 45 dBA L_{dn} or CNEL, or lower. Dwellings are to be designed so that interior noise levels will meet this standard for at least ten years from the time of building permit application. Interior noise levels can be reduced through the use of noise insulating windows, and by using sound isolation materials when constructing walls and ceilings. The primary means to achieve this standard is through the use of noise insulating windows, and/or sound isolation materials when constructing walls and ceilings.

Local

Sutter County General Plan

Goal 8.A To protect County residents from the harmful effects of exposure to excessive noise.

Table 5.4-7. State of California Noise Compatibility Guidelines

Land Use Category	Community Noise Exposure L_{dn} or CNEL (dB) 55 60 65 70 75 80
Residential – Low Density Single Family, Duplex, Mobile Homes	
Residential – Multi. Family	
Transient Lodging – Motels, Hotels	
Schools, Libraries, Churches, Hospitals, Nursing Homes	
Auditoriums, Concert Halls, Amphitheaters	
Sports Arena, Outdoor Spectator Sports	
Playgrounds, Neighborhood Parks	
Golf Course, Riding Stables, Water Recreation, Cemeteries	
Office Buildings, Business Commercial and Professional	
Industrial, Manufacturing, Utilities, Agriculture	

INTERPRETATION:

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

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

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

Clearly Unacceptable
New construction or development should generally not be undertaken.

Source: Governor's Office of Planning and Research, *State of California General Plan Guidelines 2003*, October 2003.

Policies

8.A-1 The County shall not allow development of new noise-sensitive land uses where the noise level due to non-transportation noise sources will exceed the noise level standards shown on Table 7 at the property line of the new noise sensitive land use unless noise mitigation measures have been incorporated into the project design to achieve the required standard.

Table 7 – Noise Level Standards
New Non-Transportation Sources

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Leq, dB	50	45
Maximum level, dB	70	65

8.A-2 The County shall require that new non-transportation noise sources be mitigated to the noise level standards shown in Table 7.

8.A-3 The feasibility of proposed development project with respect to existing and future transportation noise levels shall be evaluated against the noise guidelines in Table 8.

Table 8 – Land Use Compatibility Guidelines for Development

Land Use Category		Community Noise Exposure Ldn or CNEL, dB						
		55	60	65	70	75	80	
Residential, Theaters, Meeting Halls, Churches, Auditoriums	A.							
	C.A.							
	U.							
Transient Lodging, Motels, Hotels	A.							
	C.A.							
	U.							
Schools, Libraries, Hospitals, Child Care, Museums	A.							
	C.A.							
	U.							
Playgrounds, Neighborhood Parks, Amphitheaters	A.							
	C.A.							
	U.							
Office Buildings, Business, Commercial and Professional	A.							
	C.A.							
	U.							
Industrial, Utilities, Manufacturing, Agriculture	A.							
	C.A.							
	U.							
Golf Courses, Riding Stables, Outdoor Spectator Sports	A.							
	C.A.							
	U.							

Notes:
A. Acceptable
C.A. Conditionally Acceptable
U. Unacceptable

8.A-4 New development of noise-sensitive land uses shall not be permitted in areas exposed to noise levels from transportation noise sources which exceed the levels specified in Table 9, unless

the project design includes noise mitigation to achieve the required standard.

8.A-5 Noise created by new transportation noise sources, including roadway improvement project, should be mitigated so as not to exceed the levels specified in Table 9.

Table 9 – Maximum Allowable Noise Exposure Transportation Noise Sources

Land Use	Outdoor Activity Areas[1]	Interior Spaces	
	Ldn/CNEL, dB	Ldn/CNEL, dB	Leq, dB[2]
Residential	60[3]	45	--
Transient Lodging	60[3]	45	--
Hospitals, Nursing Homes	60[3]	45	--
Theaters, Auditoriums	--	--	35
Churches, Meeting Halls	60[3]	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Notes:

1. 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.
2. As determined for a typical worst-case hour during periods of use.
3. Where it is not possible to reduce noise in the outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best available noise reduction measures, an exterior noise level of up to 62.5 dB Ldn/CNEL may be allowed provided that available exterior noise reduction measures have been implemented and interior noise levels are in compliance with this table.

Sutter County Code

Currently, Sutter County does not have a noise ordinance contained in its Code. The General Plan standards listed above are the only regulations pertaining to noise in the county.

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5.5 FLOOD HAZARDS

INTRODUCTION

This section describes the risk of flooding in Sutter County and the flood control measures in place that provide flood protection from the major waterways in the county. Information for this section was obtained from applicable reports and studies prepared by Sutter County, the Federal Emergency Management Agency, and the U.S. Army Corps of Engineers. See Section 3.1.5, Levees and Flood Control, for additional information.

SUMMARY OF KEY FINDINGS

- There are approximately 280 miles of levees within the county that provide flood protection to the area. Failure of any of these levees could cause major flooding in the county.
- Recent and on-going studies have found that some levees within the county do not meet, or have not been certified as meeting, the current levee design criteria. As a result, much of the county is considered vulnerable to flooding due to levee failure.
- FEMA is planning to map large portions of the county into the 100-year floodplain.
- SAFCA has a levee improvement project underway that is designed to provide 100-year flood protection to the Natomas Basin by 2010 and 200-year flood protection by 2012.
- It is anticipated that the Sutter County Feasibility Study being performed by the Army Corps of Engineers will produce a plan to provide 100-year flood protection to the major urban areas within the county. It will be several years before this study is complete; however, the non-federal sponsor's planning objective is to achieve 200-year flood protection and to obtain FEMA levee certification.[1]

OVERVIEW

Flooding in Sutter County can occur from two sources:

1. rainfall and runoff from inside the levee systems (see Section 3.1.4, Stormwater Drainage), and
2. flooding from failure of a levee or dam.

The primary method of flood protection provided in the County is via a system of levees or earthen embankments along the Sacramento and Feather Rivers that contain high river flows within these constructed channels.[2] When the capacity of the river levee system is exceeded, the bypass system accommodates the additional flows to take the load off the primary levee system during critical peak flow periods.

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1 Sutter County California Feasibility Study, October 2004, Feasibility Scoping Meeting (F3 Milestone) Report.

