Section 3

Section 3

DEMOGRAPHICS, LAND USE, AND ECONOMIC ACTIVITY

TABLES

FIGURES

Section 3

DEMOGRAPHICS, LAND USE, AND ECONOMIC ACTIVITY

This section includes discussion of changes in demographics and land use in the Tehama West Watershed over time. It should be noted at the time of this writing that the Tehama County General Plan is being revised. Information obtained for this section was taken from the draft plan and may change prior to final General Plan approval. Much of the data used for this section was summarized "by county" and smaller sub-unit data was not available. Where delineation of data in to sub-units was not possible the discussions address the county as a whole. Where sub-unit definition was practical the discussion addresses the applicable sub-unit.

SOURCES OF DATA

Primary sources of data used to construct this section of the report include:

- Tehama County General Plan (Draft)
- Files and records obtained from Tehama County Planning Department
- Agricultural Commissioner and Assessors offices
- Digital and non-digital data obtained from the California Department of Conservation

Reports and other documents reviewed and used to construct this section are included in the references section at the end of this section. Census data was used for population projections, however because census blocks vary by census within the county changes over time by area within the watershed were not available.

CITIES

The Tehama West Watershed is located in Tehama County. The county was created out of parts of Butte, Colusa, and Shasta Counties in 1856. The county is made up of 2,951 square miles and is located approximately 120 miles north of the City of Sacramento and roughly midway between Sacramento and the Oregon state border. There are three incorporated cities within the watershed. Included are the cities of Red Bluff, Corning, and the City of Tehama. Incorporated cities are included on Figure 3-1.

Red Bluff

Red Bluff, the county seat, was established in 1856. Its strategic location along the Sacramento River, connecting it to both Sacramento and San Francisco, enabled it to serve as a transportation hub, exporting agricultural and lumber products by steamships up and down the river. Steamships also imported freight to Red Bluff where it was unloaded and distributed to the Trinity mining camps to the northwest. The Central Pacific Railroad connected through to Red Bluff in the 1870s and soon replaced the steamships as the primary mode of transportation and commerce. Red Bluff's downtown reflects the Victorian architectural style popular during the

1870s due both to its connection to the cities of Sacramento and San Francisco as well lumber made available by the Sierra Lumber Company Flume.

Corning

Corning, the watershed's second-largest city, was incorporated in 1907. It originally served as an agricultural hub for Tehama County, producing olives, plums, almonds, walnuts, and peaches, as well as cattle and sheep. Corning is home to Bell Carter Foods (which includes the Lindsey Olive Company).

City of Tehama

The City of Tehama, which was established in 1846, is both the watershed's oldest and smallest incorporated city (approximately 0.8 square miles). The city was originally established as a trading hub due to its proximity to the Sacramento River. Today, Tehama is almost entirely residential, with residents fulfilling commercial needs in the unincorporated, but larger town of Los Molinos, which is located approximately 1 mile to the east.

CURRENT LAND OWNERSHIP

The Tehama West Watershed is largely rural in nature, with isolated pockets of population primarily concentrated along the watershed's major transportation corridor along Interstate 5. As the watershed extends westward from these populated areas and into the watershed's margins, large ranches, forest products industry, and government land holdings dominate the terrain.

The existing land use pattern within the watershed primarily consists of a combination of upland agricultural, exclusive agricultural, and public lands. A majority of the major incorporated (city) and unincorporated developed (town) areas within the watershed are located adjacent to Interstate 5.

Commercial land uses also primarily occur along the Interstate 5 transportation corridor, mainly in Red Bluff and Corning. Residential land uses within the developed portions of the county often tend to be located behind or beyond the commercial and service uses directly adjacent to the major street network.

Based on the available data summarized in Table 3-1, the watershed has a large area of land in private ownership (85 percent). This leaves approximately 15 percent in federal and state ownership. General ownership within the watershed is shown in Figure 3-2.

GENERAL PLAN

The General Plan is the guiding document from which zoning and other development approval on private property emanates. Viewed as the constitution for the community, the General Plan includes broad principles and goals designed to forward a vision for the community. While all of the components of the General Plan are equal in stature, two elements, Land Use and Circulation, are used more in the day-to-day review of development proposals. The Land Use element contains a listing of uses allowed by type. Low Density Residential for example, typically

provides for traditional housing subdivisions. Commercial designations can allow for a variety of retail, professional office, and light industrial types of use. Table 3-2 and Figure 3-3 contain the draft general plan designations found in the Tehama West Watershed.

Table 3-1
LAND OWNERSHIP IN THE TEHAMA WEST WATERSHED

Owner	Total Acres	Percent of Watershed
Bureau of Land Management	14,745	2.21
California Department of Fish and Game	760	0.11
California Department of Parks and Recreation	260	0.04
Department of Defense	27	< 0.01
State Lands Commission	410	0.01
The Nature Conservancy	250	0.04
US Fish and Wildlife Service	2,767	0.41
US Forest Service	83,826	12.55
Subtotal Government Acres	103,045	15.37
Crane Mills	55,530	8.32
Sierra Pacific Industries	1,001	0.15
Unclassified Private Ownership	508,592	76.17
Subtotal Other Acres	565,122	84.63
Total	668,168	100.00

Source: California Resources Agency

Table 3-2
DRAFT GENERAL PLAN DESIGNATIONS

General Plan Designation	Description	Acres
C	Cropland	143,255
CC	Composite Cropland	9,232
CR	Commercial Recreation	316
CTY	City	7,356
G	Grazing	285,504
GC	General Commercial	469
GOV	Government Lands	97,721
IG	General Industrial	3,161
NH	Habitat Resource	4,951
NR	Resource Lands	451
OS	Open Space	744
P	Public Facility	45
RL	Rural Large Lot	14,609
RS	Rural Small Lot	21,327
SE	Scenic Easement	671
SP	Special Plan	4,355
SR	Suburban	10,948
T	Timber	57,743
TR	Native American Lands	1,985
U	Urban	1,986
W	Water	114

Just because a property has a land use designation, there is no assurance that the land will be developed. In many instances, the land will remain vacant for years, often outlasting several General Plan revisions. The General Plan designation provides an opportunity for development, not a guarantee to develop. It is also possible that property may contain a land use designation that cannot be developed because of some site constraint unknown to the county at the time the General Plan was adopted. General Plans seldom provide sufficient information to enable development at the individual property level, which is why area plans and watershed plans are so important. Wetlands, biological resources, limited access, mineral rights, and agricultural preserves are only some of the things that can restrict a property owner's ability to implement the underlying general plan designation.

The Circulation Element is important because it dictates how connectivity will occur between parcels. The Circulation Element also assures that new owners can in fact gain access to their land, and establishes minimum roadway widths and location. Policies within the circulation element govern the extension of utilities including power, water, phone, etc. Obviously the placement and size of a roadway can create an opportunity to build where one may not currently exist, or restrict development due to a lack of access. Because of this, circulation issues are frequently discussed with, or ahead of, land development proposals.

The General Plan is so important that state law limits amendments to four times per year. Most communities allow one per quarter and keep one in reserve for special projects. Tehama County is about to conclude the complete revision and update of its General Plan and looks to adopt the General Plan early in 2006. Unlike many other counties and cities, most of Tehama County is organized along a 10-mile wide strip on either side of Interstate 5. Lands to the far west and east of this strip are usually in larger agricultural use, or owned by state and federal agencies. Large tracts of land are also in conservation or agricultural preserve trusts. The County is focusing its development pressure on lands along the Interstate 5 corridor to both make use of this transportation improvement, and to help preserve larger agricultural uses outside of this central core. During the update process, the County met with numerous land owners, members of the public and held community meetings in several regions of the County. The land use map proposed with this update reflects very little change from the current land use map, which is both normal, and desired by the County and the members of the update committee. Large changes in land use patterns are typically addressed through specific plans, like Lake California or the Sun City Tehama project, which can address both the broad policy issues as well as site specific development concerns. The Specific Plan process is typically accompanied by its own environmental impact report (EIR).

Key to implementation of any General Plan designation is the zone district adopted by the County for specific properties. By state law, a zoning district must be consistent with the underlying General Plan designation. By zoning a property, the County identifies a list of permitted uses that can occur with little or no review or governmental discretion. These uses are typically consistent with the title of the zoning district. For example, a residential zone district will typically allow a single family dwelling as a permitted use. Conditional uses are those that the County might allow, but that need additional review to ensure that the use is compatible with the surrounding area(s) affected by the proposal. Other laws, such as the subdivision map act, County health codes, etc, also govern how a property can be developed, and must be consistent with both the General Plan designation and the Zoning District.

EXISTING ZONING

The Tehama County Board of Supervisors adopted the current Zoning Ordinance in 1983, pursuant to Ordinance No. 3787 (Zoning Enabling Plan for Tehama County). The purpose of the zoning ordinance was to protect and promote public health, safety, morals, peace, comfort, convenience, prosperity, and general welfare, including prescribing land use regulations that promote forestry and agriculture. The Zoning Ordinance establishes Zoning Districts based upon the General Plan land use designations, summarized in Table 3-3. Figure 3-4 shows the zoning districts within the watershed.

Table 3-3
ZONING DISTRICTS

District	Zoning District	General Plan Land Use Designation
Agricultural		
U-A	Upland Agricultural District	**Agricultural Lands:** The primary land use in this district is for the grazing of livestock. Secondary uses include tree, row, and field crops, farming, animal husbandry, dairies, nurseries, etc. Minimum lot area in a U-A district shall be forty to one hundred sixty acres.
E-A	Agricultural Exclusive District	**Agricultural Lands:** The primary land use in this district shall be the production of crops. Secondary uses for lands in this district include the grazing of livestock. Minimum lot area in an E-A district shall be ten acres to forty acres.
Residential		
RE	Residential Estate District	**Rural Large Lot:** Uses permitted in an RE district include one-family dwellings, crop and tree farming, private stables, and publicly owned parks. The minimum lot area is ten thousand five hundred square feet.
R-1	One-Family Residential District	**Rural Small Lot:** Uses permitted in an R-1 district shall be one-family dwellings, including private garages, accessory buildings, and home occupations. Crop and tree farming is also permitted, but not including commercial nurseries, or the railing of any animals other than ordinary household pets. Minimum lot area is five thousand square feet.
R-2	Two-Family Residential District	**Suburban Residential:** Uses permitted in an R-2 district shall include all uses permitted in an R-1 district with the addition of two-family dwellings. Minimum lot area is six thousand square feet.
R-3	Neighborhood Apartment District	**Suburban Residential:** Uses permitted in an R-3 district shall include all uses permitted in the R-1 and R-2 districts with the addition of parks and playgrounds, group buildings, multiple-family dwellings, apartments, boardinghouses and private garages/parking lots. Minimum lot area is six thousand square feet, but not less than one thousand five hundred square feet of lot area for each unit in multiple or apartment dwellings, and not less than two thousand square feet for each unit in group dwellings.
R-4	General Apartment District	**Suburban Residential**: Uses permitted in an R-4 district shall include all uses permitted in the R-1, R-2, and R-3 districts with the addition of hotels, hospitals, mortuaries, rest homes, churches, private schools, sanitariums, nursery schools, daycare centers, professional offices, clubs, lodges and fraternities. Minimum lot area is six thousand square feet.

Table 3-3 (cont.) ZONING DISTRICTS		
District	**Zoning District**	**General Plan Land Use Designation**
C-1	Neighborhood Commercial District	**Commercial:** Uses in a C-1 district shall include all uses permitted in R districts, as well as the retail businesses such as foodstores, bookstores, drugstores, laundry agencies, barbershops, small-scale repair shops, professional offices, gas stations, and self-operated laundries. There are no minimum lot requirements in the district.
C-2	Community Commercial District	**Commercial:** Uses in a C-2 district shall include all uses permitted in R and C-1 districts, with the addition of retail stores such as banks, bowling alleys, drugstores, clothing stores, restaurants, pawnshops, hotels, theaters, print shops, mortuaries, and bakeries. Professional offices and public utility offices are also permitted. There are no minimum lot requirements in the district.
C-3	General Commercial District	**Commercial**: Uses permitted in a C-3 district shall include uses permitted in R, C-1 and C-2 districts, with the addition of commercial repair garages, automobile sales, construction and building material sales, transient lodging, funeral and interment services and plumbing and electrical services. There are no minimum lot requirements in the district.
C-4	Local Convenience Center Commercial District	**Commercial**: Uses permitted in a C-4 district shall include uses permitted in R districts, with the addition of foodstores, gas stations, small restaurants and bars, and commercial uses that provide a needed service to the community. There are no minimum lot requirements in the district.
Recreation		
G-R	General Recreation District	**Recreation:** Uses permitted in a G-R district shall include public parks, playgrounds, and recreation areas, crop and tree farming, grazing and animal husbandry, one-family dwellings, and noncommercial picnic, boating, swimming, fishing, riding and hunting facilities and structures. Lot requirements in a G-R district shall follow minimum regulations provided for R-1 districts, and otherwise provided in use permit conditions.
NR	Natural Resource Lands and Recreation District	**Recreation:** Uses permitted in an NR district include fire trails, riding and hiking trails, nonprofit riding stables, parks and picnic sites, crop and tree farming, grazing, noncommercial boat launching and docking facilities, and other uses that the Planning Commission determines are similar to the above. Minimum parcel size in an NR district is forty acres.
Industrial		
M-1	Light Industrial District	**Industrial**: Uses permitted in an M-1 district shall include uses permitted in C-3 districts, with the addition of assembly and storage of goods, wholesale and storage warehouses, feed yards, manufacturing, dry-cleaning plants, laundries, veterinary hospitals, retail lumberyards, and similar uses. There are no minimum lot requirements in the district.
M-2	General Industrial District	**Industrial:** Uses permitted in an M-2 district shall include uses permitted in M-1 districts with the addition of wholesale lumberyards, lumber mills, pottery kilns, concrete batching plants, blacksmith shops and casting foundries. There are no minimum lot requirements in the district.
PD	Planned Development District	**Development:** Uses permitted in a PD district shall include all uses permitted in R, C & M districts, subject to the securing of a use permit. Lot requirements are specified in the use permits.

Table 3-3 (cont.) ZONING DISTRICTS		
District	**Zoning District**	**General Plan Land Use Designation**
Miscellaneous		
AV	Airport District	**Airport:** Uses permitted in an AV district shall include paved runways, aircraft storage, repair hangers, aircraft refueling facilities, passenger and freight terminal facilities, lighting radio and radar facilities, and accessory structures and facilities, including aircraft and aviation accessory sales, caretaker dwelling and related uses. There are no minimum lot requirements in the district.
PA	Public Agency District	**Public Agency:** Uses permitted in a PA district include public schools, parks and recreation areas, fairgrounds, civic centers, public forest and reservoir areas, historical sites, public utility facilities for local services, and other sites which the Planning Commission determines are similar to above. There are no minimum lot requirements in the district.
TPZ	Timber Preserve District	**Forest Lands:** Uses permitted in a TPZ zone include those integrally related to the growing, harvesting, and processing of forest products; management for watershed; fire and erosion control; and management for fish and wildlife habitat. A TPZ district must consist of contiguous parcels, and parcels zoned TPZ may not be divided into parcels less than one hundred sixty acres.

POPULATION

Between 1960 and 1990, Tehama County's population increased from 25,305 to 49,625 people, an average annual growth rate of 1.68 percent. Between 1990 and 2000 the county's population increased from 49,625 to 55,700 people, or an average 1.18 percent annual growth rate for the decade. The growth rate was around 3 percent early in the decade (1990 to 1992) and declined to less than 1 percent in the latter part of the decade (CED, 2004). Figure 3-5 shows a comparison of population density for 1990 and 2000. Table 3-4 and Figure 3-6 show historical population data for Tehama County.

Table 3-4 TEHAMA COUNTY POPULATION CHANGE			
Year	**Total**	**Change**	**Percent Change**
1860	4,044	---	---
1870	3,587	(457)	-11.30%
1880	9,301	5,714	159.30%
1890	9,916	615	6.61%
1900	10,996	1,080	10.89%
1910	11,401	405	3.68%
1920	12,882	1,481	12.99%
1930	13,866	984	7.64%
1940	14,316	450	3.25%
1950	19,276	4,960	34.65%
1960	25,305	6,029	31.28%
1970	29,517	4,212	16.64%
1980	38,888	9,371	31.75%
1990	49,625	10,737	27.61%
2000	56,039	6,414	12.92%
Source: University of Virginia Library, 2005			

Tehama County's population ranks 41st among the 58 counties in California. The majority of the population is located along the central valley area of the county, primarily adjacent to the north-south running Interstate 5 and Highway 99, a roughly parallel facility. The State Department of Finance Demographic Research Unit estimated Tehama County's population at 58,700 people in 2005, representing a 1.1 percent annual growth rate over the last 10 years. It further projected the county population to reach 61,200 people in 2010, representing a 0.8 percent annual growth rate through the year 2010 (CED, 2004). Based on recent proposed development in the Interstate 5 corridor, this number may increase significantly.

Between 2000 and 2003, the Tehama County's population rose to 57,700 people, averaging a 1.16 percent annual growth rate for the 3-year period, which is lower than the growth rate for the State of California within that same time period (4.8 percent). Reflecting its rural character, Tehama County's population density (persons per square mile) remains dramatically below the State average, with just 19 persons per square mile in 2000 compared to the state average of 217.2 persons per square mile.

Table 3-5 below provides a historical perspective of dwelling unit construction in the county and the number of units constructed in 3- to 10-year intervals throughout history.

Table 3-5
HISTORIC CONSTRUCTION OF DWELLING UNITS, TEHAMA COUNTY

Year Built	Number
1939 or earlier	2,233
1940 to 1949	2,098
1950 to 1959	2,110
1960 to 1969	2,666
1970 to 1979	5,981
1980 to 1989	4,623
1990 to 2000	3,836

Source: U.S. Bureau of the Census, Census 2000

Table 3-6 provides a perspective as to the total number of dwelling units (by type) in the county, based on the 2000 census.

According to the 2000 Census, the county contained 90 units (0.4 percent) that lack complete plumbing facilities, 159 units (0.8 percent) that lack complete kitchen facilities, and 483 units (2.3 percent) that have no telephone service.

Table 3-6 TOTAL HOUSING UNITS (BY TYPE), TEHAMA COUNTY		
Units in Structure	**Number**	**Percent**
1-unit, detached	14,186	60.2
1-unit, attached	486	2.1
2 units	435	1.8
3 or 4 units	778	3.3
5 to 9 units	612	2.6
10 to 19 units	308	1.3
20 or more units	670	2.8
Mobile Home	5,773	24.5
Boat, RV, Van, etc.	299	1.3
Total Units	**23,547**	**100.0**
Source: U.S. Bureau of the Census, Census 2000		

The population of Tehama County is almost evenly divided between men and women. Women account for 50.6 percent of the population, according to 2000 census figures. Approximately 58.4 percent of the population age 15 years and older is married, while 23.7 percent have never married. Approximately 17.9 percent of the 15-and-over population is divorced or separated.

The percentage of county residents below the age of 18 is 27.4 percent, an increase from 26.9 percent in 1990. Residents 65 years of age or older comprise 15.9 percent of the county population, which is a decrease from 16.9 percent in 1990.

Table 3-7 shows the racial composition of the County population in 1990 and 2000. As indicated by the table, little change has occurred in the racial composition of the county population, except for a significant decline in the percentage of white residents. Although speculative, the decline may be explained in part by residents who changed their racial categorization from "white" to another category, particularly "other" or "two or more races," the latter category not having been established prior to the 2000 Census.

Table 3-7 COUNTY POPULATION BY RACE			
Race	**Percent of Population, 1990**	**Percent of Population, 2000**	**Percentage Change**
White	91.6	84.8	-6.8
Black	0.7	0.6	-0.1
American Indian/Alaska Native	1.8	2.1	+0.3
Asian/Pacific Islander	.04	0.8	+0.76
Other	4.8	5.0	+0.2
Two or more races	[1]	3.4	[1]
[1] Category not established in 1990 U.S. Census. Figures may not add up to 100 % due to rounding. Source: U.S. Census Bureau			

Hispanics/Latinos are considered an ethnic group rather than a race. The Hispanic population in the county increased from 10.3 percent of the total county population in 1990 to 15.8 percent in

2000. The 5.5 percent increase is greater than that for any racial group, and is slightly lower than the percentage increase in the state population during the same time period (6.6 percent).
There are 23,547 households in the county, which is 0.11 percent higher than the 1990 figure of 20,403. Approximately 63.5 percent of Tehama County's households are considered family households, which is less than the 1990 percentage of 67.2 percent. Approximately 9.6 percent of county households are family households headed by females. Of the total non-family households, approximately 70.5 percent have householders that live alone. Approximately 10.4 percent of total County households have householders 65 years of age or older who live alone, which is slightly above the 1990 percentage of 10.0 percent and above the statewide percentage of 7.8 percent. The average household size in the county in 2000 was 2.62, a slight decrease from the 1990 average size of 2.68.

Approximately 72.2 percent of the County population age 25 and older has graduated from high school. The percentage of 25-and-over residents with a bachelor's degree or higher is 10.2 percent. By comparison, approximately 76.8 percent of California residents graduated from high school, and approximately 26.6 percent hold a bachelor's degree or higher.

