In Yuba County, PM emissions are generated by a variety of sources. The primary sources of PM are entrained road dust, farming operations, and agricultural burning. Traffic generates particulate matter and PM emissions through entrainment of dust and dirt particles that settle onto roadways and parking lots. PM is also emitted by burning wood in residential woodstoves and fireplaces and open burning of residential and agricultural wastes.

Fine particulate matter is a concern because it can bypass the body's natural filtration system more easily than larger particles, and can lodge deep in the lungs. Health effects of PM vary depending on a number of factors, including the type and size of particle. Research has shown a correlation between high PM_{10} concentrations and increased mortality rates. Elevated levels can aggravate chronic respiratory illness such as bronchitis and asthma. PM also causes visibility reduction.

Regulatory Framework

Feather River Air Quality Management District

Wheatland is located within the Feather River Air Quality Management District (FRAQMD). The FRAQMD is part of the Northern Sacramento Valley Air Basin (NSVAB) that includes Butte, Colusa, Glen, Tehama, Shasta, Yolo, Sacramento, Yuba, Sutter, and parts of Placer and Solano Counties. The FRAQMD is the local air quality agency. The District adopts and enforces controls on stationary sources of air pollutants through its permit and inspection programs and regulates agricultural burning. Other District responsibilities include monitoring air quality, preparation of clean air plans and responding to citizen air quality complaints. NSVAB air quality monitoring location are shown on Figure 6-4.

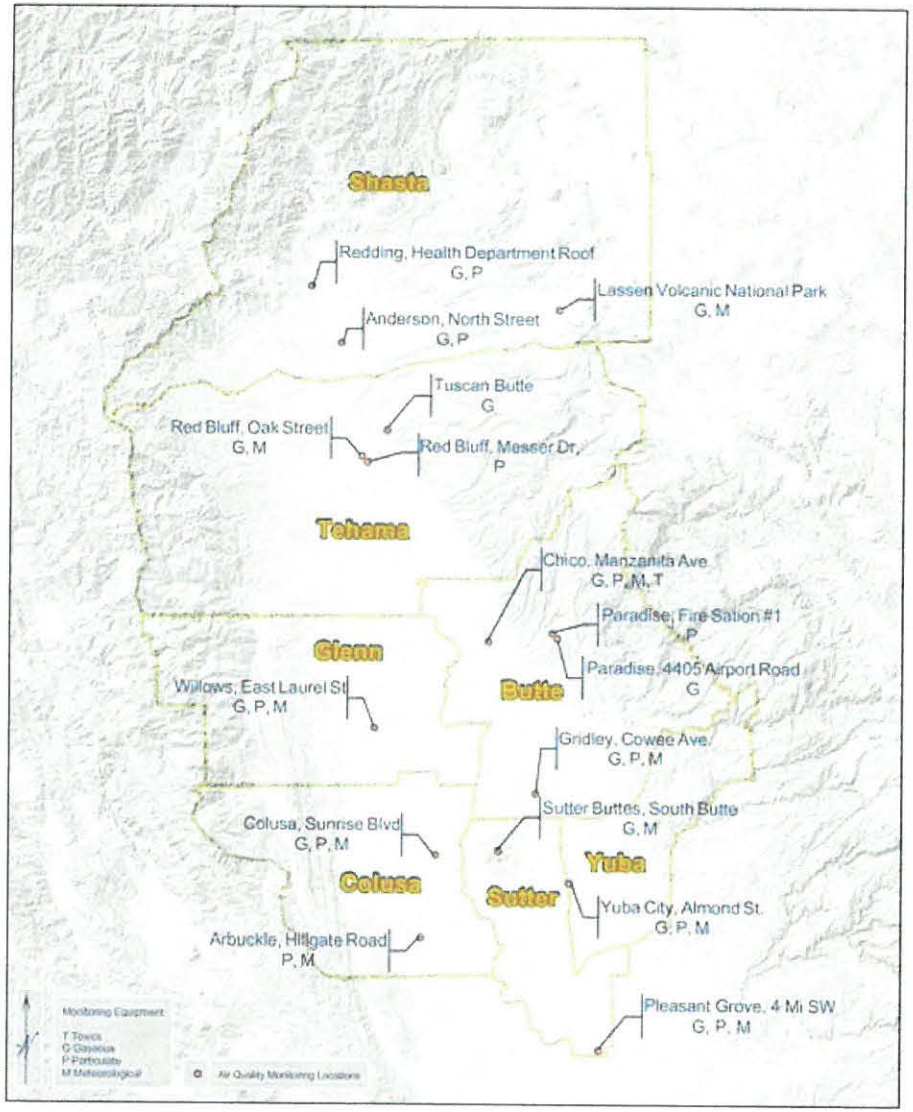
State/Federal Air Programs

Both the Federal and State governments have enacted laws mandating the identification of areas not meeting the ambient air quality standards and development of regional air quality plans to eventually attain the standards. Under the Federal Clean Air Act the FRAQMD has been designated Attainment or Unclassified for all national ambient air quality standards except the 1-hour ozone standard.