2 Sutter County, *Sutter County General Plan 2015: Background Report*, November 1, 1996.

Failure of any one of the levee systems in surrounding Sutter County could cause major flooding of areas within the County. Similarly, failure of a dam on the Feather River, Sacramento River, or their tributary rivers could lead to flows that exceed the capacity of the river/bypass/levee system and thereby cause major flooding of Sutter County. Sutter County is actively working with several other agencies to ensure that the levee system that protects the County has adequate capacity, that the structural integrity of the levees is thoroughly evaluated, and that required repairs and maintenance are performed.

EXISTING CONDITIONS

There are approximately 280 miles of levees protecting Sutter County lands from flooding (see Figure 3.1-15, Section 3.1.4, Stormwater Drainage). These levees provide the County with protection against flooding from the Sacramento River, Feather River, Sutter Bypass, Tisdale Bypass, Wadsworth Canal, Bear River, Yankee Slough, Natomas Cross Canal, East Side Canal, and the Pleasant Grove Canal.

Current flood maps published by the Federal Emergency Management Agency (FEMA) show that the levee systems, with some exceptions, protect the county from flooding during a 100-year storm event; however, most of these flood maps were published in 1988 with a few in 1998 and they do not necessarily reflect the most recent flood studies. When FEMA first produced flood maps for the county, most of the levees were assumed to provide adequate protection based on studies prepared by the U.S. Army Corps of Engineers in the 1960's. However, these levees have not been certified as meeting current levee protection criteria. This is a significant issue because FEMA, as a part of its Map Modernization Program, now requires that all levees be certified before the protection they provide will be recognized and reflected on new or updated flood maps. This is true for all levees, even those that were recognized as providing protection on previous maps. To obtain certification, a levee owner must provide FEMA with engineering data that demonstrates compliance with all of the appropriate levee criteria. These requirements include evaluations of freeboard, closure structures, embankment protection, embankment and foundation stability, settlement potential, interior drainage, operations and maintenance, and as-built conditions.

Currently there are draft FEMA floodplain maps that show much of Sutter County within the 100-year floodplain. These maps are expected to be adopted by FEMA around December 2008.

Areas that are currently mapped by FEMA within the 100-year flood zones are based on Q3 data, which is digitized FEMA Flood Insurance Rate Map information used for GIS mapping (see Figure 3.1-15, Section 3.1.4, Stormwater Drainage). As described below, a number of studies have been completed or are in progress that will affect the flood protection and FEMA flood mapping within the county.

Lower Feather River Floodplain Mapping Study

DWR commissioned a study by the U.S. Army Corps of Engineers to map the floodplain along the Lower Feather River. The DWR forwarded the study to FEMA and requested that new flood maps be issued for the study area. Draft flood maps were published by FEMA in August 2006 that showed large portions of the study area within the 100-year floodplain. The proposed floodplain covers the area roughly south of Stewart Road between the Feather River and the Sutter Bypass, the area between the Feather River, the Natomas Cross Canal and Highway 70, and also large portions of the area east of Highway 70. Revised draft maps have been released with final maps expected to be released around December 2008. Development within these floodplain areas will be significantly restricted upon adoption of the new maps.

Upper Feather River Floodplain Mapping Study

At the request of DWR, the U.S. Army Corps of Engineers is also currently performing a study to define the floodplain along the upper portions of the Feather River. This study has not been completed, but it is expected to be complete in the near future. It is anticipated that the study will show large portions of northern Sutter County within the 100-year floodplain. A FEMA representative has indicated that they will begin working on the draft floodplain maps in 2009. The schedule for the completion of draft flood maps is uncertain.

Natomas Basin Project

The Natomas Basin is located at the southern end of the county and is bounded by the Sacramento River on the west, the Natomas Cross Canal on the north, Pleasant Grove Canal on the east, and the county line on the south. This area is currently shown on FEMA flood maps as having protection from the 100-year flood. In 2006, the U.S. Army Corps of Engineers determined that the levees protecting the Natomas Basin do not meet the current levee underseepage criteria and, as a result, FEMA intends to update the floodplain maps for the basin, with draft floodplain maps anticipated early in 2008. In September 2007, FEMA denied a request by Sutter County and other affected agencies to give the Natomas Basin an A99 designation and instead suggested that they apply for an AR designation. An A99 designation would not have resulted in severe restrictions on development, while an AR designation would only allow infill development if structures are raised 3 feet above the existing ground.

The Sacramento Area Flood Control Agency (SAFCA) in conjunction with the U.S. Army Corps of Engineers and the State of California have developed a levee improvement project that is planned to restore 100-year flood protection to the basin by 2010 and increase the protection to a 200-year level by 2012.

Sutter County Feasibility Study

The U.S. Army Corps of Engineers initiated a feasibility level study to determine the Federal Government's level of interest in achieving the federal flood protection requirements. This study will help develop preliminary flood protection measures for Sutter County. Sutter County and the State Reclamation Board are sharing the local cost share for the study. The study began in 2000 and is partially complete. The results from a geotechnical analysis indicate that approximately 15 percent of the Sacramento River Flood Control Project levees have a high probability of failure. Failure is expected mostly as a result of excessive seepage or embankment instability rather than overtopping. The remainder of the study is expected to take several years to complete, and it is the non-federal sponsor's planning objective to achieve 200-year flood protection and to obtain FEMA levee certification.

California Department of Water Resources Levee Evaluation Program

The California Department of Water Resources has initiated a program to evaluate and upgrade the levees along the Sacramento and San Joaquin River Valleys and the Delta. DWR has begun evaluation of 300 miles of high priority levees protecting urban areas in the valleys. Included in the high priority categories are levees within Sutter County along the Feather River and the east side of the Sutter Bypass. The levee evaluations are being conducted over a two- to three-year period. During that time, DWR is reviewing existing levee historical data; mapping near-surface geology; conducting field explorations; performing engineering, stability and seepage analyses; and preparing preliminary design and construction estimates for repairing and upgrading the levees, where needed.

Potential for Flood Due to Dam Failure

In addition to levee failure or overtopping of the levees, there is a potential for flooding as a result of a dam failure.