Median household income in Tehama County in 1999 was $31,206. This was below the statewide median household income of $47,493. Approximately 17.3 percent of families in the County were below the poverty level established in 1999. This percentage is higher than that of California families who are below the poverty level (10.6 percent).

LAND USE

Land use based on Department of Water Resources data is included as Figure 3-7. Land use based on Tehama County parcel information is included as Figure 3-8. General plan designations based on the Draft 2005 General Plan are included as Figure 3-3. General Plan Designations are included on Table 3-2. Proposed areas of future development based on the Draft Tehama County General Plan are included on Figure 3-9.

This section addresses specific land use issues determined at scoping meetings to be important to watershed residents. These include:

- Agricultural Land Use
- Grazing Land Use
- Timber
- Conservation Easements
- Mining
- Recreation
- Development

Agricultural Resources

Agriculture has long been the backbone of the Tehama West Watershed economy. The favorable growing season, arid climate, fertile soils, and abundance of water contribute to make the watershed an agricultural cornucopia in the northern Sacramento Valley. The lands that surround the Sacramento River are prime agricultural lands for irrigated crops. The foothills

provide critical grazing land and production of dryland grain. The mountains provide timber and meadows for summer grazing. All of these factors contribute to shaping the agricultural evolution of the watershed.

The Tehama West Watershed is rich with an interesting agricultural history. Since the early settlement of the county with the Mexican Land Grants, agriculture has intensified with the development of new technologies, fertilization, and irrigation systems. The watershed was the home to one of the world's largest planned agricultural communities, the Maywood Colonies, near Corning.

Agriculture, historically and currently, is the area's highest income producing industry. Agriculture provides the watershed with its rural character, open space, and lifestyle that are highly valued by its residents. The portion of the watershed dedicated to agricultural uses including timber and livestock is included on Figure 3-10.

Preservation or loss of agricultural land value and social values remain controversial issues with the county. The history of agriculture was included in Section 2, "General Watershed History." The discussion is summarized in this section because of the importance of agricultural land use issues. As in Section 2, available data was not digital and could not be broken down by watershed sub-unit. The data presented is for Tehama County as a whole.

Farm Numbers

The number of farms in Tehama West Watershed has fluctuated dramatically over the years. In the late 1800s, the number of farms reported in Tehama County ranged between 600 and 800. By 1910, over 1,000 farms were in existence, and by 1945 there were 1,890 farms reported, the largest number in county history. The number of farms steadily decreased until the early 1970s, where in 1974, 1,160 farms existed. In 2002, Tehama County reported a total of 1,573 farms, down 6 percent from 1,679 farms reported in 1997.

Farm Size

In 1880, the average farm size was 820 acres. Since that time, average farm sizes have fluctuated between 600 and 1,000 acres. More recently, average farm sizes in the county have decreased substantially. In 1974, the average farm size was reported at 1,083 acres. In 2002, the average farm size was reported at 548 acres, the lowest ever recorded for Tehama County. The continued decrease in farm size is reflected across California and is documented as a potential statewide problem (DCD 2004). The average farm size in California is now 346 acres. The reduction in farm size is due to increases in "hobby" farm properties. Although some "hobby" farms produce farm income, most do not. The expansion of "hobby" farm properties and ensuing loss of agricultural income has prompted additional legislation to protect farm land uses. Table 3-8 shows size data for farms between the years 1987 and 2002.

Commodity Changes

Commodity types have changed much since 1950. While orchard and other specialty crops have increased, dryland grain crops have decreased significantly. Crop type acreages are included on Table 3-8 and specific commodity production is shown on Figure 3-11.

Table 3-8 CROP TYPE ACREAGES	
Crop Type	**Acres**
Field Crops	10,569
Field Crops (Irrigated)	10,513
Irrigated Almond Orchard	7,053
Irrigated Misc. Orchard	1,346
Irrigated Olive Orchard	7,686
Irrigated Prune Orchard	9,140
Irrigated Walnut Orchard	7,265
Misc. Orchard	20
Pasture	2,128
Pasture (Irrigated)	23,980
Pasture (Dry Grazing)	320,040
Row Crops (Irrigated)	3,301
Vine and Bush Fruits (Irrigated)	53

Farm Acreage

Total farm acreage peaked at nearly 1.3 million acres in 1974. Between 1987 and 1997, it was reported that total farm acreage dropped from 1,104,584 acres to 885,426 acres (NASS, 2004). Table 3-9 shows the agricultural acreage comparison from 1950 to 2000.

Table 3-9 FARMS BY SIZE, 1987-2002				
Farm Size	**1987**	**1992**	**1997**	**2002**
1 to 9 acres	237	240	251	212
10 to 49 acres	574	556	529	413
50 to 179 acres	274	249	259	323
180 to 499 acres	146	142	144	271
500 to 999 acres	59	70	67	91
1,000 acres or more	130	124	112	81
Source: National Agricultural Statistics Service, 1987, 1992, 1997, 2002				

Crops

Land that has been used for producing crops has fluctuated much over the years. Data indicates that at its peak in 1950, over 280,000 acres in Tehama County was designated as cropland (NASS, 2004). Many lands were farmed without irrigation, producing dryland grain hay and other crops. This trend has slowly decreased over the years, with a low in the 1990s around 120,000 acres. In 2002, total cropland was estimated at 140,000 acres. Agricultural acreage comparisons from 1950 to 2000 are included in Table 3-10.

Table 3-10 AGRICULTURAL ACREAGE COMPARISON, 1950-2000			
Year	**Orchard**	**Cropland**	**Total Farm Acres**
1950	10,673	281,710	1,131,660
1954	11,338	186,859	1,161,699
1959	15,203	N/A	1,254,707
1964	14,620	N/A	1,168,133
1969	21,948	147,752	1,101,562
1974	20,093	138,669	1,256,010
1978	26,985	156,827	1,165,043
1982	32,497	160,359	1,168,247
1987	32,908	131,869	1,104,584
1992	35,422	120,902	1,016,851
1997	36,956	127,019	885,426
2002	45,236	140,987	862,440
Source: National Agricultural Statistics Service			

Grain production in Tehama County has decreased significantly in recent years. Historical grain production by type is included on Figure 3-12. Barley, oat, and wheat were widely produced historically and were very important economic crops. Many areas in the lower rolling foothills on the west side of the county were used historically for dryland grain farming (Smith, 1997). Other than a few remnant producers, dryland grain crops have been nearly eliminated from production in Tehama County. The low prices for grain and the increased costs of production are largely responsible for the decline in grain production. There are 10,475 acres of grain crops in the watershed.

Rice production has also seen a major decline in the past 2 decades. Plantings of rice date back to the early 1980s, when nearly 3,000 acres were produced (NASS 2004). In 2003, only 600 acres were reported (Tehama County 2003). Increases in the cost of water have nearly eliminated water-intensive crops such as rice from agricultural production in Tehama County. Historical rice production is included on Figure 3-13.

Orchard Production

Orchard production in Tehama County was initially reported by the National Agricultural Statistics Service (NASS) in 1930. During the 1930s to the mid 1960s, orchard production remained stagnant with an approximate 10,000 to 15,000 acres in production. By the late 1960s, total orchard production jumped to over 20,000 acres. Since this time, total orchard production has experienced a steady increase to 45,236 acres reportedly in orchards in 2002 (NASS, 2004). Tehama County orchards are predominantly walnuts, prunes, almonds, or olives. This is due in great part to availability of irrigation water and higher dollar value for orchard commodities. Acres in orchard production for 1965 to 2003 are shown on Figure 3-14.

The combination of the availability of irrigation water, advances in irrigation technologies, relatively good commodity prices for orchard crops, and the availability of processing facilities are responsible for the drastic increase in orchard acreage. Many orchards have been established in western Tehama County on clay soils with drip irrigation. Earlier in Tehama County history, other factors that have led to the increase of orchard plantings were the construction of Shasta Dam in 1945, which drastically minimized the flood risk of prime agricultural lands adjacent to

the Sacramento River; the development of the Red Bluff Diversion Dam combined with the Tehama/Colusa Canal and the Corning Canal; and the reduction in copper mine pollution from lower Shasta County in the early 1900s (Kristofors, 1973).

Walnuts are the most widely planted crop in the county, with a steep increase in plantings occurring in the 1990s. Walnut acreage is currently estimated at 7,160 acres in the watershed.

Almonds have seen a tremendous increase in plantings in the early 1980s and somewhat stagnant growth in the early 1990s. Since the early 1990s, almond acreage has increased gradually, with a reported 7,268 acres in production in 2003 (Tehama County, 2003). There are 7,053 acres of almond orchards in the watershed.

Dried plums have been a high-valued crop in the county for decades and are presently produced on 8,848 acres (Tehama County, 2003). More recently, overproduction has led to the U.S. Department of Agriculture's (USDA) voluntary tree removal program in Tehama County. There are 9,140 acres of dried plum orchards in the watershed.

Olives have remained the most stable orchard crop in Tehama County. A large processing facility is located in Corning at the Bell Carter processing facility. The Maywood Cannery in Corning was the only major olive processing facility in the county. In 1978, Bell-Carter Foods Inc. purchased the Maywood Olive Company and the facility was renovated and opened in 1980. Since that time, Bell-Carter Foods has been the primary olive processing facility in the county, selling olives under the Lindsay Olives brand name (Bell-Carter, 2004). Olives are currently produced on 5,560 acres in Tehama County (Tehama County, 2003). Olives are planted primarily around the Corning area. There are 7,665 acres of olive orchards in the watershed.

Peaches have historically been large orchard crops in Tehama County. In 1909, it was reported that 2,891 acres were planted for peach production (Grimes, 1983). In 1975, peaches were reportedly produced on 884 acres, and by 1985, the acreage dramatically dropped to 83 acres. The reduction in prices and marketing outlets is one of the many reasons for the decline of the production of this crop. There are 36 acres of peach orchards in the watershed.

Crop types in the watershed are included on Figure 3-15 (Tehama County 2005).

Grazing and Livestock

Livestock has been a valuable commodity since the turn of the century. Both historically and today, cattle are wintered in the lower foothills of Tehama County and summered in the mountain meadows of Tehama County and other surrounding counties (Briggs, 1956). Some livestock producers keep cattle on irrigated pasture on the valley floor during the summer months. Historical irrigation acreages for Tehama County are shown on Figure 3-16.

Most of the early settlers in Tehama County depended primarily on livestock for their livelihood. In the late 1800s, of the farms reporting inventories, sheep production was much more prolific than cattle or hog production. The large sheep herds of the past are now gone, passing beef production the title of the largest livestock industry in the county. Livestock population trends are included on Figure 3-17.

Cattle inventories in Tehama County have drastically increased over the years. In the late 1800s, cattle numbers ranged near 10,000 head (NASS, 2004). Over the next century, cattle numbers steadily increased to a peak of approximately 100,000 head in the 1970s. In 2002, total cattle inventories for Tehama County indicate approximately 68,000 cattle in the county. Two of the reasons for the drastic increase in cattle numbers were an increase in cattle commodity prices and the reduction of sheep populations in the county (Briggs, 1956).

Urban developments threaten the winter ranges in the foothills. Irrigated pastures serve as a location for cattle in the summer months, and have been slowly reduced over the years. The increasing cost of water and the high land values are challenges to a low-value crop such as irrigated pasture.

Hog production was widespread in the late 1800s and the early 1900s, with the average hog population around 20,000 head residing in the county in any given year. Over the years, this number has experienced a steady decline. In 2003, only 1,000 domestic hogs were reported in the county (Tehama County, 2003). It should be noted that wild pigs have been introduced into certain portions of the county over the years. The lower foothills on both the west and east side of the county contain wild pig populations.

Sheep were historically the largest livestock commodity in Tehama County. The first reported estimate of sheep populations occurred in 1880, when 121,963 sheep were reported. Sheep production was much more common than cattle production during the early settlement of the county because they were primarily nomadic (Wentworth, 1948). Sheep production in Tehama County peaked in 1930, with nearly 350,000 head. This number has steadily declined since this time, and in 2003, only 5,800 head reportedly resided in the county (Tehama County, 2003). Reasons for sheep numbers declining include the dramatic increase of predators, reduction in mountain summer ranges available to grazing, low commodity prices, and the unavailability of labor for sheep-herders (Briggs, 1996).

Timber

Timber has always played a large role in the economy of Tehama County. Timber harvesting zones in the county are located on the eastern and western mountain slopes. Timber harvesting over the years has faced an overall decline. Throughout the 1980s, timber harvesting in Tehama County extracted an average of 140 million harvested board feet annually. In the 1990s, the average timber harvested dropped to below 100 million harvested board feet annually. In the 2000s, timber harvesting continues to drop below historical numbers. In 2003, approximately 74 million board feet of timber were harvested. This indicates nearly a 50 percent decrease in production compared to timber harvesting levels from the 1980s. In 2003, the gross value for timber production in the county was estimated at $17 million. Timber production from 1980 to 2003 is included on Figure 3-18.

Economic Agricultural Conditions

Gross Sales of Farms

Farms in Tehama County range from small “hobby farms” to large-scale agribusiness operations. Hobby farms are generally defined as a farm with under $10,000 in sales annually and are typically subsidized by the owner’s income from other sources. The majority of farms,

though not the majority of acreage, are designated hobby farms. Eight hundred seventy-one farms reported gross sales below $10,000 and 324 farms reported gross sales of over $50,000 in 2002. Farms by value of sales are summarized in Table 3-11.

Table 3-11
ECONOMIC CHARACTERISTICS OF FARMS, 1987-2002

Farms by Value of Sales	Number of Farms			
	1987	1992	1997	2002
$0-$9,999	809	746	693	871
$10,000 to $49,999	346	349	366	378
$50,000 or more	265	286	303	324
Total	1420	1381	1362	1573

Source: National Agricultural Statistics Service, 2002

Agricultural Contribution to Economy

The total value for Tehama County agricultural commodities in 2003 was an estimated $125 million (Tehama County, 2003). Orchard crops are the highest value crops in the county, with an estimated $68 million in gross revenue in 2003. Livestock and poultry were the next highest valued commodity with a total value of approximately $22 million. Commodity value trends from 1999 to 2003 are included on Table 3-12. Commodity trends from 1994 to 2003 are included on Figure 3-19.

Table 3-12
AGRICULTURAL COMMODITY VALUE COMPARISON SUMMARY ($), 1999-2003

Commodity	1999	2000	2001	2002	2003
Fruit and Nut Crops	47,655,250	58,914,500	58,525,470	71,377,000	68,112,790
Livestock & Poultry	19,195,500	21,170,250	24,205,560	21,500,000	21,808,520
Field Crops	6,356,750	5,867,250	6,813,050	6,187,770	5,970,320
Pasture & Range	9,020,000	9,020,000	8,965,000	9,295,000	10,225,000
Livestock & Poultry Prod.	11,491,000	12,079,500	15,475,120	12,147,300	13,797,500
Seed Crops	774,250	730,000	640,630	593,360	542,770
Nursery Crops	1,367,000	1,308,500	1,991,000	2,102,000	1,600,000
Apiary Products	941,500	1,453,000	1,173,000	3,009,630	2,921,800
Vegetable Crops	156,000	160,250	162,240	160,000	160,000
TOTAL	**96,957,250**	**110,703,250**	**117,951,070**	**126,372,130**	**125,138,700**

Source: Tehama County Agricultural Crop Reports

Of the orchard crops, walnuts created the highest revenue of any commodity, nearly $28 million in 2003. Walnuts accounted for roughly 41 percent of the total values of orchard crop production. Almonds were the next highest value, with just over $16 million in value, accounting for approximately 24 percent of the total value of orchard crops in 2003. Dried plums accounted for roughly $13 million and olives accounted for just over $7 million.

Field crops play a relatively minor role in Tehama County agriculture. Alfalfa hay was valued at approximately $2 million in 2003. Nursery crops, such as strawberry plants, had a value of $1.6

million. Other crops, such as grain hay, silage, corn, and rice are also important field crops for the county. Cultivated agricultural commodities are summarized in Table 3-13.

Table 3-13
TOP TEN CULTIVATED AGRICULTURAL COMMODITIES, 2003

Rank	Crop	Value in $
1	Walnuts	27,987,490
2	Almonds	16,280,230
3	Dried plums	13,130,430
4	Olives	7,005,600
5	Alfalfa hay	2,090,000
6	Nursery crops*	1,600,000
7	Grain hay	736,000
8	Silage	660,000
9	Corn	630,000
10	Rice	540,000
Total		**70,659,750**

Source: 2003 Tehama County Agricultural Crop Report
* Orchard trees, Christmas trees, strawberry plants

Agricultural commodities were grouped to estimate the value of each industry and/or specific crops to the economy. Walnut production remains the highest value crop or industry in Tehama County in 2003. The beef industry, with a total of approximately $26 million was the second highest-ranking industry behind walnuts. Timber production was the third highest grossing industry in Tehama County for 2003. The top 10 agricultural commodities are summarized on Table 3-14.

Table 3-14
TOP TEN AGRICULTURAL COMMODITIES, 2003

Rank	Crop	Value in $
1	Walnuts	27,987,490
2	Beef industry[1]	26,694,265
3	Timber	17,137,043
4	Dairy industry[2]	16,496,000
5	Almonds	16,280,230
6	Dried plums	13,130,430
7	Olives	7,005,600
8	Apiary products[3]	2,921,800
9	Alfalfa hay	2,090,000
10	Fish[4]	2,000,000

Source: 2003 Tehama County Agricultural Crop Report
Note: (1) Feeders, bulls, calves, range, rental, etc. (2) Milk and cattle (3) Honey, queens, packaged bees, etc. (4) Sturgeons, trout, catfish, fishing, etc.

Market Value of Production

In 2002, total agricultural production was valued at $126,372,130. Assuming there were 1,573 farms in existence in 2002, each farm received estimated gross revenue of $80,338. Also assuming the average farm size is 548 acres, the estimated gross revenue per farm acre in Tehama County is roughly $146 per acre.

Conservation Easements and Programs

Over the past few years, a significant amount of farmland has been protected under permanent conservation easements. A conservation easement compensates the landowner for the fair market value of their property less than the restricted value, determined by an accredited appraiser. The Sacramento River Corridor is an area where permanent agricultural conservation easements are occurring. The Natural Resources Conservation Service (NRCS) has five easements in the watershed totaling approximately 85 acres. The City of Red Bluff also has a 1-acre easement in the watershed for the Red Bluff River Park. Figure 3-20 shows the conservation easements in the watershed area.

Farmland Mapping Program

In 1980, the California Department of Conservation, Division of Land Resource Protection, began work to supplement the Soil Conservation Service (SCS) conservation programs through a Farmland Mapping and Monitoring Program (CDC, 2001). This program, designed to inventory important farm and grazing lands in the form of important Farmland Series maps, became California Law in 1982. Its purpose is to monitor conversion of the state's agricultural land to and from agricultural use, and report concerns to the Legislature, local government, and the public. A map of the types of farmland within the watershed is shown on Figure 3-21.

The guidelines identified five categories of farmlands: prime farmland, farmland of statewide importance, unique farmland, farmland of local importance, and grazing land. All five designations of land use are found throughout the Tehama West Watershed. According to the California Department of Conservation, the state's total agricultural land use acreage has grown by approximately 9 percent. Change by area of land use is shown in Table 3-15 and Figure 3-22. The Department of Conservation defines these five categories as described in the sections below.

Prime Farmland

Prime Farmland is 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 three years. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

Table 3-15 CHANGE BY LAND USE COUNTY ONLY						
Land Use Category	**Total Acreage Inventoried**					
	1992	**1994**	**1996**	**1998**	**2000**	**2002**
Prime Farmland	83,716	79,698	77,153	77,463	73,770	74,126
Farmland of Statewide Importance	21,560	20,004	18,651	19,431	19,762	19,871
Unique Farmland	11,117	12,787	19,088	19,447	18,487	18,468
Farmland of Local Importance	122,705	127,719	131,226	129,633	132,763	132,980
Important Farmland Subtotal	**239,098**	**240,208**	**246,118**	**245,974**	**244,782**	**245,445**
Grazing Land	714,049	712,634	706,585	706,309	706,027	705,674
Agricultural Land Subtotal	**953,147**	**952,842**	**952,703**	**952,283**	**950,809**	**951,119**
Urban and Built-Up Land	10,165	10,696	10,758	10,784	11,458	11,544
Other Land	871,910	869,802	869,907	870,206	871,006	870,610
Water Area	6,214	6,155	6,133	6,221	6,221	6,221
Total Area Inventoried	**1,841,436**	**1,839,495**	**1,839,495**	**1,839,494**	**1,839,494**	**1,839,494**

Farmland of Statewide Importance

Farmland of Statewide Importance is land other than "Prime Farmland" that has a good combination of physical and chemical characteristics for the production of crops. It must have been used for the production of irrigated crops within the last three years. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

Unique Farmland

Unique Farmland is land that does not meet the criteria for "Prime Farmland" or "Farmland of Statewide Importance" and that 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 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. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

Farmland of Local Importance

Farmland of Local Importance is land currently producing crops, or having the capability of production. "Farmland of Local Importance" is land other than "Prime Farmland," "Farmland of Statewide Importance," and "Unique Farmland." This land may be important to the local economy due to its productivity. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

Grazing Land

Land defined in Section 65570(b)(2) of the Government Code as "land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock." The minimum mapping unit for "Grazing Land" is 40 acres.