Under the State system, the FRAQMD is designated "Nonattainment" for the California standards for ozone and PM_{10}. The air districts of the NSVAB have jointly prepared and adopted a uniform air quality attainment plan addressing ozone and PM_{10}.[59]

The U.S. Environmental Protection Agency established new national air quality standards for ground-level ozone and for fine particulate matter in 1997. The existing 1-hour ozone standard of 0.12 PPM microns or less) is to be phased out and replaced by an 8-hour standard of 0.08 PPM. Implementation of the 8-hour standard was delayed by litigation, but was determined to be valid and enforceable by the U. S. Supreme Court in a decision issued in February of 2001.

[59] FRAQMD, 2004.



WHEATLAND
GENERAL PLAN

LEGEND

Figure 6-4
NSVAB Monitoring Locations

Sources: Foothill Associates and Mintier & Associates, 2004

The U. S. Environmental Protection Agency has classified Yuba County as an Attainment area for the new Federal 8-hour ozone standard. The California Air Resources Board and U.S. Environmental Protection Agency have both proposed that Yuba County be considered Unclassifiable with respect to the Federal $PM_{2.5}$ standards. Unclassifiable means that an area cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant. U.S. EPA plans to finalize $PM_{2.5}$ designations by December 15, 2004.

Emerging Air Quality Issues and Programs

The following is a discussion of emerging air quality issues that may not have been previously addressed.

Diesel Exhaust

In 1998, after a 10-year scientific assessment process, the California Air Resources Board identified particulate matter from diesel-fueled engines as a toxic air contaminant (TAC). The exhaust from diesel engines contains hundreds of different gaseous and particulate components, many of which are toxic. Many of these compounds adhere to the particles, and because diesel particles are so small, they penetrate deep into the lungs. Diesel engine particulate has been identified as a human carcinogen. Mobile sources, such as trucks, buses, automobiles, trains, ships, and farm equipment are by far the largest source of diesel emissions. Studies show that diesel particulate matter concentrations are much higher near heavily traveled highways and intersections.

The State of California has begun a program of identifying and reducing risks associated with particulate matter emissions from diesel-fueled vehicles. The plan consists of new regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles, new retrofit requirements for existing on-road, off-road and stationary diesel-fueled engines and vehicles, and new diesel fuel regulations to reduce the sulfur content of diesel fuel as required by advanced diesel emission control systems.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. Many different types of TACs exist, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least forty different TACs. The most important, in terms of health risk, are diesel particulate, benzene, formaldehyde, 1,3-butadiene and acetaldehyde. Public exposure to TACs is primarily addressed through Airborne Toxic Control Measures (ATCMs) promulgated by the California Air Resources Board.

Wood Smoke

Wood smoke has long been identified as a significant source of pollutants in urban and suburban areas. Wood smoke contributes to particulate matter and carbon monoxide concentrations reduces visibility and contains numerous TACs. Present controls on this source include the adoption of emission standards for wood stoves and fireplace inserts. Interest in wood smoke is likely to increase with the recent adoption of national and state standards for $PM_{2.5}$.

Yuba-Sutter Transportation Management Association

The Yuba Transportation Management Association recently received a grant from the Feather River Air Quality Management District to launch rideshare services in Yuba and Sutter Counties. The new venture will be known as the Yuba-Sutter Transportation Management Association (YSTMA).[60] Plans are underway to work with a number of local companies and agencies to provide information and hands-on assistance leading to expanded carpooling, vanpooling, public transit, and local bicycle commute options. With Marysville, Yuba City, and other area communities attracting a large number of commuters who work in the metropolitan Sacramento region, SR 70 and SR 99 are showing increased congestion. The goal of the YSTMA is to work with the community and local businesses to improve regional air quality by reducing single occupancy vehicle trips and dependency on the automobile, thereby, reducing motor vehicle emissions, the major source of air pollutants in the Sacramento Valley.

FRAQMD Indirect Source Review Guidelines

The FRAQMD has developed Indirect Source Review Guidelines for use in the environmental evaluation of projects. The guidelines provide project pollutant thresholds that, when exceeded, may be considered a significant air quality effect by the air district. The guidelines also provide a minimum list of feasible mitigation measures to reduce the air pollutant impacts from transportation and land-use projects, and a Best Available Mitigation Measures (BAMM) list. The mitigation measures in these guidelines are transportation and land use control measures. They are intended to reduce dependency on the automobile for mobility, and mitigate the air quality impacts of new development.

Heat Island Reduction Initiative

In 1997, EPA launched the Heat Island Reduction Initiative (HIRI), a multi-agency effort to work with communities and public officials to reduce the impacts of urban heat islands. Heat islands form as vegetation is replaced by asphalt and concrete for roads, buildings, and other structures necessary to accommodate growing populations. These surfaces absorb – rather than reflect – the sun's heat, causing surface temperatures and overall ambient temperatures to rise. The displacement of trees and shrubs eliminates the natural cooling effects of shading and evapotranspiration (a natural cooling process in which water transpires from a leaf's surface and evaporates into the atmosphere, reducing ambient temperature).

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[60] FRAQMD, 2004.