There is currently only one dam located within Sutter County that is under the jurisdiction of the California Department of Water Resources' Division of Safety of Dams (DSOD). The Steidlmayer #3 Dam is located in the northwest interior of the Sutter Buttes. It is relatively small in size and any failure of this dam would result in minimal property damage. There are, however, 10 larger dams outside the county listed in Table 5.5-1, all under the jurisdiction of the DSOD, that have the potential to cause significant flooding in Sutter County if any were to fail. These dams are operated under a variety of goals and regulations including flood control, water supply, fisheries, and other beneficial uses.

Table 5.5-1. Dams Under State Jurisdiction with Potential to Flood Sutter County

Dam Name	Owner	Stream	Type	Capacity (Acre Feet)
Oroville Dam	State DWR	Feather River	Earth	3,537,577
New Bullards Bar	Yuba County Water Agency	Yuba River	Variable Radius Arch	969,600
Camp Far West Dam	South Sutter Water District	Bear River	Earth and Rock	103,000
Lake Almanor	Pacific Gas & Electric	North Fork Feather River	Hydraulic Fill	1,308,000
Thermalito Afterbay Dam	State DWR	Feather River	Earth	57,041
Thermalito Forebay Dam	State DWR	Feather River	Earth	11,768
Shasta Dam	US Bureau of Reclamation	Sacramento River	Gravity	4,552,000
Whiskeytown Dam	US Bureau of Reclamation	Clear Creek (Sacramento River)	Gravity	241,100
Folsom Dam	US Bureau of Reclamation	American River	Gravity	1,010,000
Englebright Dam	Corps of Engineers	Yuba River Radius Arch	Variable	70,000

Source: Sutter County General Plan, Background Report, November 1996.

REGULATORY CONTEXT

This section summarizes regulations that are relevant to levees and flooding.

Federal

The National Flood Insurance Act of 1968 made federally subsidized flood insurance available to property owners in communities that participate in the National Flood Insurance Program (NFIP). Sutter County participates in the NFIP and is subject to its regulations. The NFIP is administered by FEMA.

State

California Code of Regulations Title 23 establishes regulations related to the State Plan of Flood Control and State adopted floodways. These regulations are applicable to the levee systems included in the Sacramento River Flood Control Project.

In October 2007, the State of California enacted several relevant bills, as summarized below:

Senate Bill 5 - This bill requires:

- The State must develop 100-year and 200-year flood maps for the Central Valley by July 1, 2008.
- The State must establish a Central Valley flood protection plan by 2012.
- Within 2 years after the adoption of a flood protection plan by the Central Valley Flood Protection Board (formerly the Reclamation Board), communities within the Sacramento-San Joaquin Valley must amend their general plans to include the data and analysis contained in the plan, goals and policies for the protection of lives and property from flooding, and related feasible implementation measures. Within 1 year of the general plan adoption, zoning ordinance amendments must be enacted to maintain consistency with the general plan.
- By 2015, for areas with a population of 10,000 or greater, local governments cannot approve new developments unless the land under review has 200-year flood protection or efforts are in place to provide that level of protection. For areas with a population of less than 10,000, new developments cannot be approved unless the area has 100-year flood protection.
- Requires counties to collaborate with cities within its jurisdiction to develop flood emergency plans.

Senate Bill 17 - Renames the Reclamation Board to the Central Valley Flood Protection Board, sets new criteria for members of the Board, and establishes Senate confirmation for Board members nominated by the Governor.

Assembly Bill 70 - Beginning in 2008, local governments could be held financially liable if they unreasonably approve new developments that are susceptible to flood damage.

Assembly Bill 162 - Requires local governments to consider flood risks in their general plans (after January 1, 2009), including:

- Annually review areas covered by the general plan that are subject to flooding as identified by FEMA or the State Department of Water Resources.
- The Safety Element of the general plan must include flood hazards and set goals, policies and objectives for the protection of the community.
- For communities/counties within the Central Valley, the Safety Element must be submitted to and reviewed by the State Central Valley Flood Protection Board (Formerly the Reclamation Board).
- Allows flood risk to be considered in evaluating the available land suitable for urban development if the flood protection infrastructure required for development would be impractical due to cost or other considerations.

- There is no reimbursement from the State to the local communities for implementing the requirements of this bill.

Assembly Bill 156 - Requires the state to prepare flood maps for areas in the Central Valley that are protected by state levees and to annually notify owners of property behind those levees of their flood risks, starting in 2010.

Local

As a participant in the NFIP, Sutter County is required to adopt and enforce a floodplain management ordinance that minimizes future flood risks to new or existing construction. The County adopted a flood damage prevention ordinance in 1993 and updated it in 2000. It is anticipated that the ordinance will be updated again in 2008. Sutter County's flood damage prevention ordinance is intended to promote public health and safety and minimize losses due to flooding. The ordinance seeks to accomplish these goals by:

- Restricting land-use in flood prone areas;
- Requiring flood protection measures at the time of initial construction for uses that are vulnerable to floods;
- Controls the alteration of natural floodplains;
- Controls activities that may increase flood damage; and
- Prevents or regulates unnatural diversions of floodwaters that could increase flood hazards in other areas.

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Chapter 7 GLOSSARY

A

100-Year (or Base) Flood. A flood event that statistically has a 1 out of 100 (or one percent) chance of being equaled or exceeded on a specific watercourse in any given year. A flood event of this magnitude is often used to determine if flood insurance is either advisable or required on a property.

Abandoned Gas Well. A well having temporarily or permanently ceased production from a well or ceasing further drilling operations.

Absorption or Net Absorption. An indicator of real estate market performance. States the change in the amount of space occupied by owners and tenants. Renewed leases (churn) and newly constructed buildings (if not yet leased or occupied) do not increase net absorption. New vacancies decrease net absorption.

Acre-Foot. Amount of water it takes to cover an acre of land to a depth of one foot; about 326,000 gallons. An acre-foot can supply the annual needs of between one and two average California households.

Acres, Gross. The entire acreage of a site. Most communities calculate gross acreage to the centerline of proposed bounding streets and to the edge of the right-of-way of existing or dedicated streets.

Acres, Net. The portion of a site that can actually be built upon. The following generally are not included in the net acreage of a site: public or private road rights-of-way, public open space, and flood ways.

Active Fault. As defined by the California Division of Mines and Geology, a fault that has shown displace within Holocene time (last 11,000 years). For planning purposes, such faults can be expected to move within the next hundred years.

ADA. The Americans with Disabilities Act civil rights legislation passed in 1990, effective July 1992.