Mineral and Aggregate Resources

In 1975, the California Legislature enacted the Surface Mining and Reclamation Act to prevent adverse environmental impacts of mining operations, reclaim mined lands, encourage production and conservation of minerals, consider the value and potential uses of mineral areas for recreation, watershed, wildlife habitat and scenic enjoyment and eliminate public health and safety hazards associated with mining activities (Public Resources Code 2712).

The majority of Tehama County's mineral wealth is derived from the extraction of non-metallic sand, gravel, and limited volcanic cinder, which are used primarily by local paving and construction industries. Because of their bulky, heavy character, aggregate resources are expensive to transport, and given increasing transportation costs, the sand and gravel deposits located close to the developing areas of Tehama County are valuable assets. As of September 2005, there are 32 mineral extraction operation permits granted in Tehama County and 15 in the Tehama West Watershed. The locations of these operations are shown on Figure 3-23.

Aggregate mining is necessary to supply base materials needed to construct roads and projects within the county. As development increases, the demand for materials will also increase. Aggregate mining is targeted for many negative impacts to stream and aquatic and riparian habitats. If conducted using best management practices, impacts can be greatly lessened. Numerous sources address the impacts of gravel extraction on the ecological systems. Significant work has been compiled to address gravel extraction, sediment loading, and gravel impacts (USFS 1997) to Thomes Creek. The following general discussion of impacts was summarized from the National Marine Fisheries Service National Gravel Extraction Policy (1996).

Channel hydraulics, sediment transport, and morphology are directly affected by human activities such as gravel mining and bank erosion control. Direct effects reshape the boundary, either by removing or adding materials. Subsequently, flow hydraulics are altered when water levels rise and inundate the altered features. This can lead to shifts in flow patterns and patterns of sediment transport. Local effects also lead to upstream and downstream effects.

Altering any habitat parameters can lead to deleterious impacts on instream biota and the associated riparian habitat (NMFS 1996). This can include shifts in species, invasion, and colonization by non-native plants from an alteration of the flow patterns resulting from modification of the river bed or an excess of suspended sediment

The potential effects of gravel extraction activities on stream morphology, riparian habitat, and anadromous fishes and their habitats may include:

1. Extraction of bed material in excess of natural replenishment by upstream transport may cause bed degradation. This is partly because gravel "armors" the bed, stabilizing banks and bars, whereas removing this gravel causes excessive scour and sediment movement. Degradation can extend upstream and downstream of an individual extraction operation, often at great distances, and can result from bed mining either in or above the low-water channel (NMFS 1996).

2. Gravel extraction may increase suspended sediment, sediment transport, water turbidity and gravel siltation. The most significant change in the sediment size distribution resulting from gravel removal is a decrease in sediment size caused by fine material deposition into the site. Siltation, substrate disturbances and increased turbidity also affect the invertebrate food sources of anadromous fishes (NMFS 1996).

3. Bed degradation can change the morphology and dynamics of flow within the channel (NMFS 1996).

4. Gravel bar "skimming" significantly impacts aquatic habitat. Bar skimming creates a wide flat cross section, then eliminates confinement of the low flow channel, and results in a thin sheet of water at baseflow. Bar skimming can also remove the gravel "pavement," leaving the finer subsurface particles vulnerable to entrainment (erosion) at lower flows (NMFS 1996).

5. Operation of heavy equipment in the channel bed can directly destroy spawning habitat, and produce increased turbidity and suspended sediment downstream (NMFS 1996).

6. Stockpiles and overburden left in the floodplain can alter channel hydraulics during high flows. During high water, the presence of stock piles and overburden can cause fish blockage or entrapment, and fine material and organic debris may be introduced into the water, resulting in downstream sedimentation (NMFS 1996).

7. Removal or disturbance of instream roughness elements (down debris) during gravel extraction activities negatively affects both quality and quantity of anadromous fish habitat. Instream roughness elements, particularly large woody debris, play a major role in providing structural integrity to the stream ecosystem and providing critical habitat for salmonids. These elements are important in controlling channel morphology and stream hydraulics, in regulating the storage of sediments, gravel and particulate organic matter, and in creating and maintaining habitat diversity and complexity (NMFS 1996).

8. Destruction of the riparian zone during gravel extraction operations can have multiple deleterious effects on anadromous fish habitat. The importance of riparian habitat to anadromous fishes should not be underestimated. The riparian zone includes stream banks, riparian vegetation and vegetative cover. Damaging any one of these elements can cause stream bank destabilization, resulting in increased erosion, sediment and nutrient inputs, and reduced shading and bank cover leading to increased stream temperatures. Destruction of riparian trees also means a decrease in the supply of large woody debris (NMFS 1996).

In addition, disturbances caused by mining activities have been accused of increasing the likelihood of colonization of non-native invaders such as tamarisk and arundo. Mining is also blamed for increased braiding of both Thomes and Elder Creeks.

Other mineral resources found in the county include aragonite, borax, chalcopyrite, chromite, copper, cristobalite, galena, garnet, opal, pectolite, penninite, sassolite, and Wallstonite. Of these, chromite offers the best possibilities for development. Chromite is an important metal used in steel production, yet almost all of the nation's demand for this metal is currently met by import rather than domestic production. In future years, domestic production of chromite may become a necessity due to rising importation costs and/or decreasing foreign supplies. At such a time, the demand for chromite deposits in Tehama County may increase, resulting in future development of chromite mining operations. The Raglin Ridge area along the North Fork of Elder Creek in the Western Planning Area contains the most significant deposits of this metal.

The earliest record of production of chromite was in 1886 when the Tehama Consolidated Chrome Company located deposits and mined lenses of high-grade ore from open cuts. Shipments were made by rail to San Francisco and then by boat to Philadelphia. The properties were then closed and remained idle until World War I in 1915. From 1915 until the collapse of the market in 1918, the Noble Electric Steel Co., the American Refractories, and several other operators produced 3,800 long tons of chromite ore. Significant production was resumed in 1942 (CDMG 1996).

Tertiary continental deposits cover a majority of the older rocks in which chromite occurs in the Sacramento Valley. Eastward-dipping sedimentary rocks of late Jurassic to Cretaceous age border the Klamath Mountains. Separated from the southern Klamath Mountains by a long, tabular, north-trending body of peridotite is the Elder Creek mass, which in some places attains a thickness of more than 2 miles. The Elder Creek mass terminates to the north at the South Fork of Cottonwood Creek.

Another large body of peridotite, the Beegum Creek body, crops out in the northwest corner of the county and extends more than 6 miles in a northwesterly direction into Trinity County. It lies within Paleozoic and Triassic metasedimentary and metavolcanic rocks. It is irregular in shape, and much of it has been sheared to slickentite. Many thousands of long tons of lump ore and concentrates have been mined from the Elder Creek and Beegum Creek peridotite masses over the last 125 years.

Natural gas and geothermal resources are also located in Tehama County. Natural gas fields are found in the South Interstate 5 Planning Area to the northeast and to the south of the City of Corning.

Construction and mining constitute only four percent of Tehama County employment, reflecting the relatively low intensity of mineral development in the county today. Though this figure is small, mining should not be considered an insignificant contribution to the County's economy and is worthy of protection under General Plan policies and programs.

RECREATION

The Tehama West Watershed is rich in recreational resources and lands. Hiking, fishing, and boating opportunities abound, as well as the opportunity for more passive recreation. The valleys and mountains have diverse and unique scenic resources including rivers, lakes, wetlands, large expanses of grassland, spectacular forests and high mountains. The Sacramento River

provides numerous recreational opportunities to residents and visitors. California State University, in association with other agencies, has created The Sacramento River Recreational and Public Access Guide.

Included in this inventory are USDA Forest Service (USDAFS) lands, National Park Service lands (under the US Department of the Interior), Bureau of Land Management (BLM) properties, California State Parks facilities and areas, US Army Corps of Engineers lakes and parks, and County regional parks – each of which are described in more detail below.

The Mendocino National Forest straddles the eastern spur of the Coastal Mountain Range in northwestern California, covering 894,399 acres that span portions of seven counties: Butte, Colusa, Glenn, Lake, Mendocino, Tehama, and Trinity. The Mendocino National Forest extends from the Yolla Bolly Mountains in the north (just west of Red Bluff), to Clear Lake in the south. This includes 137,787 acres of designated wilderness and over 40 campgrounds, with a total of 514 recreation sites. Elevations range from about 1,000 feet to over 8,000 feet, providing a variety of vegetation and wildlife.

The Mendocino National Forest offers an array of recreation opportunities to the visitor, including fishing in lakes and streams, camping, picnicking, boating, hiking, horseback riding, wildlife viewing, hang-gliding, a large off-road vehicle trail system, winter snow play, hunting, wilderness experiences and mountain biking. The Mendocino National Forest is divided into three ranger districts: Grindstone (formerly Corning and Stonyford), Covelo, and Upper Lake.

The Mendocino National Forest Red Bluff Recreation Area encompasses 488 acres of diversified habitat adjacent to the Sacramento River, 2 miles south of Red Bluff. The Recreation Area includes the Sacramento River Discovery Center, Lake Red Bluff, two campgrounds, boat launches, a salmon viewing area, interpretive opportunities and a unique birding experience.

LAND USE REGULATIONS

Many laws and regulations govern the manner in which both public and private lands are managed on the federal, state and county level. This section will discuss some of the laws most relevant to the watershed and its citizens. This is not an all-inclusive list and the reader is cautioned to not use the following as legal or regulatory advice.

Federal

National Environmental Policy Act (NEPA) of 1969

The purposes of this Act are to declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere; and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

Clean Water Act (Federal Water Pollution Control Act Amendment) of 1972

The primary purpose of the 1972 Clean Water Act was to "restore and maintain the chemical, physical and biological integrity of the nation's waters." To achieve that goal, the law prohibits

the discharge of pollutants into "navigable waters," defined in the act as "waters of the United States," without a permit. The law has historically been understood to protect traditionally navigable waters, tributaries of navigable waters, wetlands adjacent to these waters, and other wetlands, streams, and ponds that, if destroyed or degraded, could affect interstate commerce.

Endangered Species Act of 1973

The Endangered Species Act recognizes that various species of fish, wildlife, and plants in the United States have been rendered extinct because of economic growth and development, and that other species of fish, wildlife and plants have been so depleted in numbers that they are in danger of, or threatened with, extinction. The Unites States has pledged to conserve to the extent practicable the various species of fish or wildlife and plants facing extinction.

Forest and Rangeland Renewable Resources Planning Act (1974)

The Forest and Rangeland Renewable Resources Planning Act of 1974 provided authority to the United States Forest Service (USFS) to prepare and update an assessment every 10 years to inventory and monitor the status and trends of the forest lands and range lands in the National Forest System, and to prepare a long-range plan every 5 years to guide USFS policies. The act authorizes the Secretary of Agriculture to conduct, support, and cooperate in investigations, experiments, tests, and other activities deemed necessary to obtain, analyze, develop, demonstrate, and disseminate scientific information about protecting, managing, and utilizing forest and rangeland renewable resources in rural, suburban, and urban areas. It also requires a comprehensive assessment of present and anticipated uses, demand for, and supply of renewable resources from the nation's public and private forests and rangelands, as well as coordinated public and private research programs.

National Forest Management Act (1976)

The National Forest Management Act of 1976 established standards and guidelines for managing the national forests, including directives for national forest land management planning, and public participation. The act requires the Secretary of Agriculture to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the national forest system. It is the primary statute governing the administration of national forests.

State

California Environmental Quality Act (CEQA) of 1970

CEQA is closely modeled on the National Environmental Policy Act (NEPA). Unlike NEPA, CEQA imposes an obligation to implement mitigation measures, or project alternatives to mitigate significant adverse environmental effects, if these measures or alternatives are feasible. Thus, CEQA establishes both a procedural obligation to analyze and make public adverse physical environmental effects, and a substantive obligation to mitigate significant impacts.

California Endangered Species Act (CESA) of 1984

CESA generally parallels the main provisions of the federal Endangered Species Act, which is administered by the California Department of Fish and Game (CDFG). Under CESA, the term "endangered species" is defined as a species of plant, fish or wildlife which is "in serious danger

of becoming extinct throughout all, or a significant portion of its range," and is limited to species or subspecies native to California.

California Forest Practices Act (1973)
The California Forest Practices Act was enacted in 1973 to regulate all timber harvesting in California on all non-federal land, including private land, with the intent to restore, enhance, and maintain forest productivity and to sustain high-quality timber products while taking into account recreation, watershed, wildlife, range and forage, fisheries, regional economic vitality, employment, and aesthetic enjoyment. This is an all-encompassing law enacted to involve timber owners, loggers, and environmentalists alike in forest management decisions.

Farmland Protection
Farmland and rangeland are precious commodities in Tehama County. Temporary and permanent programs help provide landowners with incentives to keep their agricultural lands in production and prevent conversion to urban uses. Temporary programs, such as the Williamson Act, help provide property tax reductions to landowners for enrolled properties. Permanent protection can be found through conservation easements. An agricultural conservation easement maintains a property's agricultural focus by restricting residential or commercial development.

California Land Conservation Act of 1965 (Williamson Act)
The California Land Conservation Act of 1965, also known as the Williamson Act, is the primary program for the conservation of agricultural lands in California. The Williamson Act creates an arrangement between the private landowner and the county to preserve agricultural lands. Terms are established under 10 year contracts. The Williamson Act is a voluntary program that helps reduce property tax rates for private lands enrolled in the program. The benefits of the Williamson Act provide an estimated 20 to 75 percent savings in property taxes annually (Department of Conservation, 2004).

The Williamson Act is only eligible to landowners within a designated agricultural preserve. A local government, such as a city or a county, establishes an agricultural preserve. In Tehama County, the Board of Supervisors establishes agricultural preserves. Agricultural preserves are regulated by strict rules to provide guidelines that ensure the land within the preserve is maintained for agricultural or open space use. Agricultural preserves have a minimum of 100 acres. Smaller agricultural preserves may be established. Contiguous neighbors may team up to combine their properties to enter them into the Williamson Act. A minimum term for a Williamson Act contract is 10 years. A contract is renewed automatically each year. The Williamson Act contract is tied to the land and is transferred upon sale of the property. The Williamson Act is enforced by the California Department of Conservation.

To remove land from the Williamson Act, a notice of non-renewal must be established. During the non-renewal process, the annual tax assessments increase. Once the 9-year non-renewal period is complete, the Williamson Act contract is terminated. Another removal process is to cancel the contract. Only the private landowner can petition to cancel a contract. The city or county must approve the contract cancellation.

Farmland Security Zone
In 1998, another option within the Williamson Act Program was established to provide additional property tax incentives for agricultural properties. The Farmland Security Zone (FSZ)

was created to provide additional tax incentives for property owners to protect agricultural lands. Land restricted by a FSZ contract is valued for property assessment purposes at 65 percent of its Williamson Act valuation or 65 percent of its Proposition 13 valuation, whichever one is lower (Department of Conservation, 2004).

A FSZ contract is nearly identical to a Williamson Act contract. Farmland Security Zone contracts are established for a 20-year minimum term. Similar to a Williamson Act contract, these contracts renew annually unless a "notice of non-renewal" is filed. Lands within a FSZ are prohibited from being annexed from cities and special districts that provide non-agricultural services. School districts are also prohibited from acquiring FSZ lands for school facilities. For land to be eligible for the FSZ, the land must be designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance.

Williamson Act and FSZ contracts are not intended to be cancelled. Cancellation is typically reserved for unusual, "emergency" situations. Therefore, the 9-year non-renewal process has been identified as the legally preferred method for terminating a Williamson Act contract.

Criteria for Williamson Act Land Classification

The Williamson Act classifies land under different categories, Prime Agricultural Land, Non-Prime Agricultural Land, Land in Non-Renewal, Farmland Security Zone Land, Urban and Built-Up Land, and Non-Enrolled Land.

Prime Agricultural Land

- Land which is Class I or Class II in the NRCS Land Use Capability Classification System
- Land which rates 80 to 100 in the Storie Index Rating System
- Grazing lands with an annual carrying capacity equivalent to at least one Animal Unit per Acre (AUM) as defined by USDA
- Land planted to orchards or vineyards which have a nonbearing period of less than 5 years and will bring a normal return not less than two hundred dollars per acre
- Land which has agricultural returns producing an annual gross value of not less than two hundred dollars per acre for 3 of the previous 5 years

Non-Prime Agricultural Land

- Land which does not meet any of the criteria for classification as Prime Agricultural Land
- Land is defined as Open Space Land of Statewide Significance
- Typically this type of land is used agriculturally for grazing or non-irrigated crops

Land in Non-Renewal

- Land which is in the process of non-renewal

- Annual tax assessment gradually increases

Farmland Security Zone Land

- Land created within an agricultural preserve identified by the County Board of Supervisors upon request of landowner(s)

Urban and Built-Up Land

- Land occupied by structures with a density of at least 1 unit to 1.5 acres
- Data is provided by the California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP)

Non-Enrolled Land

- Land not enrolled in the Williamson Act Program

Lands in Tehama County protected under the Williamson Act total 747,396 acres (Department of Conservation, 2004). Farm Security Zones are established on 11,364 acres. Currently, there are 8,763 acres that are placed into the Notice of Non-Renewal for Williamson Act contacts.

Conservation Easements

Over the past few years, a significant amount of farmland and other habitats, such as riparian, have been protected under permanent conservation easements. A conservation easement compensates the landowner for the fair market value of their property less than the restricted value, determined by an accredited appraiser.

California Department of Conservation's Farmland Mapping and Monitoring

The California Department of Conservation has established a FMMP in 1982. The primary goal of this program was to assess the location, quality, and quantity of agricultural lands and their conversion to other uses over time. Currently, the FMMP maps both agricultural and urban land use on over 90 percent of the state's private lands. Reports are compiled every 2 years. For a listing of categories, see page 19.

The Surface Mining and Reclamation Act

Requirements of the Surface Mining and Reclamation Act of 1975 (hereinafter the "Act") state that cities and counties must adopt an ordinance(s) "…which establishes procedures for the review and approval of reclamation plans and the issuance of a permit to conduct surface mining operations" (Public Resources Code Section 2774). The intent of this legislation is to ensure the prevention or mitigation of the adverse environmental impacts of mining, the reclamation of mined lands, and the production and conservation of mineral resources are consistent with recreation, watershed, wildlife, and public safety objectives (Public Resources Code 2712).

The Tehama County Zoning Code complies with the requirements of the Act by permitting "the commercial excavation of natural materials…in any (zoning) district upon the securing of use

permits in each case. The excavation of natural materials shall be in conformance with all provisions of the Surface Mining and Reclamation Act of 1975 and future amendments thereto."

Also according to the Act, in association with regulations of the State Board of Mines and Geology, the State Geologist must identify mineral areas of the state, which are threatened by incompatible land uses that would preclude mining activities. These areas are to be classified as one of four Mineral Resource Zones (MRZ) or as a Scientific Zone. This classification system must be incorporated into the General Plan of cities and counties supporting mining operations, including dredging and quarrying, and is intended to ensure that mineral resources will be available when their development is necessary or economically feasible.

AGENCIES WITH PERMITTING AUTHORITY

Many agencies have permitting or review authority over projects in the Tehama West Watershed. These are summarized on Table 3-16.

DATA GAPS

No major data gaps were identified in the area of land use. However, almost all data presented was for Tehama County with no mechanism for isolation of sub-units within the watershed.