Adverse Impact. A negative consequence for the physical, social, or economic environment resulting from an action or project.

ADT. (Average Daily Traffic). The measurement of the average number of vehicles passing a certain point each day on a highway, road or street.

Aesthetic Value. Refers to the perception of the natural beauty of an area, as well as the elements that create or enhance its visual quality.

Agriculture. Use of land for the production of food and fiber, including the growing of crops and/or the grazing of animals on natural prime or improved pasture land.

Agricultural Preserve. Land designated for agriculture or conservation (see also "Williamson Act.").

Air Quality Attainment Plan (AQAP). The CARB and local air districts are responsible for developing clean air plans to demonstrate how and when California will attain air quality standards established under both the federal and California Clean Air Acts. For the areas within California that have not attained air quality standards, the ARB works with air districts to develop and implement State and local Air Quality Attainment Plans (AQAPs). In general, AQAPs contain a discussion of ambient air quality data and trends; a baseline emissions inventory; future year projections of emissions, which account for growth projections and already adopted control measures; a comprehensive control strategy of additional measures needed to reach attainment; an attainment demonstration, which generally involves complex modeling; and contingency measures.

Alluvial. Pertaining to or composed of alluvium, or deposited by a stream or running water.

Alluvial Deposit. Alluvium, clay, silt, sand, gravel, or cobble deposited by rivers and streams over long periods of time.

Alluvium. A general term for clay, silt, sand, gravel or similar unconsolidated detrital material deposited during comparatively recent geologic time by a stream or other body of running water as a sort or semi-sorted sediment in the bed of the stream or on its flood plain or delta, or as a cone or fan at the base of the mountain.

Archeological Site. A bounded area of a resource containing archeological deposits or features that is defined in part by the character and location of such deposits or features.

Arterial (street). A street designated to carry traffic, mostly uninterrupted, through an urban area, or to different neighborhoods within an urban area.

Attainment. Attainment refers to an air district's status in reaching the federal and/or state ambient air quality standards. If a district meets the standard for a specific air pollutant, the district is said to be in attainment for that particular pollutant. For certain pollutants, there may be different standards depending on the timing for measurements, such as an 8-hour average reading or a 1-hour average reading.

B

Bedrock Mortar (BRM). A set of man made circular depressions in a rock outcrop or naturally occurring slab, used by early peoples for grinding of grain, acorns, or other food products.

Best Available Control Technologies (BACT) or Maximum Available Control Technologies (MACT). The California Air Resources Board and local air districts require applicants to use Best Available Control Technologies or Maximum Available Control Technologies for new sources, relocated sources, and for modifications to existing sources that may result in an emission increase of any non-attainment air contaminant, any ozone depleting compound (ODC), or ammonia. The installation of BACT or MACT helps to reduce the health risks associated with the new emission sources.

Bicycle. A vehicle having two tandem wheels, a minimum of 14" (35 cm) in diameter, propelled solely by human power through a belt, chain, gears, or pedals, upon which any person or persons may ride. A three-wheeled adult tricycle is considered a bicycle.

Bicycle Facility. Any facility provided for the benefit of bicycle travel, including bikeways and parking facilities as well as all other roadways not specifically designated for bicycle use.

Bike Lane. A portion of a roadway, which has been designated by striping and pavement markings for the preferential or exclusive use of bicyclists.

Bikeway. A bikeway is created when a road has the appropriate design treatment for bicyclists, based on motor vehicle traffic volumes and speeds: shared roadway, shoulder bikeway, bike lane or bicycle boulevard. Another type of facility is separated from the roadway: multi-use path.

Board of Supervisors (BOS). A county's legislative body. The BOS members are elected by popular vote and are responsible for enacting ordinances, imposing taxes, making appropriations, and establishing county policy. The BOS adopts general plan, zoning, and subdivision regulations.

Box Culvert. Concrete culvert that have a rectangular cross section.

Building. A resource, such as a house, barn, church, factory, hotel, or similar structure, created principally to shelter or assist in carrying out any form of human activity.

C

California Air Resources Board (CARB). California's Legislature established the California Air Resources Board in 1967 to attain and maintain healthy air quality, conduct research into the causes of and solutions to air pollution, and systematically attack the serious problem caused by motor vehicles, which are the major causes of air pollution in the State. The CARB sets and enforces emission standards for motor vehicles, fuels and consumer products, sets health-based air quality standards, conducts research, monitors air quality, identifies and sets control measures for toxic air contaminants, provides compliance assistance for businesses, produces education and outreach programs and materials, and oversees and assists local air quality districts which regulate most non-vehicular sources of air pollution.

California Clean Air Act (CCAA). The California Clean Air Act was signed into law in 1988 clearly identifies California's air quality goals, planning mechanisms, regulatory strategies, and standards of progress. The CCAA provides the State with a comprehensive framework for air quality planning regulation. Prior to passage of the Act, federal law contained the only comprehensive planning framework. CCAA requires attainment of state ambient air quality standards by the earliest practicable date.

California Climate Action Team (CCAT). Governor Schwarzenegger signed Executive Order # S-3-05 on June 1, 2005 which established targets to reduce greenhouse gas emissions to 2000 emission levels by 2010, 1990 emission levels by 2020, and 80 percent below 1990 levels by 2050. To meet the targets, the Secretary of the California Environmental Protection Agency has been tasked to lead the California Climate Action Team and coordinate with representatives from different government departments to implement global warming emission reduction programs and report on the progress made toward meeting the statewide greenhouse gas targets that were established in the executive order.

California Code of Regulations (CCR). The California Code of Regulations (CCR), is the official compilation and publication of the regulations adopted, amended or repealed by state agencies pursuant to the Administrative Procedure Act (APA). Properly adopted regulations which have been filed with the Secretary of State have the force of law.

California Environmental Protection Agency (Cal/EPA). The California Environmental Protection Agency was created in 1991 by Governor's Executive Order. This brought the California Air Resources Board, State Water Resources Control Board, Regional Water Quality Control Boards and the Integrated Waste Management Board under an umbrella agency with the newly created Department of Toxic Substances Control, Office of Environmental Health Hazard Assessment and Department of Pesticide Regulation. These six Boards, Departments and Offices are tasked with the protection of human health and the environment and to assure the coordinated deployment of State resources.