CONCLUSIONS AND RECOMMENDATIONS

- Support monitoring of watershed health that provides information regarding agricultural viability, water quality, and habitat conditions
- Assess aquatic and riparian habitat and reaches that have undergone gravel extraction. If warranted, make recommendations to mitigation impacts from gravel extraction
- Evaluate aggregate mining to ensure compliance with current policies and best management practices
- Modify extraction activities as necessary to reduce impacts on salmonid habitat and other aquatic resources
- Initiate education programs for wise grazing management and reduce year round use of foothill uplands
- Work with local land owners to limit farmland conversion where possible
- Encourage retention of large ownerships to enhance stewardship and management efficiency for agricultural resources, fuels management, and preservation of open space
- Work with Tehama County to develop erosion control guidelines to minimize sediment input associated with construction and development activities. Encourage

practical protective construction techniques that encourage enlightened self interest among road builders

- Continue to employ the most ecologically sound timber harvesting practices by following the Forest Plan (USFS) and Resource Management Plan (BLM) on federal lands and THP rules on private lands within the watershed

- Modify and employ the most ecologically sound grazing practices by following the Forest Plan and Resource Management Plan on federal lands and through partnerships on private and state-owned land within the drainage

- Encourage habitat restoration in areas associated with agricultural lands

- Encourage the concept of the working watershed aspect of land use—managing and producing natural resources as a land use goal

Table 3-16
PERMIT-ISSUING AGENCIES

Agency	Function
Agencies with Permitting Authority	
Tehama County	The County has land use jurisdiction over all lands outside of incorporated cities. Before construction can begin, the County reviews the project and grants its approval. If the County has jurisdiction, it must also serve as the "lead agency" for purposes of complying with the California Environmental Quality Act (CEQA). Encroachment and building permits, use permits and zoning administration all fall under the purview of Tehama County. In addition to the Planning Department, the Tehama County Public Works and Health Departments may also issue permits and establish conditions for construction projects.
State Lands Commission	The State Lands Commission has exclusive jurisdiction over all submerged lands owned by the State as well as the beds of navigable rivers, sloughs and lakes. The Commission has the authority to grant three kinds of permits (1) mineral extraction leases; (2) dredging permits (required for any dredging of navigable waterways for improvement of navigation, reclamation of flood control); and (3) land use leases (required for any proposal to utilize navigable waterways for any purpose other than dredging, e.g. piers, floats, docks).
California Department of Fish and Game (DFG)	The Department of Fish and Game has jurisdiction over "all water in the state," including any lakes, streams or rivers containing fish or wildlife resources. In Tehama County, such resources include the Sacramento River and all natural streams, creeks and drainage ways leading to it. The DFG has also claimed authority over all other local drainage facilities. The DFG has authority over two permitting processes: (1) streambed alteration agreements, required for any project that alters the flow of any lake, stream or river on the state; and (2) suction dredging permits, required for projects involving suction or vacuum dredging activities in state waters.
Regional Water Quality Control Board (RWQCB)	The Regional Board maintains jurisdiction over discharges into all rivers, creeks, streams and canals. Their agency also has jurisdiction over groundwater quality. Any project that will discharge wastes into any surface waters must conform to waste discharge requirements established by the RWQCB. These requirements serve as the Federal National Pollution Discharge Elimination System (NPDES) permit. The RWQCB also works to obtain coordinated action in water quality control, including prevention and abatement of water pollution and nuisances.
California Department of	CALTRANS has the authority over all state highways and freeway rights-of-way,

Table 3-16 PERMIT-ISSUING AGENCIES	
Agency	**Function**
Transportation (CALTRANS)	including easements, and undeveloped rights-of-way that have been acquired in anticipation of future construction. Any project that proposes to construct a road connection or perform earthwork adjacent to a state highway or freeway must obtain an encroachment permit from Caltrans.
United States Army Corps of Engineers	Pursuant to the Rivers and Harbors Act, the Corps maintains jurisdiction over all navigable waterways (including non-navigable streams, creeks, and marshes) and requires a permit for any work within these waterways, including dredging and filling. The U.S. Army Corps of Engineers operates the Black Butte Lake recreation area, which spans the county line of Tehama and Glenn Counties.
Tehama County Air Quality Management District	This regional agency regulates stationary sources of air pollution within the County. The District's boundaries are the same as Tehama County. The District's Board of Directors is the Board of Supervisors. The District's main purpose is to enforce local, state and federal air quality laws, rules and regulations. Sources of air pollution include industrial development and commercial businesses with air emissions such as lumber product companies and gasoline stations. The district also regulates open outdoor burning and a variety of other programs such as Air Toxic Control Measures (ATCM's) and New Source Performance Standards (NSPS). The District issues permits to ensure that all equipment and processes comply with federal and state laws and regulations, and District rules. Before any person builds, erects, alters, replaces, operates or uses anything that may cause emissions of air contaminants, a permit must be obtained from the District.
Agencies with Review Authority	
Local Agency Formation Commission (LAFCO)	LAFCO has authority over land use decisions affecting local agency boundaries, including city limits and sphere of influence boundaries for each of the three incorporated cities (Corning, Red Bluff, and Tehama) including various special and community services districts within Tehama County. Any proposed changes to city limits or sphere of influence boundaries must be reviewed and approved by the LAFCO.
California Department of Parks and Recreation	Parks and Recreation reviews development projects in relation to state recreational facilities and grants for local facilities. Within the Department of Parks and Recreation, the State Office of Historic Preservation is the designated State Historic Preservation Office (SHPO) and monitors State and Federally registered historic resources, as well as carrying out other statutory responsibilities.
California State Clearinghouse	The State Clearinghouse is the point of contact for review of environmental documents where one or more state agencies will be a responsible or trustee agency. The Clearinghouse circulates environmental documents among state agencies, coordinates review and forwards comments to the lead agency.
California Department of Forestry and Fire Protection (CDF)	The California Department of Forestry and Fire Protection is responsible for fire protection in all State Responsibility Areas (SRAs) of the County, including emergency response. The CDF is also responsible for the management and protection of natural resources, oversees the enforcement of California's Forest Practice Regulations that guide timber harvesting on private lands. Although, not a permitting agency, the CDF reviews development proposals including land divisions, new home construction and road construction for compliance with State Fire Safe Regulations adopted by the Board of Forestry in Title 14 of the California Administrative Code. These regulations govern emergency access standards, signing/addressing, emergency water supply, fuel modification and defensible space.
California Mining and Geology Board	Mines and Geology reviews petitions (by an individual or organization) to classify specific lands that contain significant mineral deposits and that are threatened by land use incompatibilities. Mineral lands classified as having regional or statewide significance, in accordance with California's Surface Mining and Reclamation Act (SMARA), ultimately must be recognized in the County General Plan through

Table 3-16 PERMIT-ISSUING AGENCIES	
Agency	**Function**
	adoption of an appropriate and compatible land use designation and through establishment of policies and implementation programs for conservation and development of these resources.
United States Environmental Protection Agency (EPA)	EPA has review authority over environmental documents that are prepared and circulated pursuant to the National Environmental Protection Act (NEPA). The EPA can comment on draft environmental impact statements (EISs). NEPA requires final EISs to be filed with the EPA. The EPA has authority over development projects pursuant to Section 404 of the Clean Water Act, an authority that overlaps with that of the Army Corps of Engineers. Generally, the EPA reviews Department of Army permits for compliance with guidelines for implementing Section 404 requirements. The EPA can, in rare cases, override an Army Corps of Engineers decision on a Department of Army permit in order to prohibit discharges into waterways.
United States Fish and Wildlife Service (USFWS)	The Fish and Wildlife Service must be consulted on all federal projects, such as Army Corps of Engineers/Department of Army permits, pursuant to the Fish and Wildlife Coordination Act. The Service comments on potential project effects on "endangered or threatened" plant and animal species under the Federal Endangered Species Act. In reviewing a project, the Fish and Wildlife Service could issue a "jeopardy" determination and would propose alternatives to the permitting agency, in a manner similar to the State Department of Fish and Game process. The Fish and Wildlife Service also comments on potential effects on fish and wildlife resources.
Bureau of Land Management (BLM)	The bureau is part of the Department of the Interior, and is a multiple-use land management agency responsible for administering 270 million acres of public land located primarily in the Western United States, including Alaska. The BLM manages many resource programs such as minerals, forestry, wilderness, recreation, fish and wildlife, wild horses and burros, archaeology and rangeland. Within Tehama County, the BLM manages approximately 120,730 acres of land.
U.S. Forest Service	The Forest Service is a division of the United States Department of Agriculture and is responsible for the management of the Tehama National Forest, which encompasses approximately 1,079,971 acres of land and lies within portions of Colusa, Lake, Glenn, Mendocino, Tehama and Trinity Counties. Within Tehama County, The National Forest includes approximately 174,000 acres of land. The Forest Service is responsible for the management of timber, mineral extraction, fire management and prevention, recreation, law enforcement, cultural, wildlife resources, fisheries, watersheds, soils, noxious weeds, ranges, etc. on government lands.
Tribal Governments	Native American tribes in Tehama County control many thousands of acres of land and manage the natural resources of those lands. Of these natural resources, the most important are forests, fish, wildlife and water quality. Government Code mandates that tribes be consulted whenever a County adopts, amends or revises a general plan.

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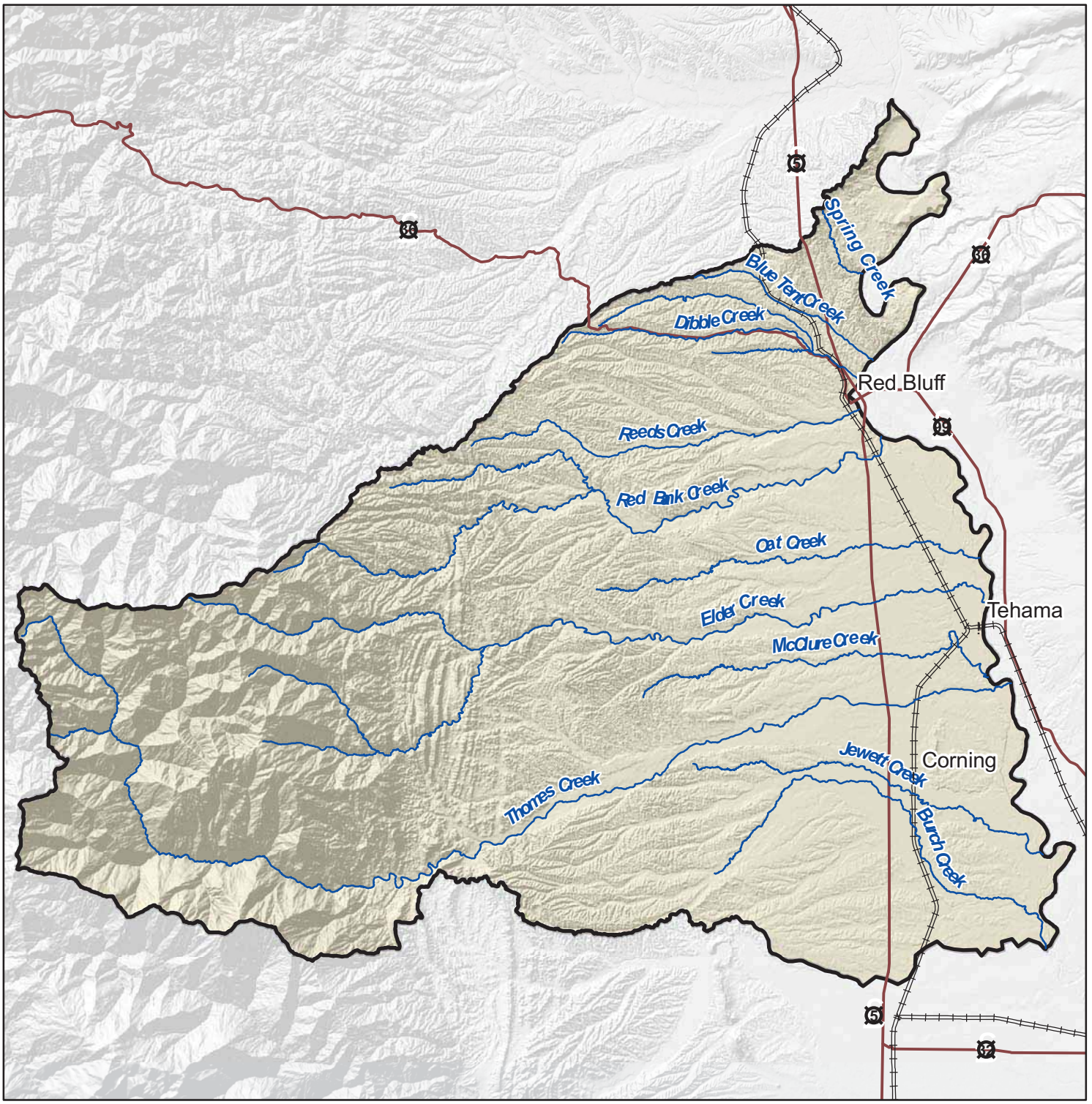


Legend

- Railroad
- Major Highway
- MajorTributary
- Tehama West Watershed
- ! Incorporated Cities

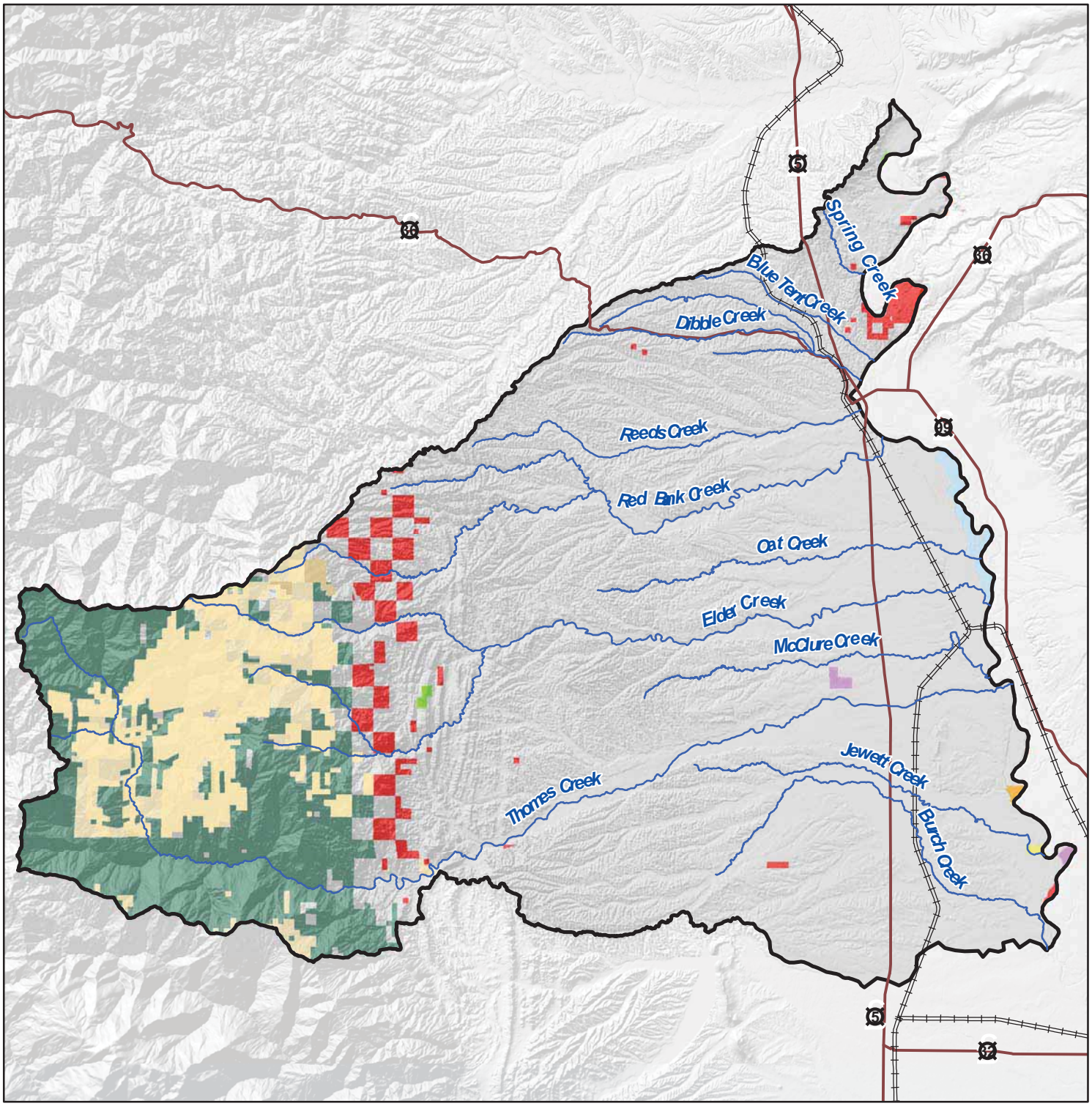
VESTRA

5

0 2.5 5 10 Miles

FIGURE 3-1
INCORPORATED CITIES
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: CALIFORNIA SPATIAL INFORMATION LIBRARY



Legend

- Railroad
- Major Highway
- Major Tributary
- Tehama West Watershed
- Bureau Of Land Management (14,745 acres)
- CA Dept of Fish and Game (760 acres)
- CA Dept of Parks and Recreation (260 acres)
- Department of Defense (27 acres)
- State Lands Commission (410 acres)
- The Nature Conservancy (250 acres)
- US Fish and Wildlife Service (2767 acres)
- USDA Forest Service (83,826 acres)
- Private (508,592 acres)
- Crane Mills (55,530 acres)
- Sierra Pacific Ind. (1,001 acres)

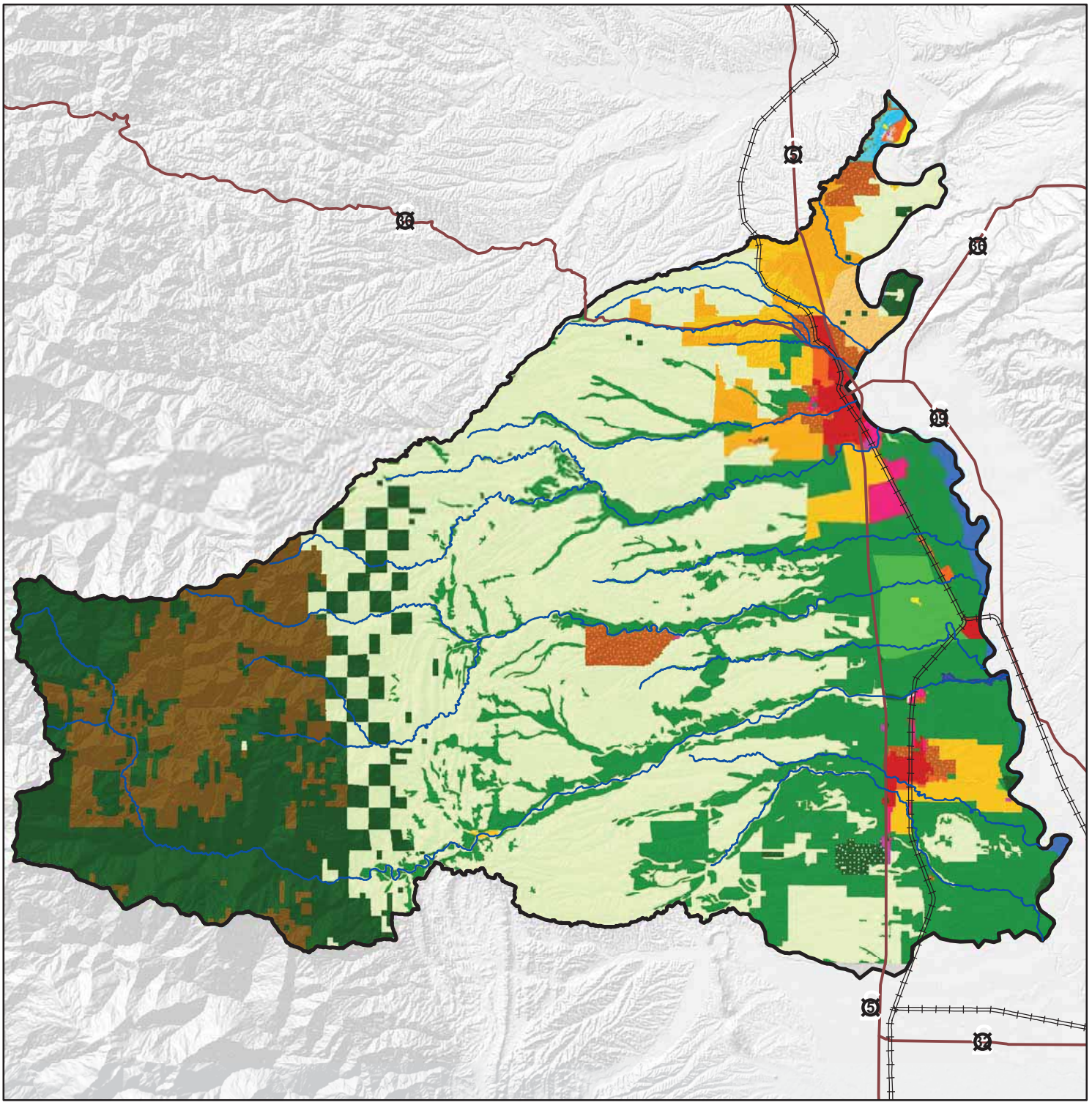
VESTRA

5

0 2.5 5 10 Miles

FIGURE 3-2
GENERAL OWNERSHIP
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: CALIFORNIA SPATIAL INFORMATION LIBRARY



Legend

- Cropland
- Composite Cropland
- Grazing
- Timber
- City
- Urban
- Suburban
- Rural Small Lot
- Rural Large Lot
- Special Plan
- Government Lands
- Public Facility
- Native American Lands
- Resource Lands
- Habitat Resource
- Open Space
- Scenic Easement
- Commercial Recreation
- General Commercial
- General Industrial

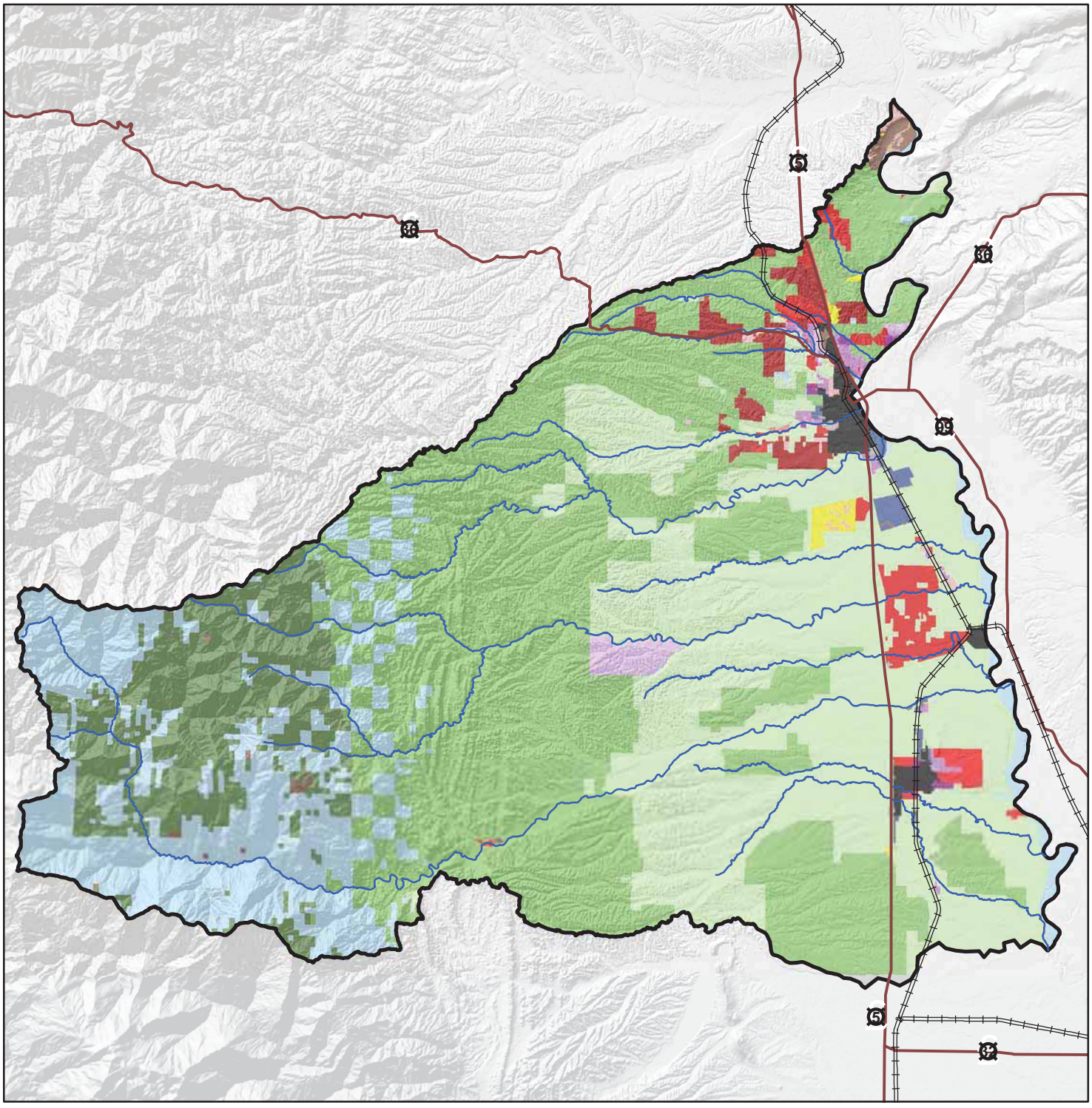
VESTRA

5

0 2.5 5 10 Miles

FIGURE 3-3
DRAFT GENERAL PLAN DESIGNATIONS
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY 2005



Legend

- Railroad
- Major Highway
- Major Tributary
- Tehama West Watershed
- Airport District
- Commercial
- City
- Agricultural Exclusive District
- General Recreation District
- Industrial
- Public
- Planned Development District
- One Family Residential District
- One Family Residential District < 10 acres
- One Family Residential District 100 acres
- One Family Residential District 250 acres
- One Family Residential District > 250 acres
- Two Family Residential District
- Neighborhood Apartment District
- General Apartment District
- Residential Estate District
- Residential Estate District < 10 acres
- Residential Estate District 100 acres
- Residential Estate District > 100 acres
- Timber Preserve District
- Upland Agricultural District

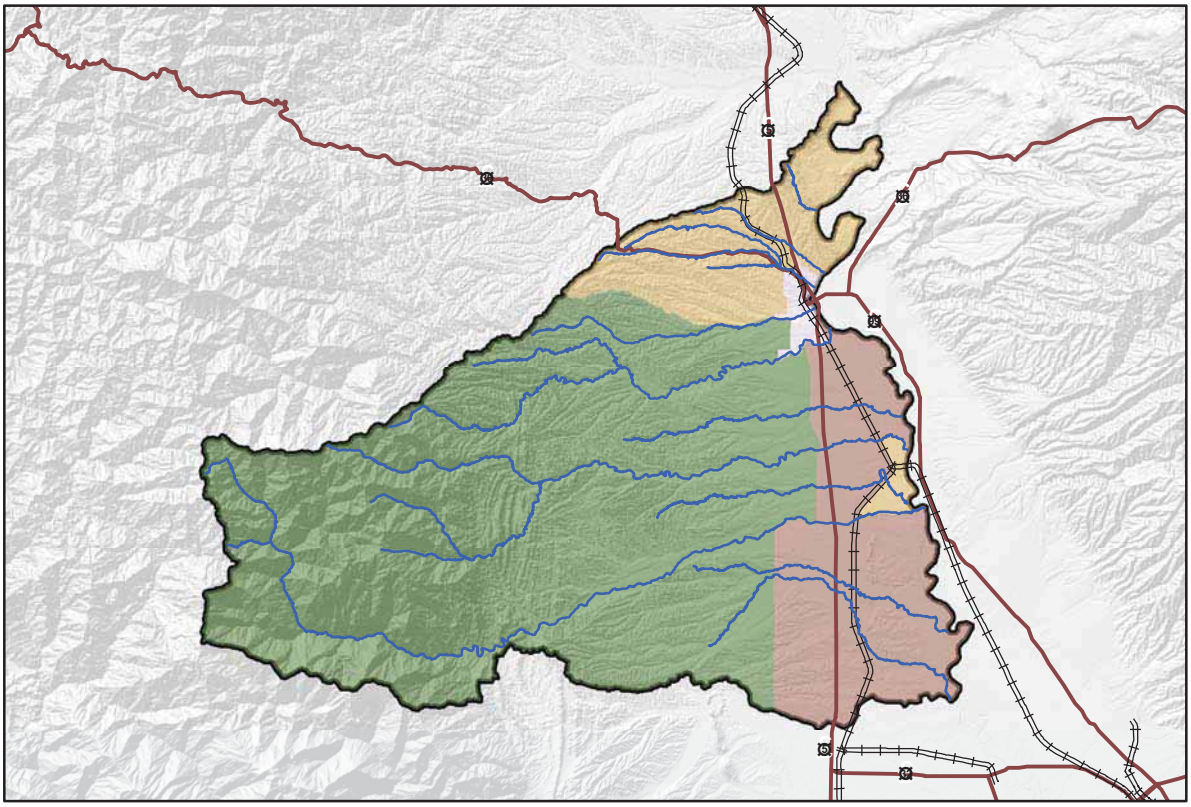
VESTRA

5

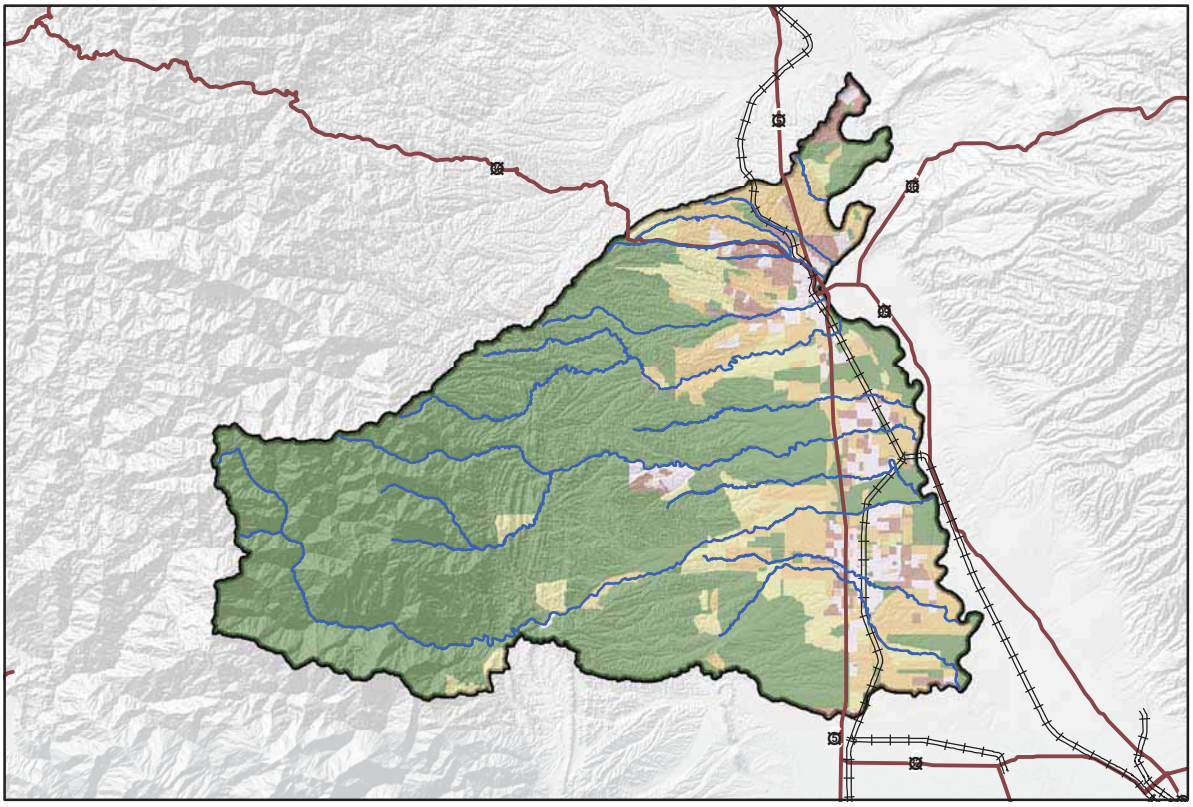
0 2.5 5 10 Miles

FIGURE 3-4
ZONING DISTRICTS
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY



1990 Census Population Density



2000 Census Population Density

Legend

- Railroad
- Major Highway
- Major Tributary
- Tehama West Watershed
- 0 - 5 persons per sq. mile
- 5 - 10 persons per sq. mile
- 10 - 50 persons per sq. mile
- 50 - 100 persons per sq. mile
- >100 persons per sq. mile

VESTRA

5

0 5 10 20 Miles

FIGURE 3-5
1990 AND 2000 POPULATION DENSITIES
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: CALIFORNIA SPATIAL INFORMATION LIBRARY, 2000 CENSUS DATA

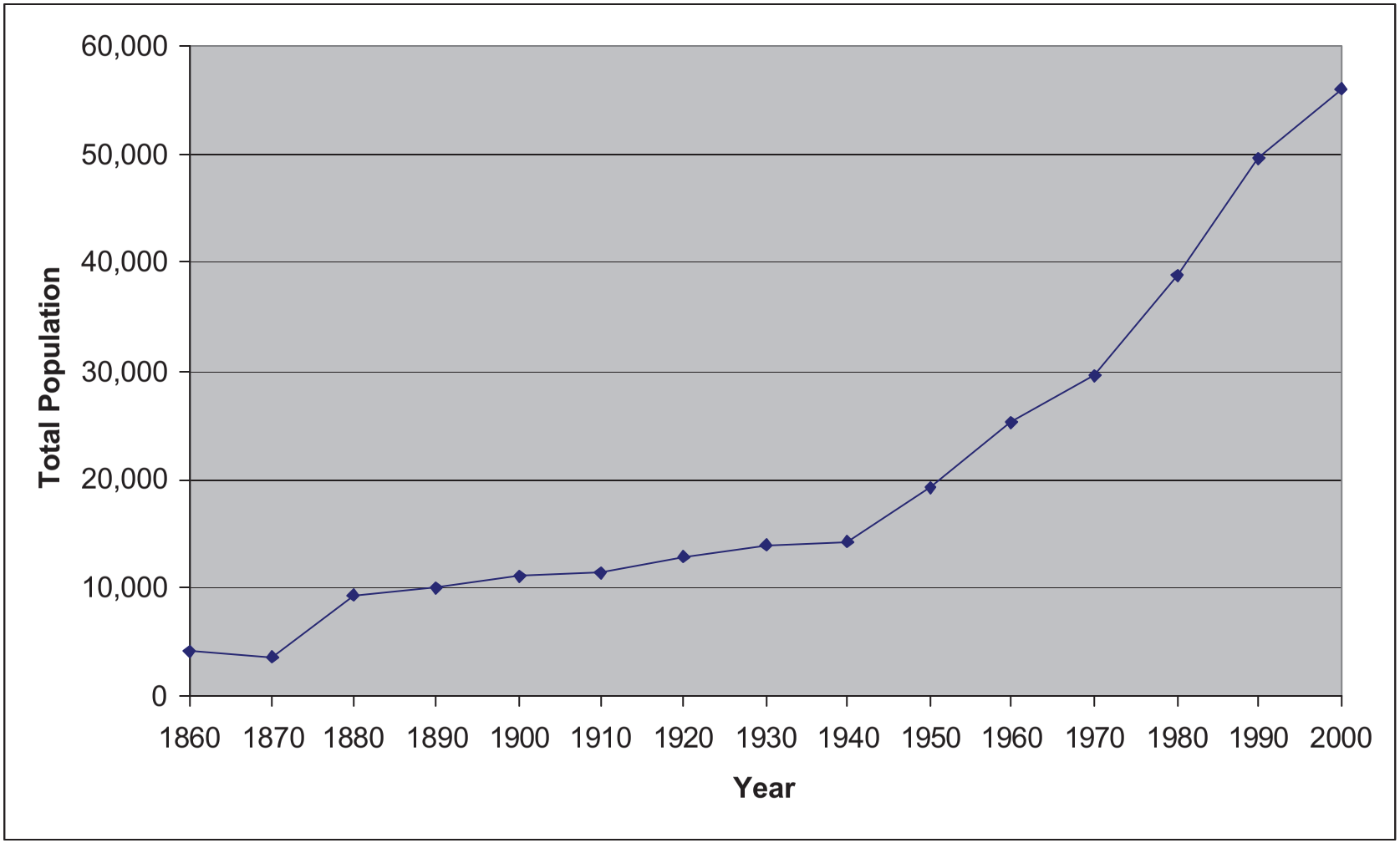
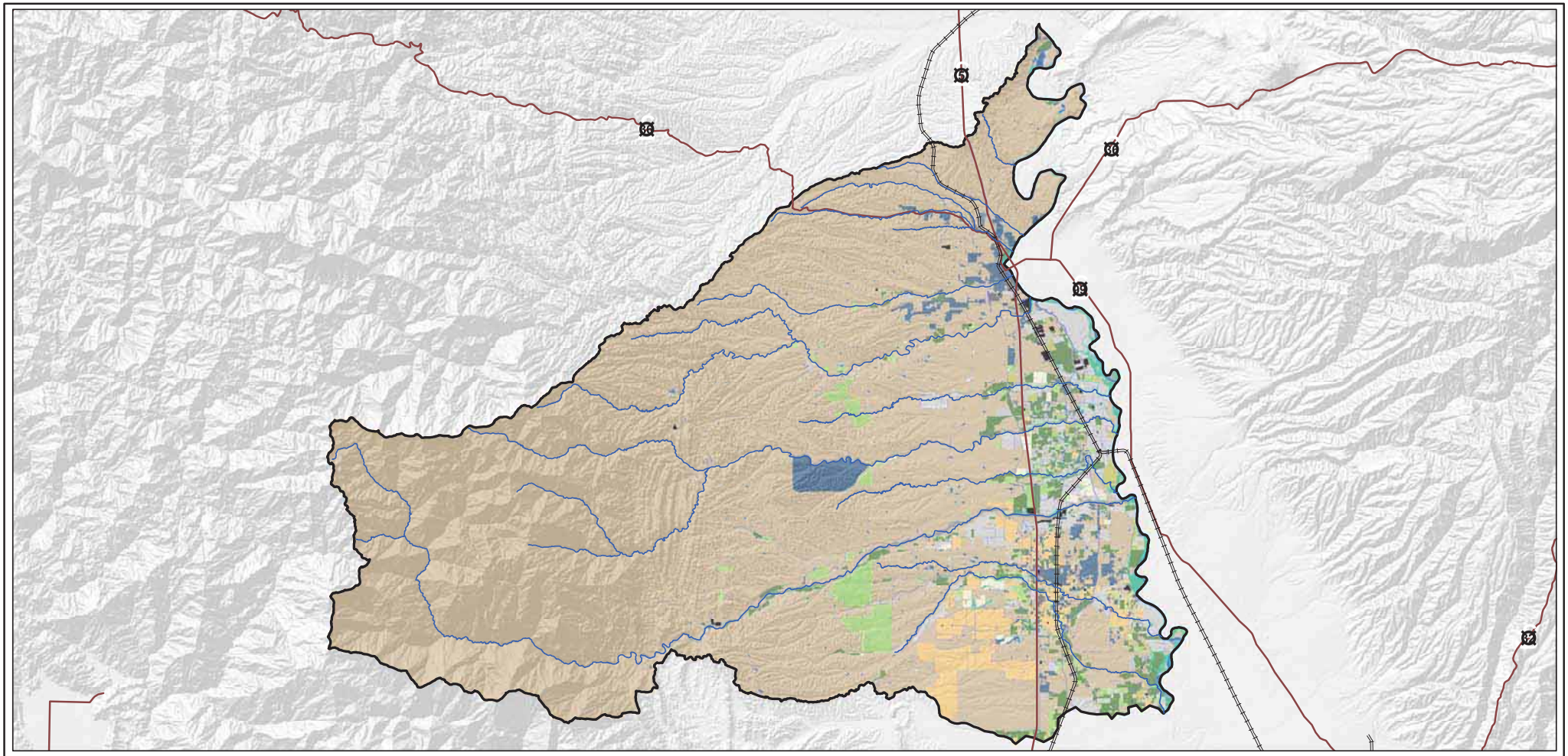


FIGURE 3-6
HISTORICAL POPULATION DATA
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: UNIVERSITY OF VIRGINIA LIBRARY, 2005



Legend

- Railroad
- Major Highway
- Major Tributary
- Tehama West Watershed

- Misc. citrus
- Oranges
- Olives
- Kiwis
- Eucalyptus
- Apples
- Apricots
- Cherries
- Peaches and nectarines
- Pears deciduous
- Prunes
- Figs
- Miscellaneous
- Almonds
- Walnuts
- Pistachios
- Field crops
- Safflower
- Corn (field)
- Sudan
- Beans, dry
- Misc. field
- Sunflowers
- Grain & hay crop
- Barley
- Misc. & mixed grain & hay
- Idle land
- Land not cropped within past three years
- New land prepared for crops
- Pasture
- Alfalfa & alfalfa mixture
- Mixed pasture
- Improved native pasture
- Rice
- Farmstead
- Livestock feed lot
- Dairy
- Poultry farm
- Asparagus
- Melons, squash, & cucumbers
- Flowers, nursery & Christmas tree farm
- Misc. & mixed truck
- Bush berries
- Strawberries
- Urban
- Vineyard
- Wine grapes
- Barren & wasteland
- Dry stream channel
- Riparian vegetation
- Marsh land, tule & sedge
- Watercourse vegetation
- Seasonal duck marsh
- Native vegetation
- Grassland
- Forest
- Water surface
- Semiagricultural
- Commercial
- Offices, retailers, etc.
- Recreation vehicle parking and camp site
- Institution
- School
- Industrial
- Manufacturing
- Extractive industry
- Storage and distribution
- Saw mill
- Fruit & vegetable cannery
- Misc. high water use
- Sewage treatment plant
- Waste accumulation site
- Urban landscape
- Lawn area - irrigated
- Golf course - irrigated
- Cemetery- irrigated
- Cemetery - not irrigated
- Residential
- Single family dwelling greater than one acre
- Single family dwelling less than one acre
- Trailer court
- Vacant
- Unpaved area
- Railroad right of way
- Paved area
- Airport runway