Caltrans. California Department of Transportation.

Carbon Dioxide (CO_2). Carbon dioxide (CO_2) is a compound that exists as a gas at standard temperature and exists in the Earth's atmosphere as a gas. CO_2 is emitted both naturally through the carbon cycle and through human activities like the burning of fossil fuels. Natural sources of CO2 occur within the carbon cycle where billions of tons of atmospheric CO_2 are removed from the atmosphere by photosynthesis in plants and by dissolving in water, especially on the surface of oceans. The CO_2 emitted back into the atmosphere annually through the decay of plants, volcanic eruptions, and as a waste product of animal respiration. When in balance, the total CO_2 emissions and removals from the entire carbon cycle are roughly equal. The burning of fossil fuels to run vehicles, heat homes and businesses, and power factories is contributing to an increase in CO_2 in the atmosphere which is contributing to global warming.

Carbon Monoxide (CO). Carbon monoxide is a colorless, odorless gas produced by the incomplete combustion of fuels.

CCR. California Code of Regulations.

CEC. California Energy Commission.

Cenozoic. The Cenozoic is the most recent of the three major subdivisions of animal history. The other two are the Paleozoic and Mesozoic. The Cenozoic spans only about 65 million years, from the end of the Cretaceous and the extinction of non-avian dinosaurs to the present.

Certified Unified Program Agency (CUPA). A local agency that implements Cal/EPA's Unified Hazardous Waste and Hazardous Materials Management Regulatory Program

CHP. California Highway Patrol.

Circulation Path. An exterior or interior way of passage from one place to another for pedestrians, including but not limited to walks, hallways, courtyards, stairways, and stair landings.

Class I (Multi-use Path). A completely separated facility designated for the use of pedestrians, bicycles, or other non-motorized transportation. The facility is separated from any street or highway by a physical space, berm, fence, or other barrier.

Class II (Bike Lane). A lane within a street or roadway designed for the one-way use of bicycles. It is an on-street facility with signs, striped lane markings, and pavement legends.

Class III (Bike Route). Any on street right-of-way recommended for bicycle travel that provides for shared use with motor vehicles or pedestrian traffic.

Collector (Street). A street designated to carry traffic between local streets and arterials, or from local street to local street

Community Noise Equivalent Level (CNEL). An L_{dn} with an additional 5 dBA "penalty" for the evening hours between 7:00 p.m. and 10:00 p.m.

Community Parks. Generally 10 to 60 acres in size and have a service area of 2 to 3 miles, which encompasses several neighborhoods and meets the requirements of a large portion of a county area or community.

Complete Gas Well. To finish work on a well and bring it to productive status. The activities and methods of preparing a well for the production of oil and gas or for other purposes, such as injection; the method by which one or more flow paths for hydrocarbons are established between the reservoir and the surface.

Complete Streets. Streets that adequately provide for all roadway users, including bicyclists, pedestrians, transit riders, and motorists, to the extent appropriate to the function and context of the street.

Covered Workers or Employment. Indicates that a person is on the payroll of an employer participating in the state's unemployment insurance program, or is part of a similar program established for federal government employees. Used as a consistent data source for tracking employment activity throughout the national economy.

Cogeneration. Utilization of the normally wasted heat energy produced by a power plant or industrial process, esp. to generate electricity.

CPUC. Public Utilities Commission.

Criteria Air Pollutants. Criteria air pollutants are a group of pollutants for which federal or state regulatory agencies have adopted ambient air quality standards.

Crosswalk. Portion of a roadway designated for pedestrian crossing, marked or unmarked. Unmarked crosswalks are the natural extension of the shoulder, curb line or sidewalk.

CTGs. Combustion turbine generators.

Culture. Shared, learned, symbolic system of values, beliefs and attitudes that shapes and influences perception and behavior.

D

Day-Night Average Noise Level (L_{dn}). A 24-hour average L_{eq} with a 10 dBA "penalty" added to noise levels during the hours of 10:00 p.m. to 7:00 a.m. to account for

increased sensitivity that people tend to have to nighttime noise. Because of this penalty, the L_{dn} would always be higher than its corresponding 24-hour L_{eq} (e.g., a constant 60 dBA noise over 24 hours would have a 60 dBA L_{eq}, but a 66.4 dBA L_{dn}).

Diversion Rate. Percent or rate of waste that is diverted from the landfill.

DOE. Department of Energy.

Drilling. In the process of drilling a well.

Dry Hole. Any well that does not produce oil or gas in commercial quantities. A dry hole may flow water, gas, or even oil, but not in amounts large enough to justify production.

E

Earthquake. Perceptible trembling to violent shaking of the ground, produced by sudden displacement of rock below and at the earth's surface.

Effluent. Waste material (such as treated wastewater) discharged into the environment.

Endemic Plant or wildlife species that only occur in a certain area, or in a certain habitat.

Epicenter. An area of the surface of the earth directly above the focus (true center of an earthquake, within which the strain energy is first converted to elastic wave energy of an earthquake.

Equivalent Energy Noise Level (L_{eq}). The constant noise level that would deliver the same acoustic energy to the ear of a listener as the actual time-varying noise over the same exposure time. No "penalties" are added to any noise levels during the exposure time; L_{eq} would be the same regardless of the time of day during which the noise occurs.

Erosion. The collapse, undermining, or subsidence of land along the shore of a lake or other body of water. Erosion is the movement of material (such as soil) from one place to another on the earth's surface. Agents of movement include water, ice, wind, and gravity.

E-waste. Electronic waste.

Expansionary Phase of Real Estate Cycle. The period of rising sales or construction activity for finished real estate such as homes, offices, stores, or warehouses. Prices often, but not always, increase during this phase of the cycle.

Expansion (shrink-swell) Potential. The relative volume change in a soil with a gain in moisture. Expansive soils are those that greatly increase in volume when they absorb water and shrink when they dry out.

F

Facultative Facultative plants are those species equally likely to occur in wetlands or uplands.

Fault. A fracture in the earth's crust accompanied by a displacement of one side with respect to the other and in a direction parallel to the fracture.

Fault Zone. A zone in which surface disruption or rock fracture has occurred due to movement along a fault. A fault zone may be expressed as an area with numerous small fractures, breccia (essentially, fractured rock) as a fault gouge. A fault zone may be anywhere from a few meters or yards) to two or more kilometers (1 mile or more) wide.