VESTRA

0 2 4 8 Miles

FIGURE 3-7
DWR LAND USE
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: DEPARTMENT OF WATER RESOURCES

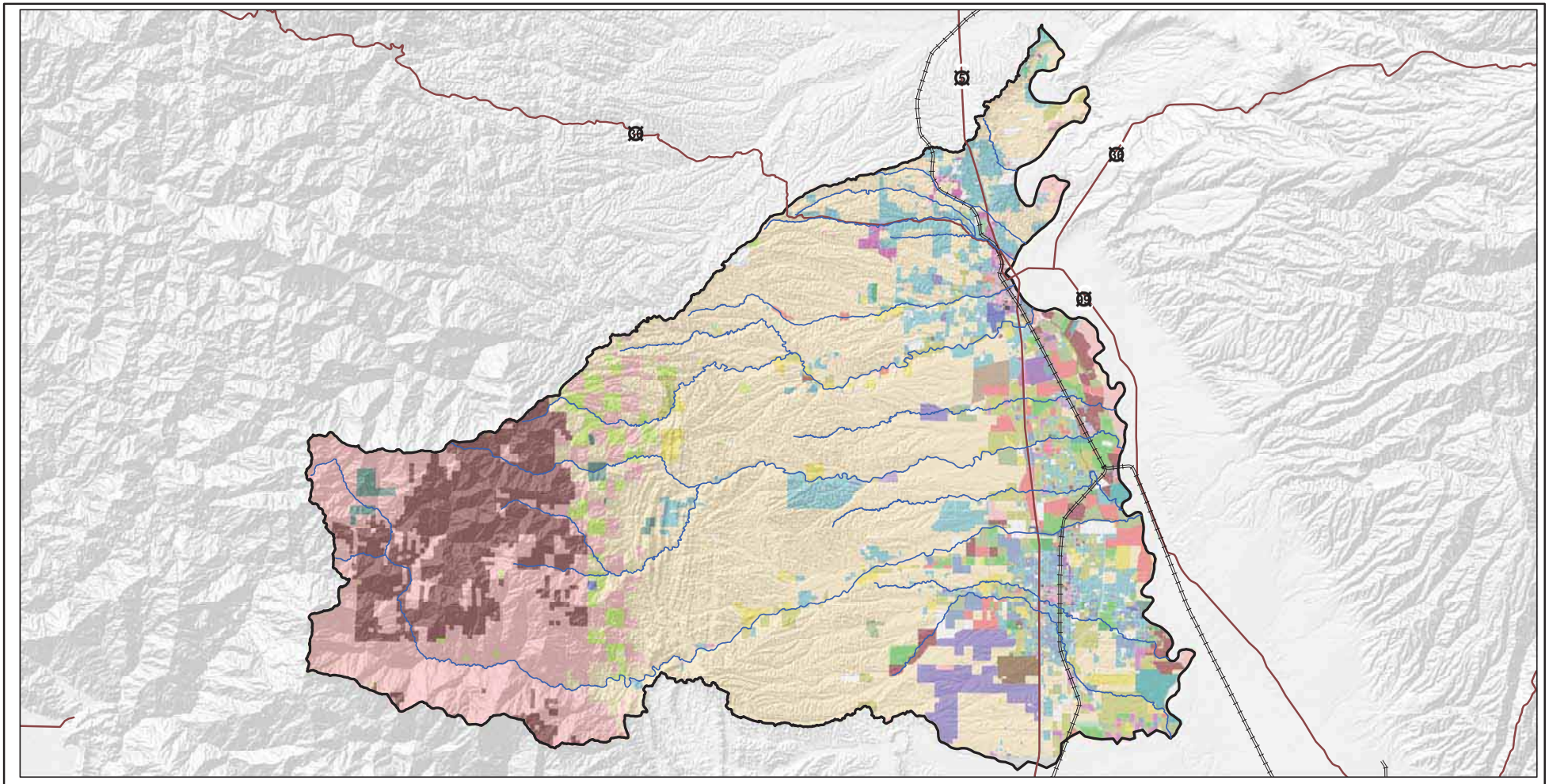
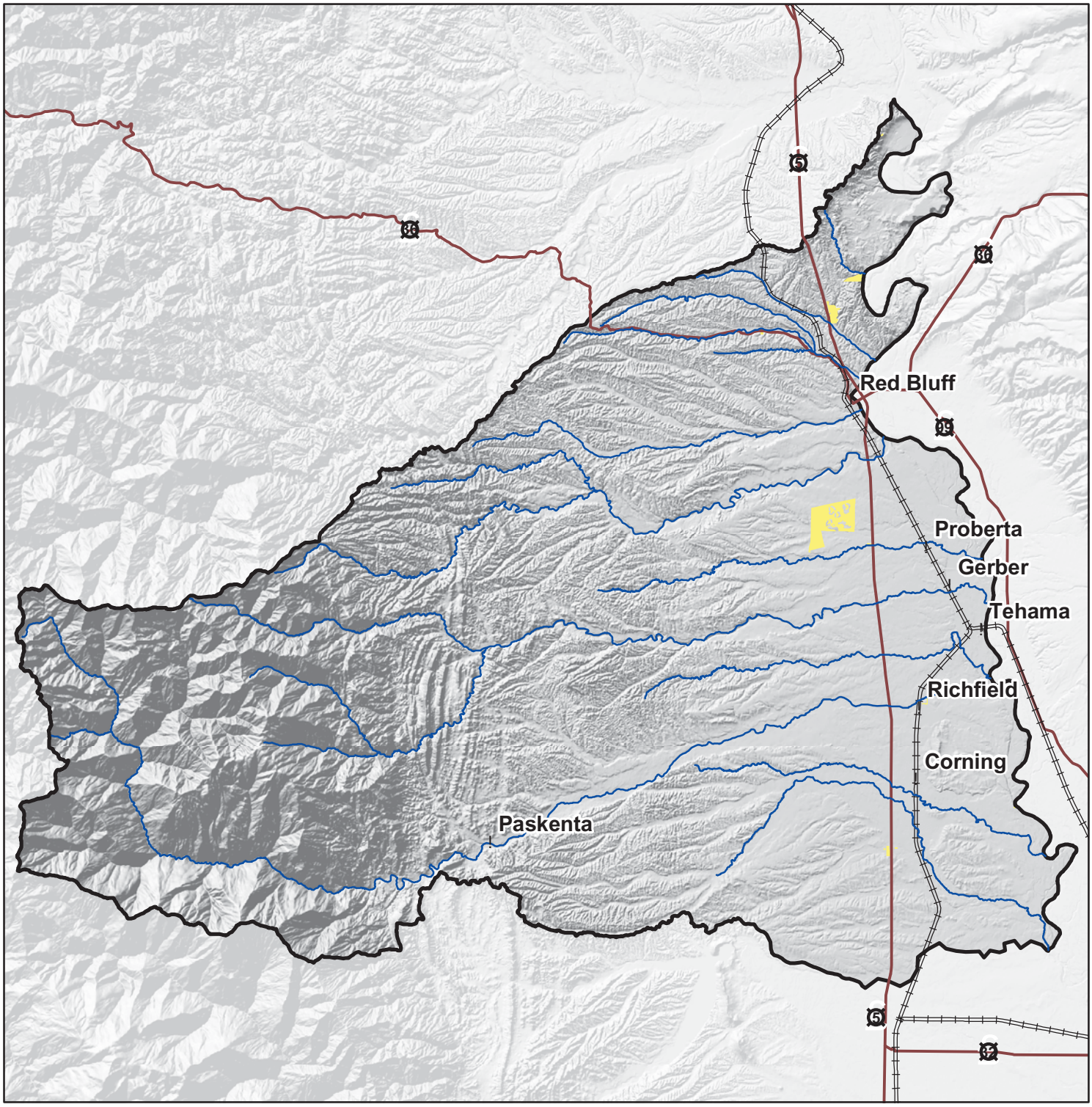


FIGURE 3-8
TEHAMA COUNTY LAND USE
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY, 2004



Legend

- Railroad
- Major Highway
- Major Tributary
- Proposed Development

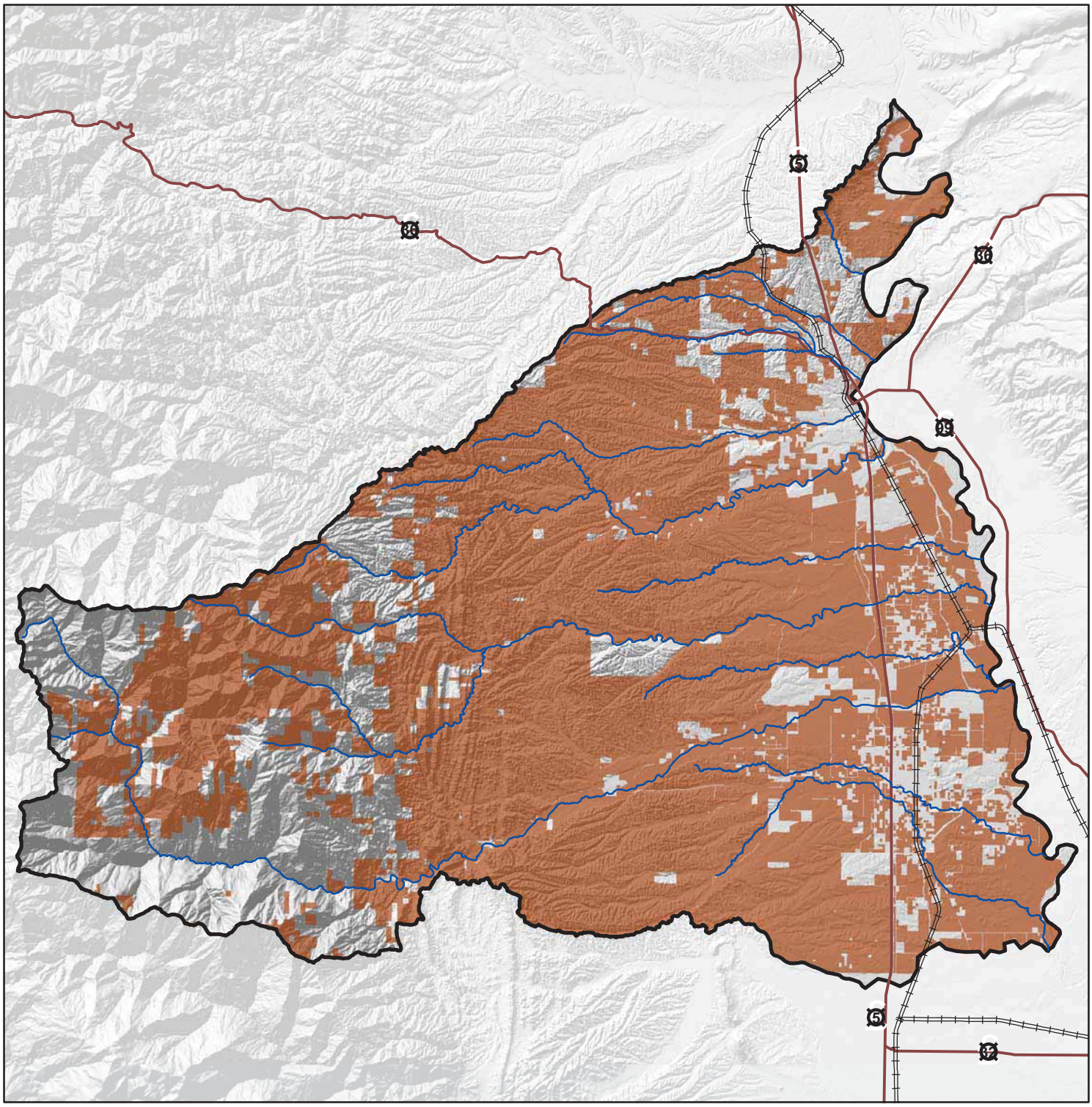
VESTRA

5

0 2.5 5 10 Miles

FIGURE 3-9
PROPOSED AREAS OF FUTURE DEVELOPMENT
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY, 2005



Legend

- Railroad
- Major Highway
- Major Tributary
- Agricultural and Timber Land Use

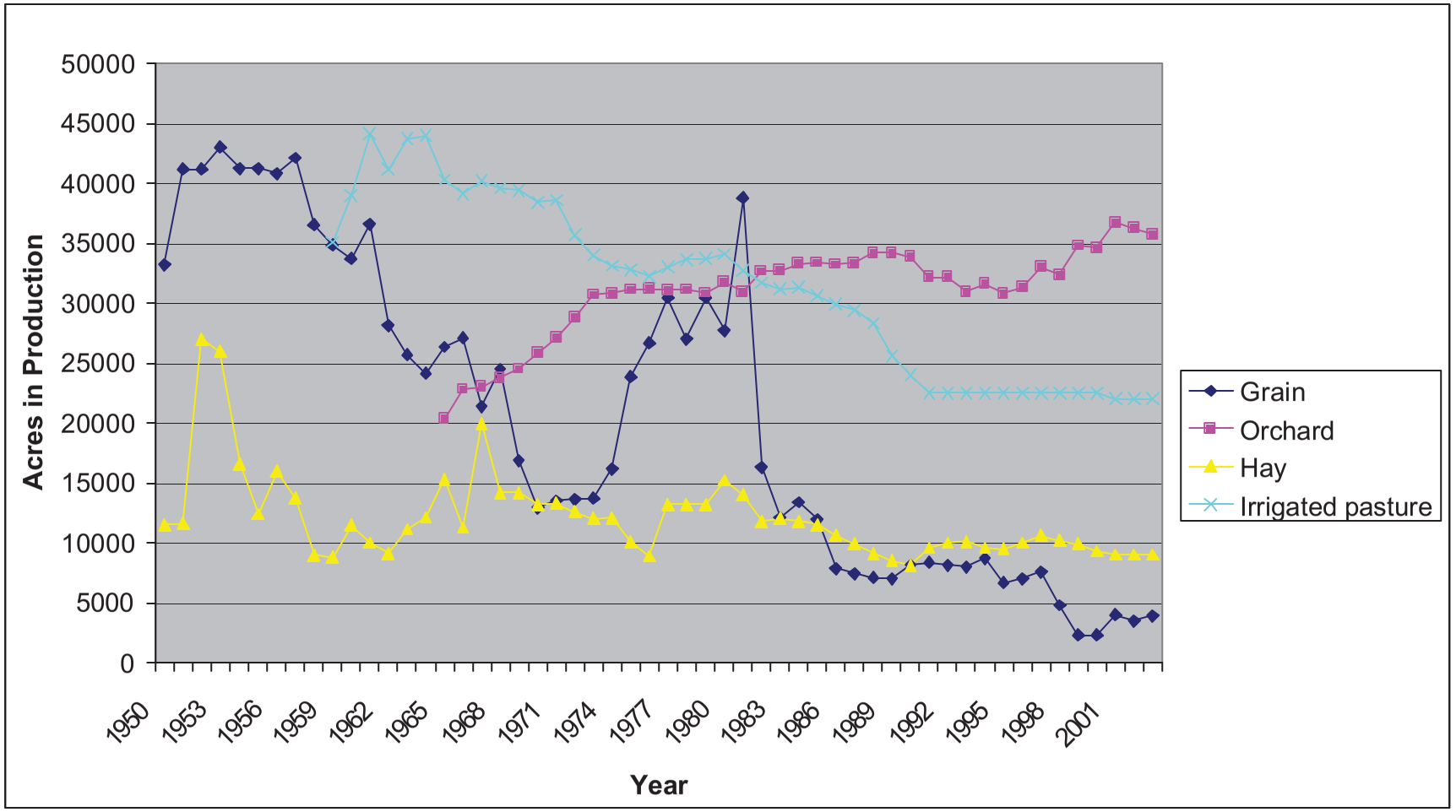
VESTRA

5

0 2.5 5 10 Miles

FIGURE 3-10
AGRICULTURAL LANDS
TEHAMA WEST WATERSHED ASSESSMENT

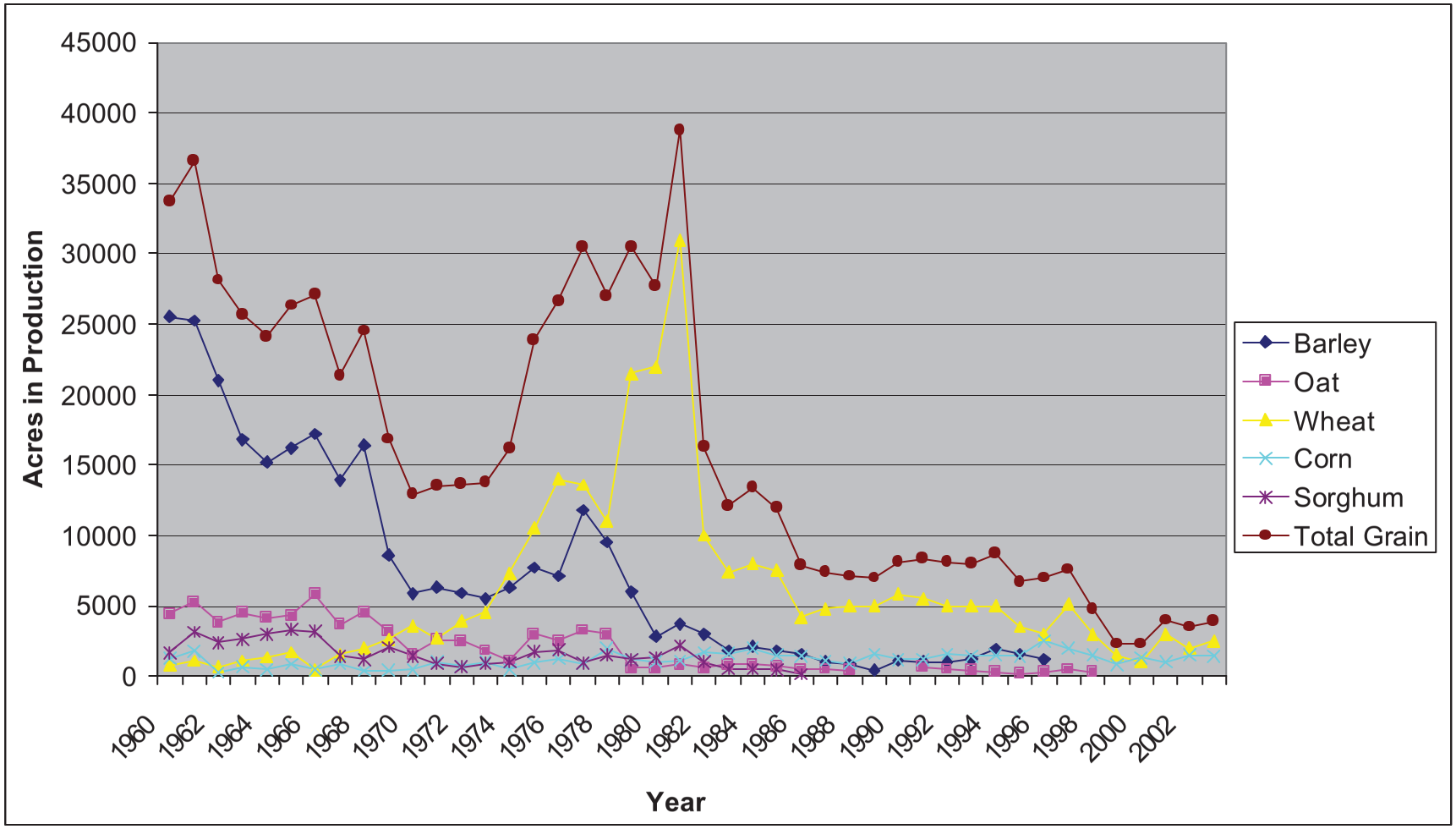
SOURCE: TEHAMA COUNTY, 2005



VESTRA

FIGURE 3-11
MAJOR CROP TYPES, 1950-2003
TEHAMA WEST WATERSHED ASSESSMENT

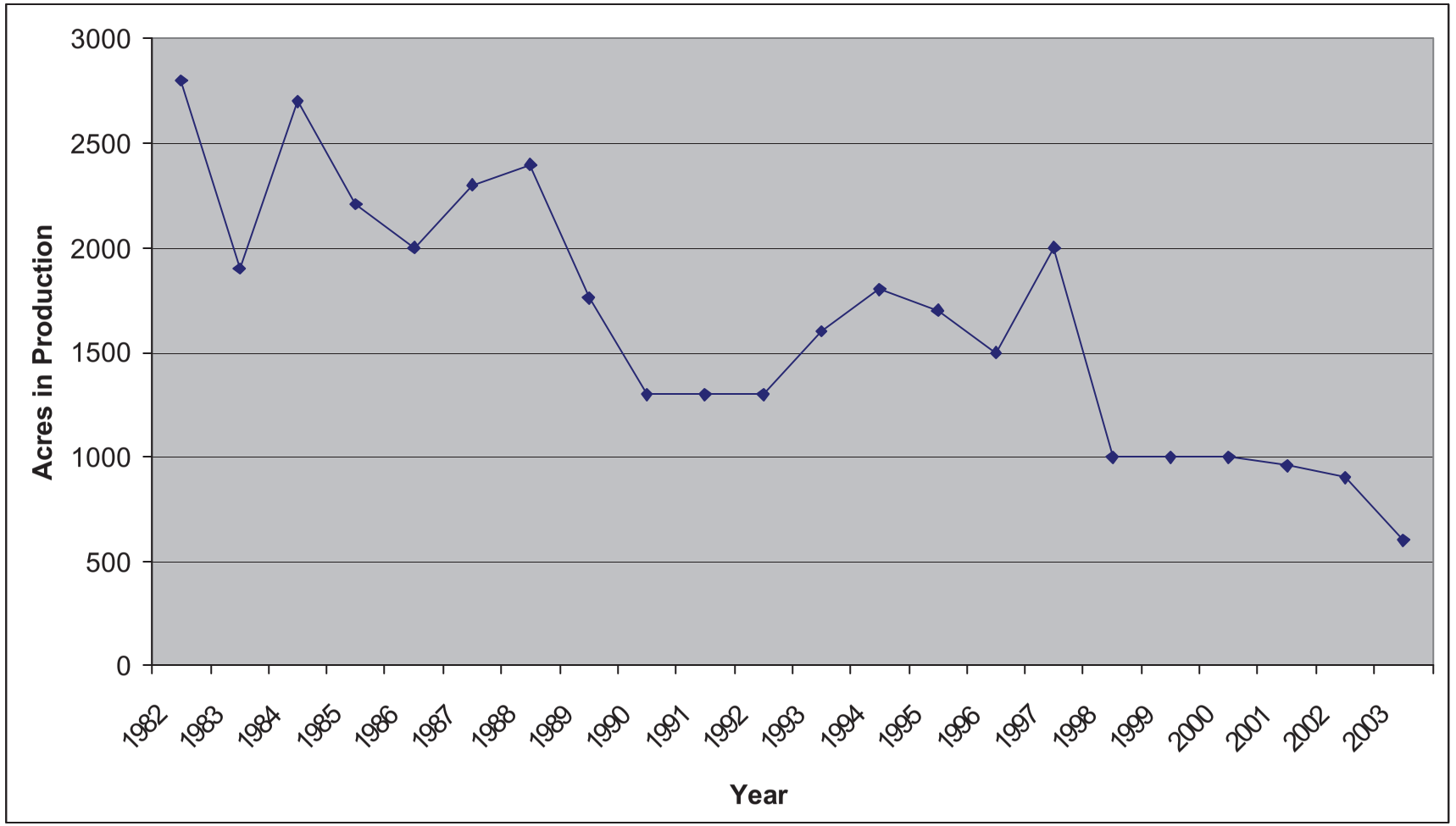
SOURCE: TEHAMA COUNTY AGRICULTURAL CROP REPORTS



VESTRA

FIGURE 3-12
GRAIN PRODUCTION, 1960-2002
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY AGRICULTURAL CROP REPORTS



VESTRA

FIGURE 3-13
RICE PRODUCTION, 1982-2003
TEHAMA WEST WATERSHED

SOURCE: TEHAMA COUNTY AGRICULTURAL CROP REPORTS

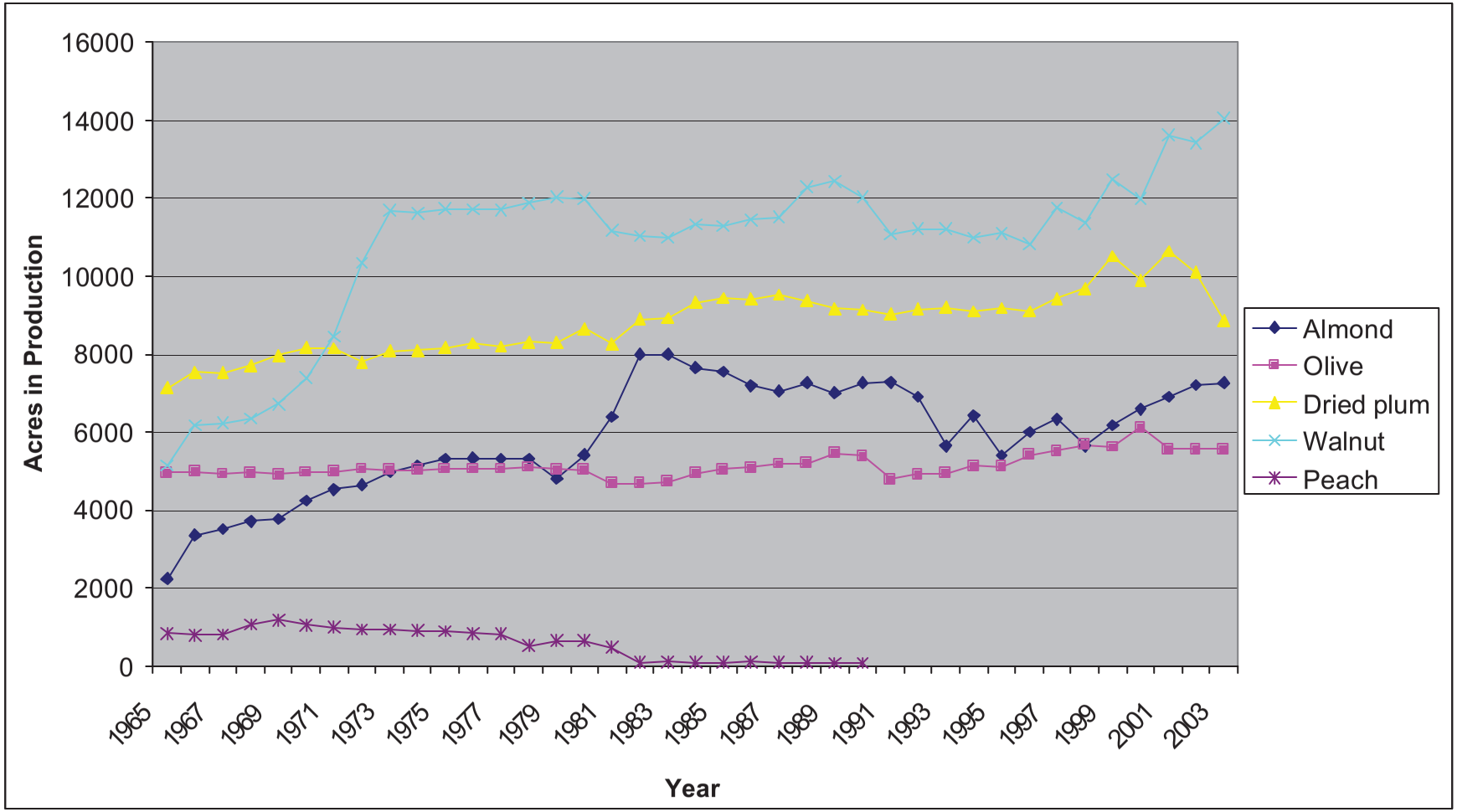
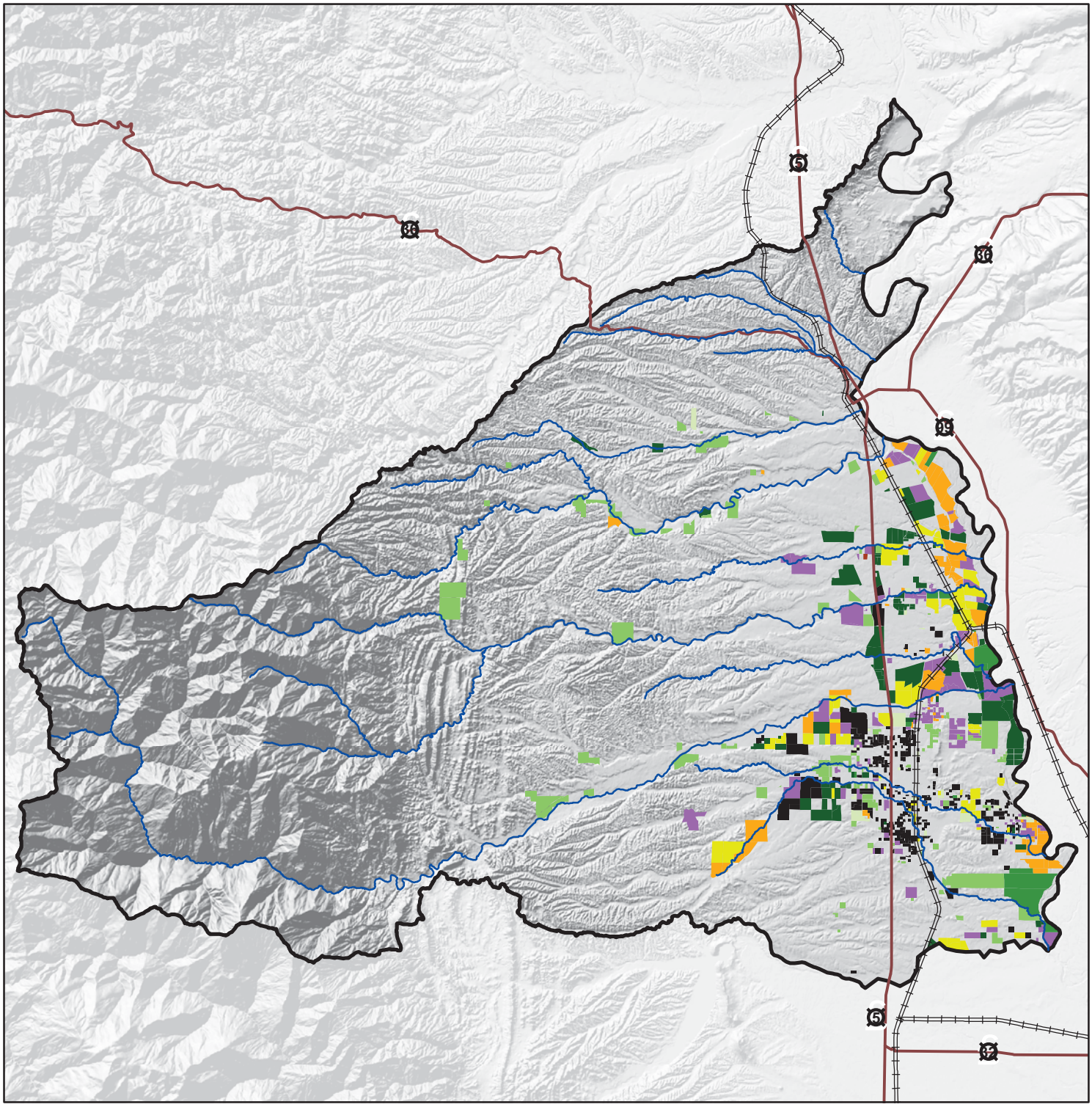


FIGURE 3-14
ORCHARD PRODUCTION, 1965-2003
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY AGRICULTURAL CROP REPORTS



Legend

- Railroad
- Major Highway
- Major Tributary
- Field Crops
- Orchard
- Field Crops - Irrigated
- Row Crops - Irrigated
- Irrigated Olive Orchard
- Irrigated Prune Orchard
- Irrigated Walnut Orchard
- Irrigated Almond Orchard
- Irrigated Misc. Orchard
- Vine and Bush Fruits - Irrigated

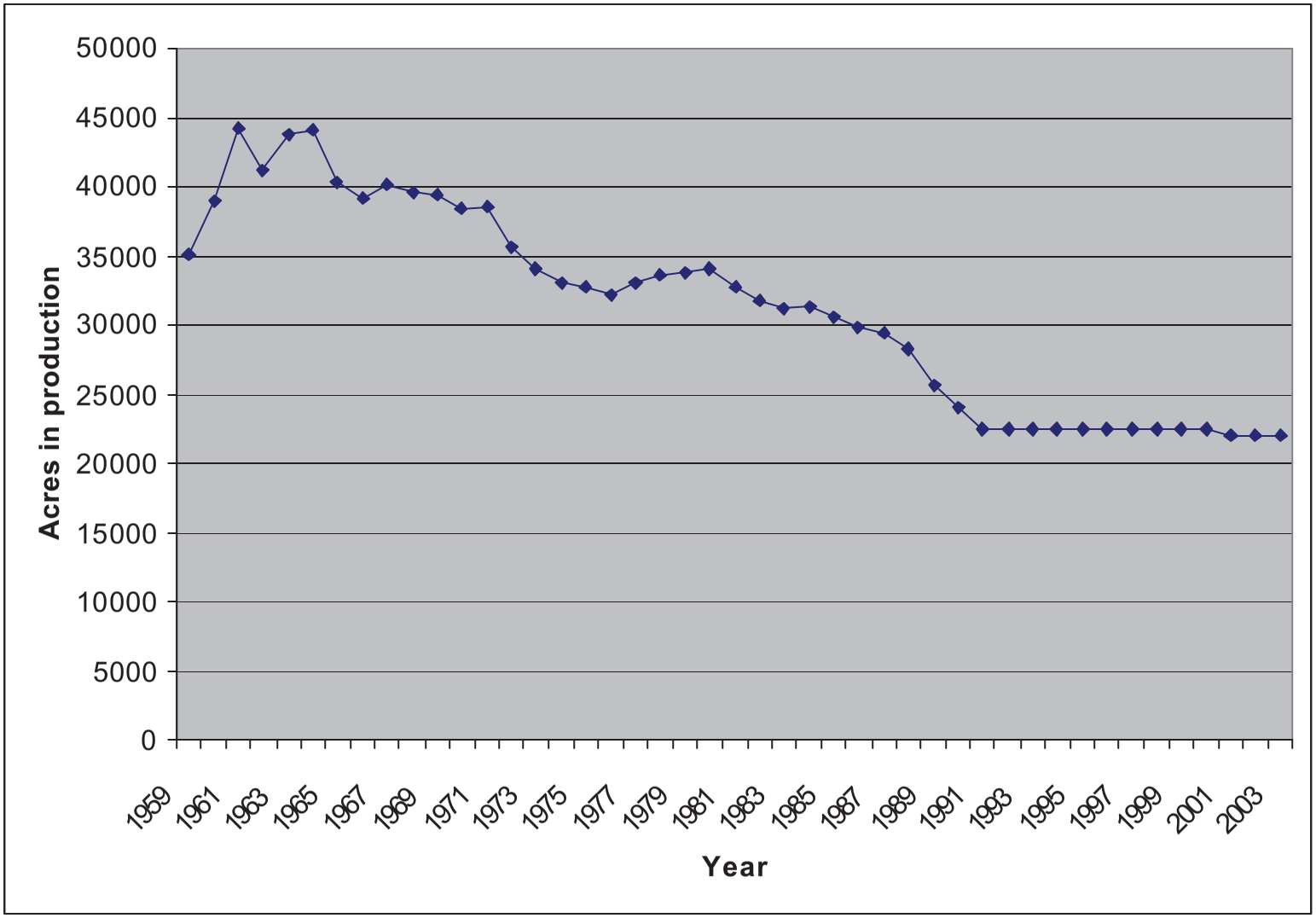
VESTRA

5

0 2.5 5 10 Miles

FIGURE 3-15
CROP TYPES
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY, 2005



VESTRA

FIGURE 3-16
IRRIGATED PASTURE PRODUCTION, 1958-2003
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY AGRICULTURAL CROP REPORTS

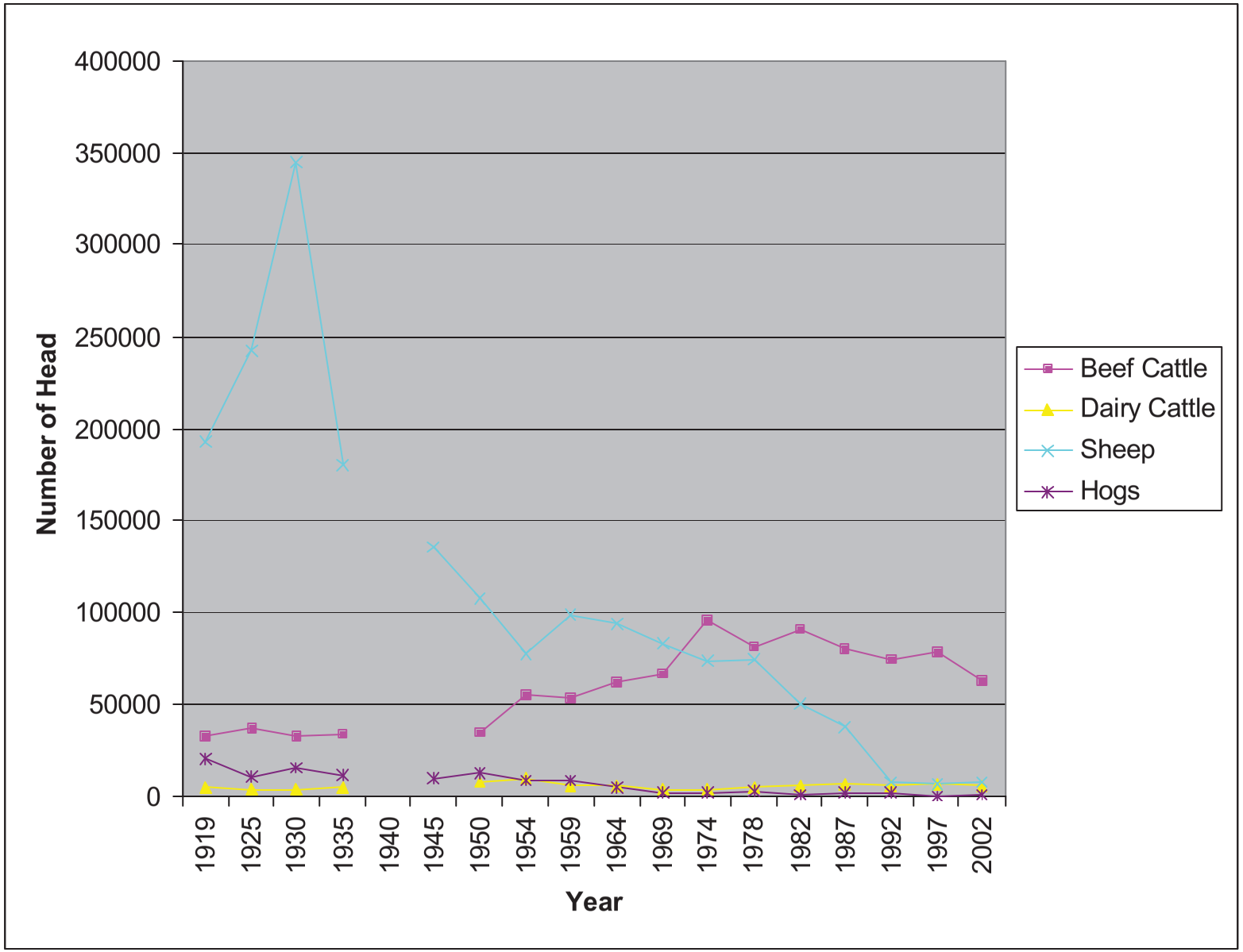


FIGURE 3-17
LIVESTOCK PRODUCTION, 1919 - 2002
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY AGRICULTURAL CROP REPORTS