Farmland of Local Importance. Farmland of Local Importance is land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

Farmland of Prime Importance. Land which has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime Farmland must have been used for the production of irrigated crops within the last four years.

Farmland of Statewide Importance. Farmland of Statewide Importance is similar to 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.

Farmland of Unique Importance. Land which does not meet the criteria for Prime Farmland or Farmland of Statewide Importance, which is currently used for the production of specific high economic value crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. Examples of such crops may include oranges, olives, avocados, rice, grapes, and cut flowers.

FBI. The Federal Bureau of Investigations**.**

Feather River Air Quality Management District (FRAQMD). The Feather River Air Quality Management District is required by law to achieve and maintain healthful air quality for its residents. FRAQMD establishes and enforces air pollution control rules and regulations in order to attain all state and federal ambient air quality standards and minimize public exposure to airborne toxins and nuisance odors.

Federal Clean Air Act (CAA). The Federal Clean Air Act establishes air quality standards for several pollutants which are designed to protect public health and public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. The CAA requires that regional plans be prepared for non-attainment areas illustrating how the federal air quality standards can be met.

Fine Particulate Matter ($PM_{2.5}$). Consists of extremely small, suspended particles or droplets 2.5 microns or smaller in diameter.

Freeboard. The height of a channel or levee top above the water level in the channel or behind the levee.

Frontage Road. A road designate and designed to serve local traffic parallel adjacent to a highway or arterial street.

Fuel. Fuel is the material that feeds a fire and is a key factor in wildfire behavior.

Fuel Load. Fuel load, or build up, depends on the time available between successive burns, and the rainfall over this period. If the time between burns is short (i.e., fire frequency is high), less fuel is able to accumulate, particularly woody fuel, and the accumulated material will be comprised primarily of herbaceous plant material and leaf litter. As the time between burns is extended, the component of larger twigs and branches will increase.

G

Greenhouse Gases (GHGs). As defined under Assembly Bill 32, greenhouse gases include all of the following: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexaflouride. These gasses occur naturally in the environment and act to trap solar energy and warm earth's lower atmosphere. This "greenhouse effect" is a natural phenomenon, without which the planet would be significantly colder and unable to sustain life as we know it. A broad scientific consensus has been reached that concludes that addition of greenhouse gases to the atmosphere by human activities, predominantly the burning of fossil fuels but also land use changes, is increasing the potency of the greenhouse effect and leading to global climate change and increased temperatures on the planet.

Grade. A measure of the steepness of a roadway, bikeway or walkway, expressed in a ratio of vertical rise per horizontal distance, usually in percent; e.g., a 5 percent grade equals 5 m of rise over a 100 m horizontal distance.

Grade Separation. The vertical separation of conflicting travel-ways through use of a structure so that traffic crosses without interference.

Grazing Land. Grazing Land (as defined by the Department of Conservation) is land on which the existing vegetation is suited to the grazing of livestock. This category 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. The minimum mapping unit is 40 acres.

Ground Failure. Mudslide, landslide, liquefaction, of the seismic compaction of soils.

Ground Shaking. When movement occurs along a fault, the energy generated is released as waves, which cause groundshaking. Groundshaking intensity varies with the magnitude of the earthquake, the distance from the epicenter, and the type of rock or sediment through which the seismic waves move. The strongest ground motion, or groundshaking, typically occurs near the epicenter of the earthquake and attenuates (diminishes) as the seismic waves move away from the epicenter. In general, loose or soft saturated sediments amplify groundshaking more than dense or stiff soils or bedrock materials.

H

Hazardous Material As defined by the California Health and Safety Code, a material that, because of its quantity, concentration, or physical, chemical characteristics poses a

significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Hazardous Waste As defined by the California Health and Safety Code, a waste or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may either: (a) cause, or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating irreversible, illness, or (b) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed.

Headwalls. Concrete structures at the ends of culverts that prevent erosion around the culverts.

Highway. A general term denoting a public way for purposes of travel, including the entire area within the right-of-way.

Hiking, Jogging Trail. A facility with the same geometrical configuration as a Class I Bikeway; however, it may be surfaced with a non-hardening finish such as disintegrated granite or it may be un-surfaced. A surfaced hiking and jogging trail may be shared with bicycles. The facility is separated from motorized vehicles and cross-flow of traffic is minimized.

Historic Resource. any building, structure, object, area, place, records, manuscript, or site which is historically or archaeologically significant and possesses integrity of location, design, setting, materials, workmanship, feeling, and association.

HRSGs. Heat recovery steam generators.

I

Idle Gas Well. Currently not in use or operation, but not abandoned or plugged.

Inactive Fault. A fault which shows no evidence of movement in recent geologic time and no potential for movement in the relatively near future.

Incorporated Population. Residents of cities only. Contrast with the unincorporated population, which refers to residents living outside of the cities in unincorporated areas of a county.

Insurance Services Office, Inc. (ISO). Conducts evaluations and ratings of the fire protection provided in communities. This system is called the ISO Public Protection Classification program, or PPC. The PPC process grades a community's fire protection on a scale of 1-10, based on ISO's Fire Suppression Rating Schedule.

Intensity (of an earthquake). A measure of the effects of earthquake waves on people, structures, and earth=s surface at a particular place. The intensity at a specific point depends not only upon the strength of the earthquake, or the earthquake magnitude, but also upon the distance from the point to the epicenter and the local geology. Intensity

may be contrasted with magnitude, which is a measure of the total energy released by an earthquake.

IWMB. Integrated Waste Management Board.

L

L_{MAX}. Maximum instantaneous noise level experienced during a given period of time.

L_{MIN}. Minimum noise level experienced during a given period of time.

LCCF. Leo Chesney Correctional Facility located in Live Oak, CA.

LEA. Local enforcement agencies formed by the Board of Supervisors to oversee various county topics.

Liquefaction. A process whereby soil is temporarily transformed to a fluid form during intense and prolonged ground shaking or because of a sudden shock or strain.

Liquefaction. A process whereby soil is temporarily transformed to a fluid form during intense and prolonged ground shaking or because of a sudden shock or strain.

Local Street. A street designated to provide access to and from residences or businesses.