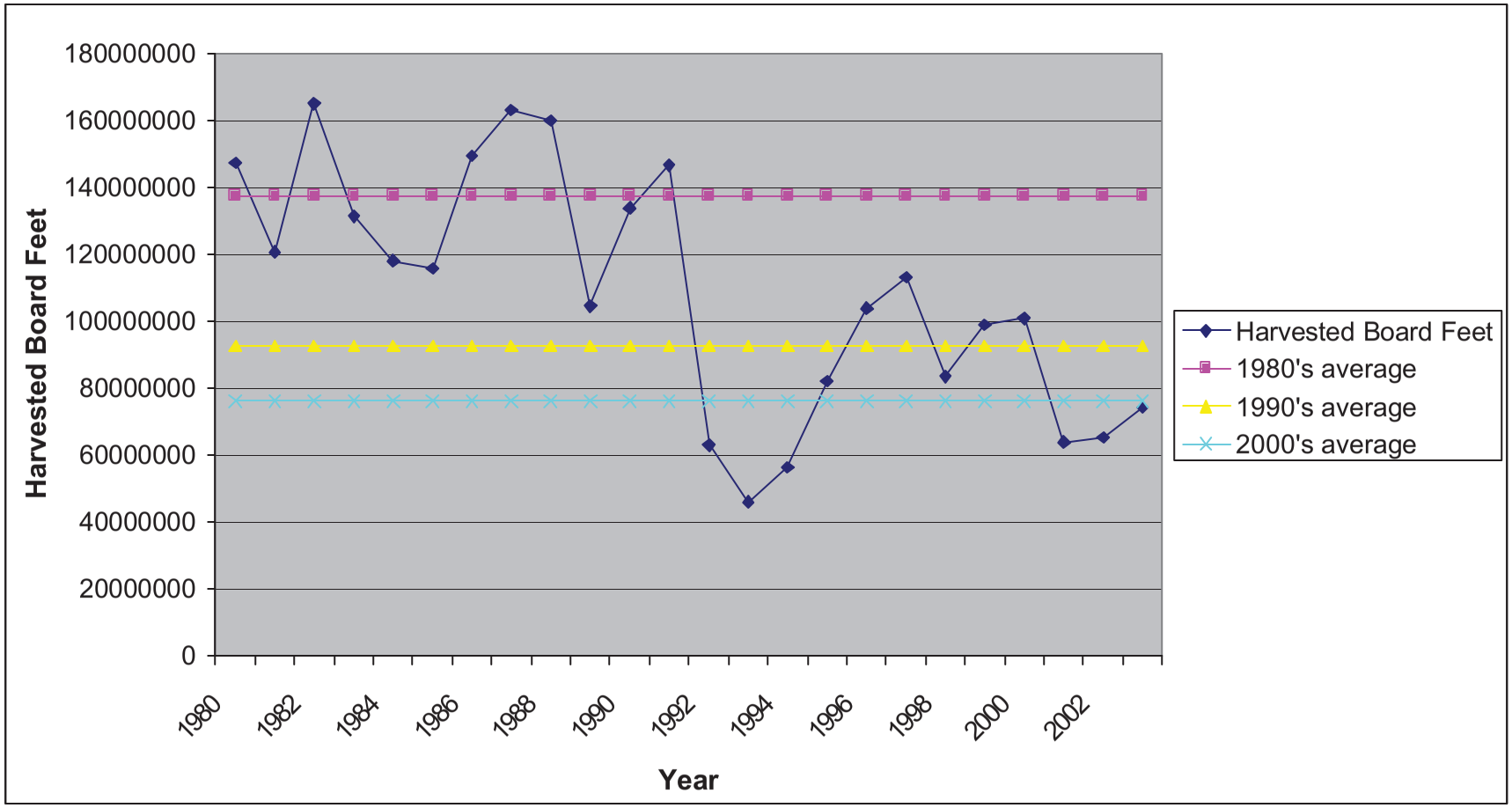
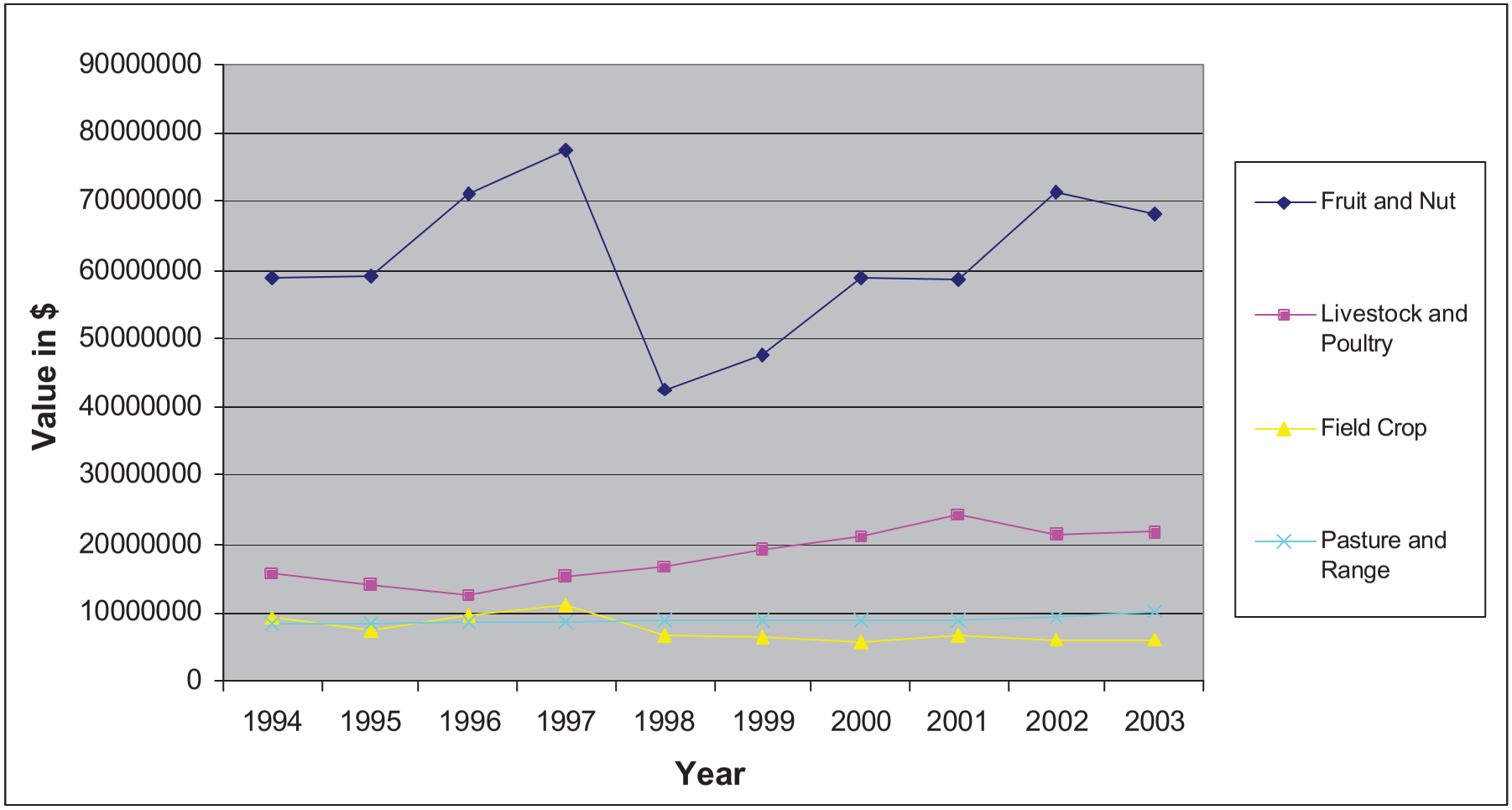


FIGURE 3-18
TIMBER PRODUCTION, 1980-2003
TEHAMA WEST WATERSHED ASSESSMENT

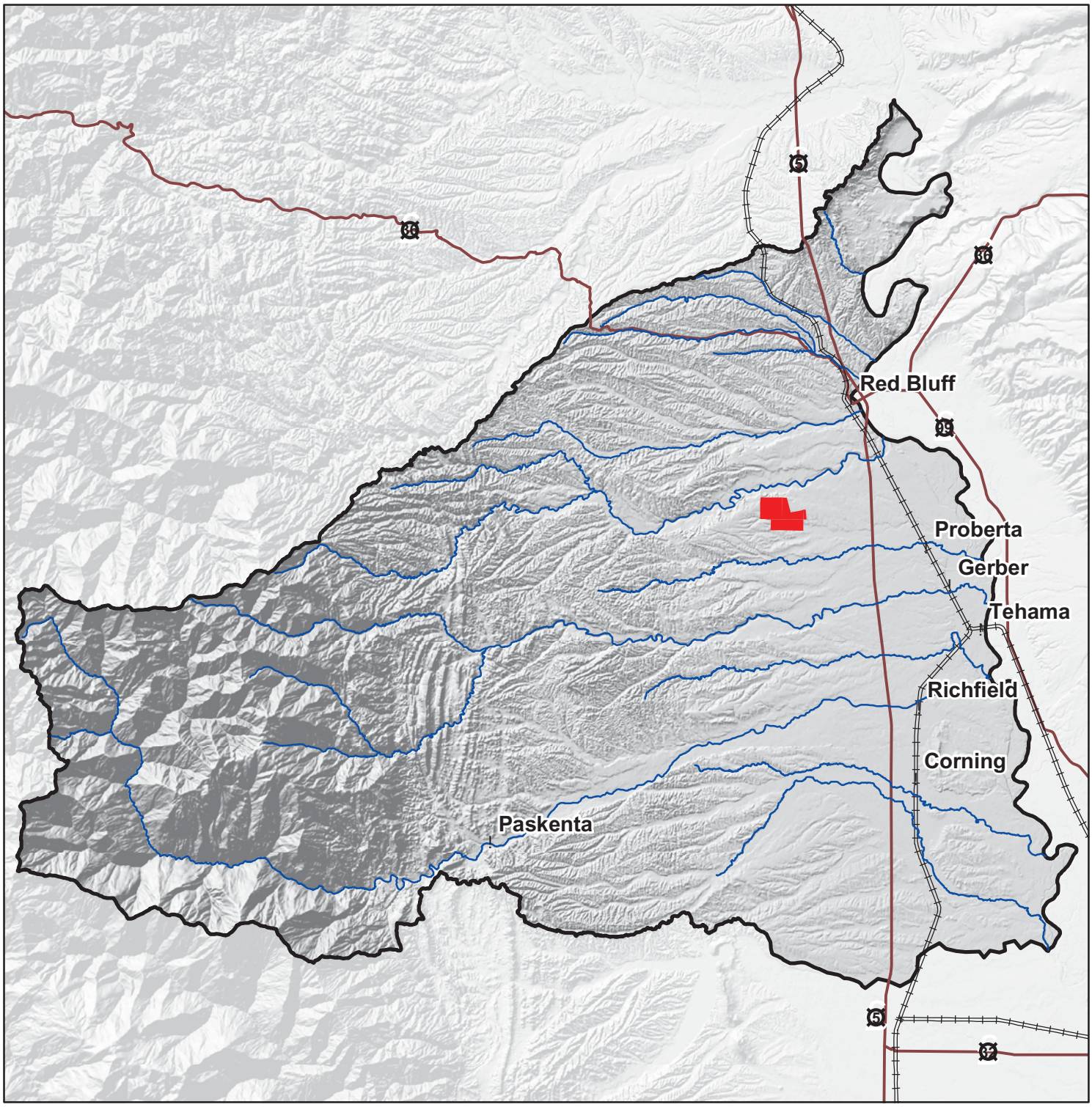
SOURCE: TEHAMA COUNTY AGRICULTURAL CROP REPORTS



VESTRA

FIGURE 3-19
AGRICULTURE COMMODITY VALUE TRENDS, 1994-2003
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY AGRICULTURAL CROP REPORTS



Legend

- Railroad
- Major Highway
- Major Tributary
- Conservation Easements

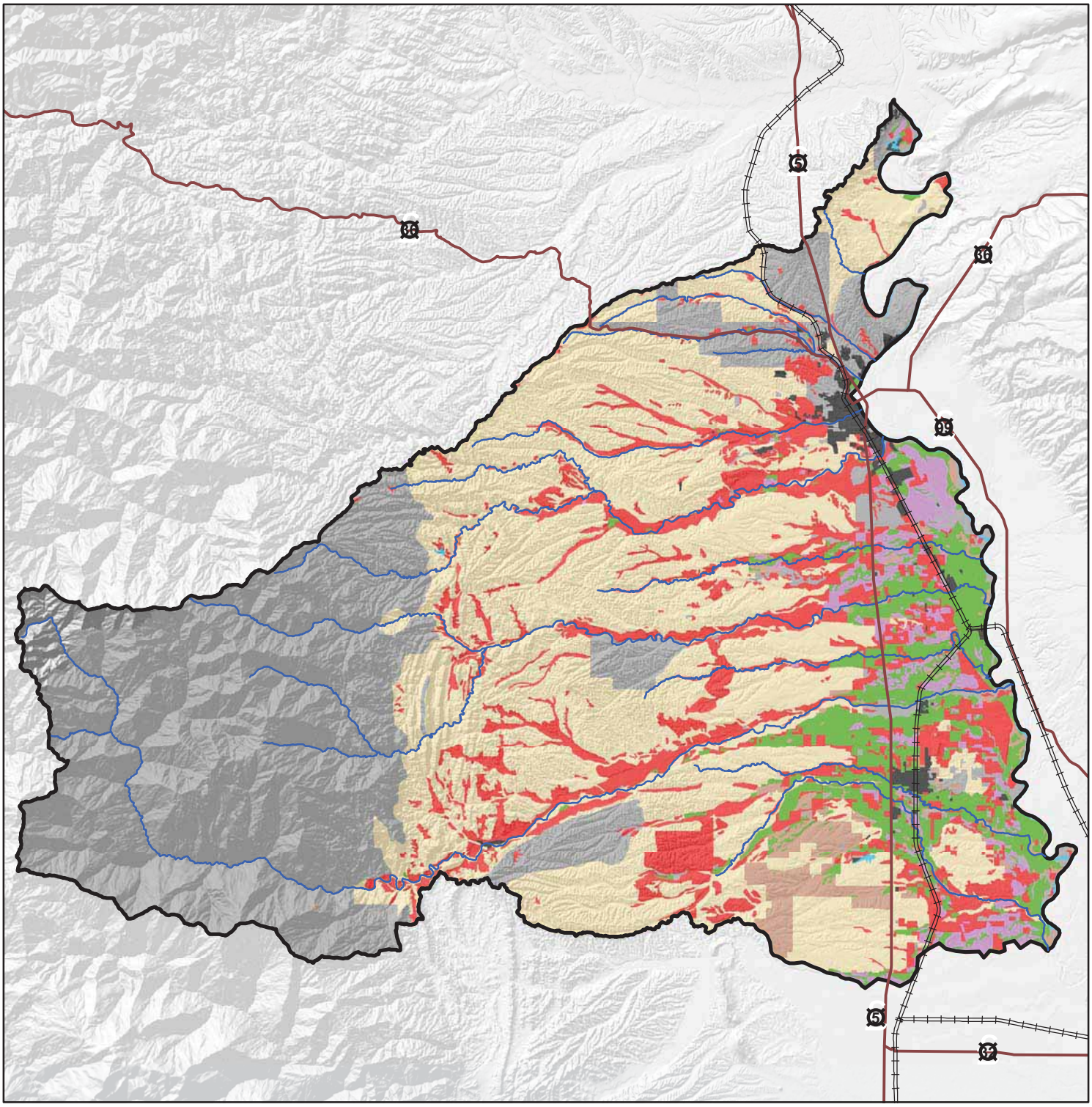
VESTRA

5

0 2.5 5 10 Miles

FIGURE 3-20
CONSERVATION EASEMENTS
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY, 2005



Legend

- Railroad
- Major Highway
- Major Tributary
- Tehama West Watershed
- Urban and Built Up Land
- Grazing Land
- Farmland of Local Importance
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Water
- Other Land

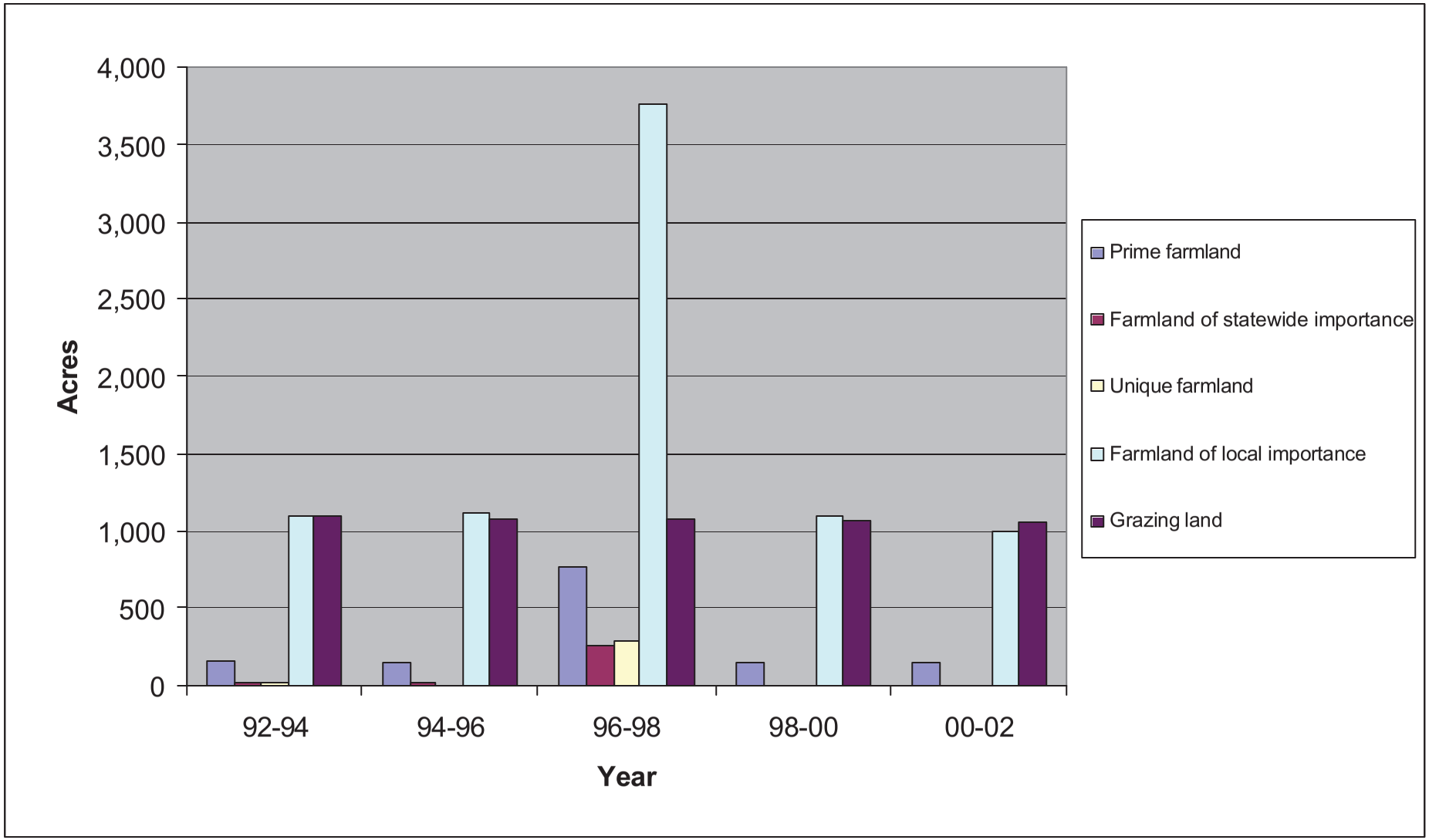
VESTRA

5

0 2.5 5 10 Miles

FIGURE 3-21
FARMLAND MAPPING PROGRAM
TEHAMA WEST WATERSHED ASSESSMENT

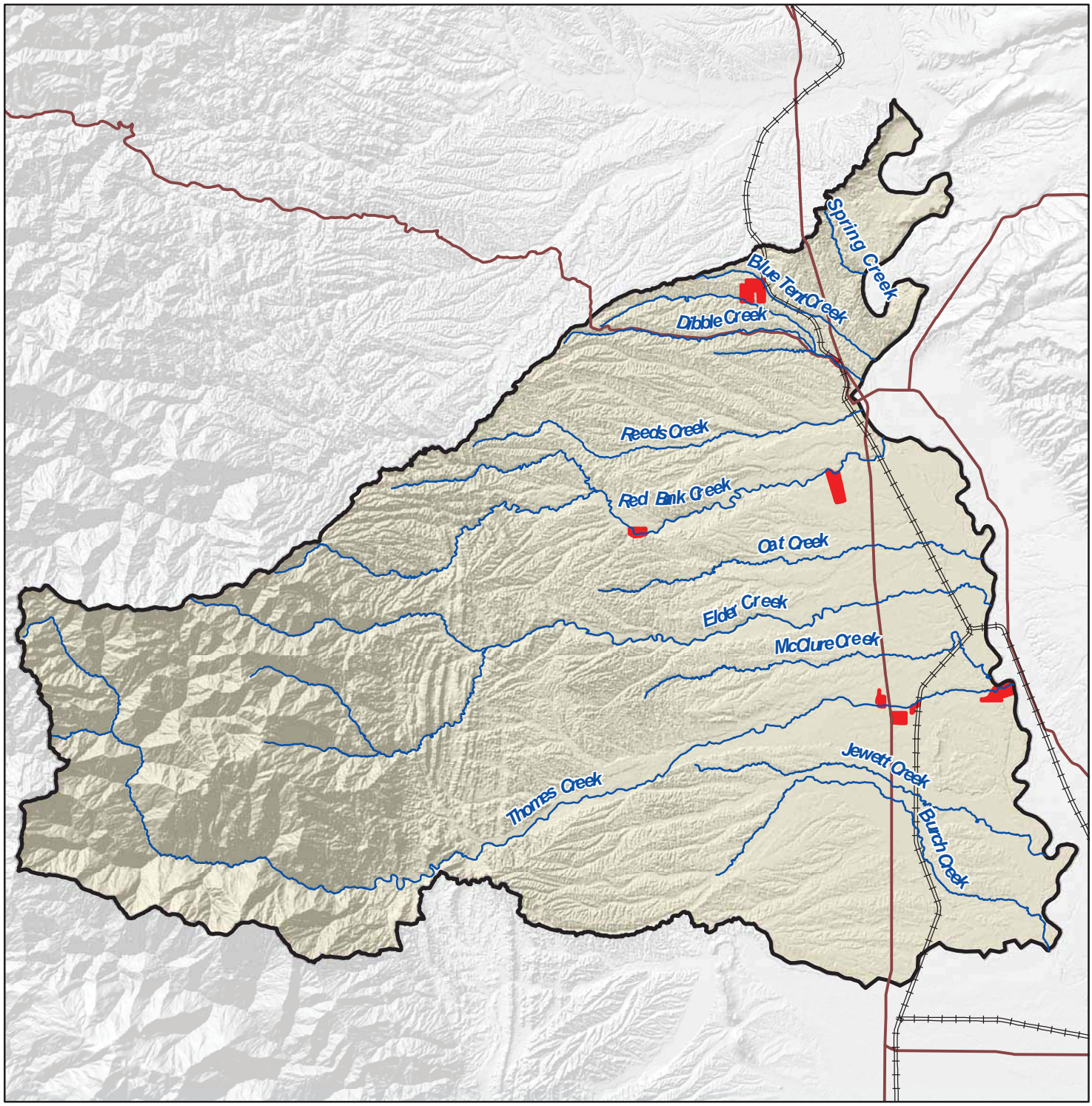
SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION, DIVISION OF LAND RESOURCE PROTECTION



VESTRA

FIGURE 3-22
AGRICULTURAL LANDS CONVERTED TO URBAN LANDS
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY AGRICULTURAL CROP REPORTS



Legend

- Railroad
- Major Highway
- Major Tributary
- Tehama West Watershed
- Gravel Mining Operation

5

0 2.5 5 10 Miles

VESTRA

FIGURE 3-23
GRAVEL MINING OPERATIONS
TEHAMA WEST WATERSHED ASSESSMENT

SOURCE: TEHAMA COUNTY PLANNING DEPARTMENT