M

Magnitude (earthquake). A measure of the strength of an earthquake or the strain energy released by it as determined by seismographic observations and mathematical calculations.

Marked Crossing. A crosswalk or other identified path intended for pedestrian use in crossing a vehicular way.

Master Tax Agreement. Legally binding agreement for the redirected allocation of tax revenue.

Maximally Exposed Individual (MEI). The risk of contracting cancer is determined using the assumption that a person is exposed to TAC over a constant period of 24 hours per day for 70 years for residential receptor locations.

Mcf. One thousand cubic feet.

Mesozoic. The Mesozoic is divided into three time periods: the Triassic (245-208 Million Years Ago), the Jurassic (208-146 Million Years Ago), and the Cretaceous (146-65 Million Years Ago). Mesozoic means "middle animals", and is the time during which the world fauna changed drastically from that which had been seen in the Paleozoic. Dinosaurs, were organisms of the Mesozoic, evolved in the Triassic, but were not very diverse until the Jurassic.

M.H. Multiple Handicapped.

Midden. Any kind of feature containing waste products relating to day-to-day human life. Midden deposits can contain a variety of archaeological material, including animal bone, feces, shell, botanical material, vermin, sherds, lithics (especially debitage), and other artifacts and ecofacts associated with past human occupation.

Mineral Resource Zone. Areas classified by the State on the basis of geologic factors, without regard to existing land use and land ownership. The areas are categorized into four mineral resource zones (MRZ).

MMcf. one million cubic feet.

Motor Vehicle. A vehicle that is self-propelled or designed for self-propulsion.

MPO. Metropolitan Planning Organization: An agency that combines the governing bodies of neighboring cities where combined population exceeds 50,000.

Multi-use Trail System. A path physically separated from motor vehicle traffic by an open space or barrier and either within a highway right-of-way or within an independent right-of-way, of sufficient width to accommodate touring/commuter bicycling, horseback riding, hiking, jogging, and all-terrain bikes with appropriate trail surfacing may be classified as a multi-use trail system.

MUTCD. The "Manual on Uniform Traffic Control Devices," approved by the Federal Highway Administration as a national standard for placement and selection of all traffic control devices on or adjacent to all highways open to public travel.

Mutual Aid Agreement. Agreement of shared services or equipment between agencies, cities and counties.

N

National Register of Historic Places. The official federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, engineering, and culture as authorized by the National Historic Preservation Act of 1966.

Neighborhood Parks. Generally 5 to 10 acres in size and are intended to be used primarily by residents whom live within a 1/2 radius.

Nitrogen Dioxide (NO_2). Nitrogen dioxide is a reddish-brown gas with a pungent and irritating odor. It transforms in the air to form gaseous nitric acid and toxic organic nitrates. NO_2 also plays a major role in atmospheric reactions that produce ground-level ozone, a major component of smog. It is also a precursor to nitrates, which contribute to increased respirable particle levels in the atmosphere.

Nitrogen Oxide (NOx). Nitrogen oxide is the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Many of the nitrogen oxides are colorless and odorless. NOx combines with reactive organic gases to form ozone.

Non-attainment. Non-attainment refers to an air district's status in reaching the federal and/or state ambient air quality standards. If a district does not meet the standard for a specific air pollutant, the district is said to be in non-attainment for that particular

pollutant. For example, Sutter County is in non-attainment for the federal 8-hour ozone standard, the state 1-hour and 8-hour standards, and the PM_{10} 24-hour and annual mean standards.

Northern Sacramento Valley Air Basin (NSVAB). California is divided geographically into air basins for the purpose of managing the air resources of the state on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The State is currently divided into 15 air basins. The Northern Sacramento Valley Air Basin is a specific portion of the larger Sacramento Valley Air Basin and includes Shasta, Tehama, Glenn, Butte, Colusa, Sutter, and Yuba Counties.

O

Off-Street. Includes all property outside the dedicated road right-of-way including both public and private ownership.

OMR. The Office of Mine Reclamation.

On-Street. All street or road right-of-way including curb, gutters, and sidewalk, also, in some cases may include a setback behind the back of sidewalk.

Ozone (O_3). Ozone is a gas that is formed when reactive organic gases (ROGs) and nitrogen oxides (NO_X), both byproducts of internal combustion engine exhaust and other processes undergo slow photochemical reactions in the presence of sunlight.

P

Part I. Crimes that are violent in nature.

Part II. Property crimes.

Parkland. Various types of parkland and special facilities (e.g., museums, riding/hiking trails, etc.).

Pavement Markings. Painted or applied lines or legends placed on a roadway surface for regulating, guiding or warning traffic. A standard pavement legend is the words "Bike Lane" supplemented by an arrow showing the direction of travel. The arrow is used in combination with the words at each location where a legend is painted.

Peaker Facility. A smaller energy facility that only operate during periods of high power demand.

Pedestrian. A person on foot, in a wheelchair or walking a bicycle.

Pedestrian Facility. A facility provided for the benefit of pedestrian travel, including walkways, crosswalks, grade separations, signs, signals, illumination and benches.

Pleistocene. The early half of the Quarternary Period, beginning about two million years ago and ending 10,000 years ago, characterized by widespread glacial ice and the advent of modern humans.

Plug and Abandon Gas Well (P&A). To place cement plugs into a dry hole and abandon it.

Potentially Active Fault. As defined by the California Division of Mines and Geology, a fault that has shown displacement during Quaternary time (last 1.6 million years).

Prime Agricultural Land. Land used actively in the production of food, fiber, or livestock. All land which qualifies for rating as Class I or Class II in the Soil Conservation Service land use compatibility classifications. Land which qualifies for rating 80 through 100 in the Storie Index Rating.

Pump Station. A facility that lifts water from a lower elevation to a higher elevation.

PWWF. Peak Wet Weather Flow.

Q

Qual. A designated unit of geological stratigraphic section under the Quaternary, Holocene sections

Quaternary. A period of geologic time from 1.6 million years to the present. Part of the Cenozoic period

R

Reactive Organic Gas (ROG). Reactive organic gases are organic compounds that are assumed to be reactive at urban and regional scales. Typically, this general term is given to those organic compounds (excluding methane) that react to form ozone.

Regional Parks. Larger sites developed with a wide range of improvements usually not found in local neighborhood or community facilities to meet the needs of the entire population.

Regional Water Quality Control Board (RWQCB) State of California agency that is set up to preserve, enhance, and restore the quality of California's water resources.

Respirable Particulate Matter (PM_{10}). PM_{10} consists of extremely small, suspended particles or droplets 10 microns or smaller in diameter.

Right-of-Way. A general term denoting publicly owned land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Roadway. The paved portion of the highway the operation of vehicular and pedestrian traffic

R.S.P. Resource Specialist Program.

S

Sacramento Valley Air Basin (SVAB). California is divided geographically into air basins for the purpose of managing the air resources of the state on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The State is currently divided into 15 air basins. The Sacramento Valley Air Basin includes Shasta, Tehama, Glenn, Butte, Colusa, Sutter, Yuba, Yolo, and Sacramento Counties. The SVAB also includes parts of Placer and Solano County.

Scenic Resources. Can include natural open spaces, topographic formations, and landscapes. These are resources that can be maintained and enhanced to promote a positive image in the future.

Scenic Roadways. In 1963, the State legislature established the California Scenic Highway Program through Senate Bill 1467. Establishes the State's responsibility for the protection and enhancement of California's natural scenic beauty.

Schultz Eddy. The Schultz Eddy prevents the prevailing wind patterns to move north which carries the pollutants out of the valley. Instead, the Schultz Eddy causes the wind pattern to circle back south which increases air pollution levels.

Seismic. Pertaining to earthquake or earth vibration, including those that are artificially induced.

Separation. An intervening space or a physical barrier between the bike path and the roadway so that the bike path is not contiguous to the outer edge of the paved highway shoulder.

S.H. Severely Handicapped.

Shoulder. The portion of a highway that is contiguous to the travel lanes provided for pedestrians, bicyclists, and emergency use by vehicles, and for lateral support of base and surface courses.

Sidewalk. A walkway separated from the roadway with a curb, constructed of a durable, hard and smooth surface, designed for preferential or exclusive use by pedestrians.

Site. A location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historical, cultural, or archeological value regardless of the value of any existing building, structure, or object.

Site Trinomial Number. A site registration number assigned by the Office of Historic Preservation to a specific archeological resource under which all documentation for that resource will be recorded.

SMARA. Surface Mining and Reclamation Act.

SRO. School Resource Officers.

State and Local Air Monitoring Network Plan (SLAM). The State and Local Air Monitoring Network Plan provides information about ambient air quality monitoring sites in California and the northern Baja California portion of Mexico. The monitoring sites in

the network include instruments that measure ambient levels of gaseous and particulate air pollutants, and in some cases, meteorological parameters.

State Historical Landmarks. The California Registered Historical Landmarks Program (Cal. Pub. Res. Code Section 5021) is a state historical resources registration program which was created in 1949 to recognize historical resources with regional and statewide significance to the history of California.

State Implementation Plan (SIP). The State Implementation Plan is a compilation of plans and regulations that govern how the region and the State will comply with the federal Clean Air Act requirements to attain and maintain the federal ozone standard.

Structure. A construction made for a functional purpose rather than creating human shelter. (e.g., mines, bridges, and tunnels).

STG. Steam turbine generator.

Sulfur Dioxide (SO_2). Sulfur dioxide is a colorless gas with a pungent odor and it dissolves easily in water. SO_2 in the atmosphere is mainly produced from activities such as the burning of coal and oil at power plants or from copper smelting. In nature, sulfur dioxide can be released to the air from volcanic eruptions. Exposure to SO_2 can cause breathing difficulties and inflammation of the airways.

Sulfur Oxide (SO_x). Sulfur oxide is a general term used to describe any of several compounds containing sulfur and oxygen. Sulfur oxides are pungent, colorless gases formed primarily by the combustion of fossil fuels. Sulfur oxides, which are considered major air pollutants, may damage the respiratory tract as well as vegetation.

Swale. A low-lying or depressed and often wet stretch of land used for treating stormwater runoff.

SWART. Swift Water Rescue Team.

T

Tertiary. The Tertiary Period is subdivided into the Paleogene and the Neogene, it is the first part of the Cenozoic period approximately 65 million years ago.

Total Organic Gases (TOG). Total organic gases include compounds that contain carbon and can become airborne (through evaporation, sublimation, as aerosols, etc.), excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. TOG also includes the organic gas compounds with low reactivity. The California Air Resources Board's emission inventory and photochemical air quality models both quantify organic compounds as TOG, as well as breaking TOG down according to the organic compounds in it.

Toxic Air Contaminants (TAC). Toxic Air Contaminants are airborne substances capable of causing short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects (i.e., injury or illness).

Traffic Control Devices. Signs, signals or other fixtures, whether permanent or temporary, placed on or adjacent to a travel-way by any authority of a public body having jurisdiction to regulate, warn or guide traffic.

Traffic Volume. The given number of vehicles that pass a given point for a given amount of time (hour, day, year). See ADT.

U

U.S. Environmental Protection Agency (U.S. EPA). The U.S. Environmental Protection Agency is the department in the federal government responsible for protecting human health and the environment. U.S. EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. The department also performs environmental research and offers financial assistance for research grants, educational programs, and environmental projects taken on by local jurisdictions or small businesses.

V

Vehicle. Any device in, upon or by which any person or property is or may be transported or drawn upon a highway, including vehicles that are self-propelled or powered by any means.

Viewsheds. Constitute the range of vision in which scenic resources may be observed. They are defined by physical features that frame the boundaries or context to one or more scenic resources.

W

Walkway. A transportation facility built for use by pedestrians, including persons in wheelchairs. Walkways include sidewalks, paths and paved shoulders.

Wildland/Urban Interface. Heavily vegetated areas where wildlands meet urban development.

Williamson Act. Known formally as the California Land Conservation Act of 1965, it was designed as an incentive to retain prime agricultural land and open space in agricultural use, thereby slowing its conversion to urban and suburban development. The program entails a 10-year contract between the city or county and an owner of land whereby the land is taxed on the basis of its agricultural use rather than the market value. The land becomes subject to certain enforceable restrictions, and certain conditions need to be met prior to approval of an agreement.

Wingwalls. Concrete structures that provide a transition from a headwall to the banks of a channel.

Y

YSDI. Yuba-Sutter Disposal, Inc.

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