Because heat and sunlight increase the formation of ground-level ozone and its precursor compounds, the heat island effect can increase ozone pollution to levels higher temperatures resulting from the heat island effect can increase the demand for energy to cool homes, offices, and other buildings. HIRI, EPA and the Department of Energy (DOE) promote common-sense measures that can reduce local ambient temperature, smog, cooling energy demand, and greenhouse gas emissions.

6.4 | AGRICULTURAL RESOURCES

EXISTING SETTING

The city of Wheatland currently has no agricultural activities. However, agriculture such as orchards and row crops, along with some grazing and fallow lands, is the primary use surrounding the city (see Figure 1-11). Information for the Agricultural Resources section is taken from the City of Wheatland General Plan (1980); the Yuba County General Plan, Volume I: Environmental Setting and Background (1994); and the Environmental Setting for the City of Wheatland General Plan Update (1996).

Agricultural Soils

Farmland Classifications

Two systems are used by the United States Department of Agriculture's Natural Resources Conservation Service (USDA-NRCS) to determine a soil's agricultural productivity: the Soil Capability Classification and the Storie Index Rating System. The "prime" soil classifications of both systems indicate the absence of soil limitations, which if present, would require the application of management techniques (e.g., drainage, leveling, special fertilizing practices) to enhance production.

Soil Capability Classification

The Soil Capability Classification System takes into consideration soil limitations, the risk of damage when the soils are used, and the way in which soils respond to treatment. Capability classes range from Class I soils, which have few limitations for agriculture, to Class VIII soils, which are unsuitable for agriculture. Generally, as the ratings of the capability classification system increase, the yields and profits are more difficult to obtain. According to the City of Wheatland General Plan (1980), Class II and Class IV soils are found within the Wheatland General Plan Update Study Area.[61]

Class II soils have moderate limitations that reduce the choice of agricultural crops that can be produced, or require moderate conservation practices. Class II soils are very deep, nearly level, moderately well drained to somewhat excessively drained soils with the following capability: good cultivable land with moderate limitations; excellent agricultural land. The soils found in

[61] *City of Wheatland General Plan Land Use Element*, p. 8. 1986.

the area immediately south of Wheatland and running parallel to the Bear River are predominantly Class II soils.

Class IV soils have very severe limitations that reduce the choice of agricultural crops that can be produced, require very careful management, or both. Class IV soils are shallow to moderately deep, well drained, nearly level to moderately sloping soils with the following capability: fairly good cultivable land with limitations for most crops; poor drainage or alkali on level lands. Due to the limitations of shallow or poor soil, this land is suited primarily for pasture or hay. Class IV soils are found in a sizeable area to the north of Wheatland.

A general description of soil classification, as defined by the NRCS, is provided in Table 6-5, Soil Capability Classification. For a more detailed description of Wheatland area soils, please refer to the "Geologic and Seismic Hazards" section of the Safety and Noise chapter.

TABLE 6-5
SOIL CAPABILITY CLASSIFICATION

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

Source: USDA Soil Conservation Service, Soil Survey of Sacramento County, April 1993.

Storie Index Rating System

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

Farmland Mapping and Monitoring Program

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

TABLE 6-6
STORIE INDEX RATING SYSTEM

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

Source: USDA Soil Conservation Service, Soil Survey of Sacramento County, April 1993.

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

Important Farmland Maps for California are compiled using the modified LIM criteria (as described above) and current land use information. The minimum mapping unit is 10 acres unless otherwise specified. Units of land smaller than 10 acres are incorporated into the surrounding classification. Acres of Important Farmland are shown in Table 6-7 below. The Important Farmland Maps identify four agriculture-related categories: prime farmland, farmland of statewide importance, unique farmland, and grazing land. Each is summarized below, based on *A Guide to the Farmland Mapping and Monitoring Program (1998)*, prepared by the California Department of Conservation.

TABLE 6-7
ACRES OF IMPORTANT FARMLANDS - YUBA COUNTY (1998)

Acres Present by Type	*Acreage*
Prime Farmland	45,785
Farmland of Statewide Importance	11,032
Unique Farmland	36,928
Grazing Land	143,224
Urban and Built-Up Land	11,180
Other Land	157,476
Water	6,192
Total Acres	**411,817**

Source: California Department of Conservation, 2004, available at: www.consrv.ca.gov

Prime Farmland

Prime farmland, as defined by the California Department of Conservation, is land with the best combination of physical and chemical features able to sustain the long-term production of agricultural crops. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. The land must have also been used for the production of irrigated crops at some time during the two update cycles (a cycle is equivalent to 2 years) prior to the FMMP mapping of Yuba County in 1998.

Much of western Yuba County, including the majority of the Wheatland General Plan Update Study Area, is designated as Important Farmlands under the FMMP (Figure 6-5). The prime agricultural soils in the vicinity of Wheatland have played an important role in the development of the area's agricultural economy. Many of the soil types found in and around Wheatland fall into NRCS Capability Classes II and IV.

Farmland of Statewide Importance

Farmland of statewide importance, as defined by the California Department of Conservation, is land similar to prime farmland, but with minor shortcomings, such as greater slopes or with less ability to hold and store moisture. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date (or since 1994).

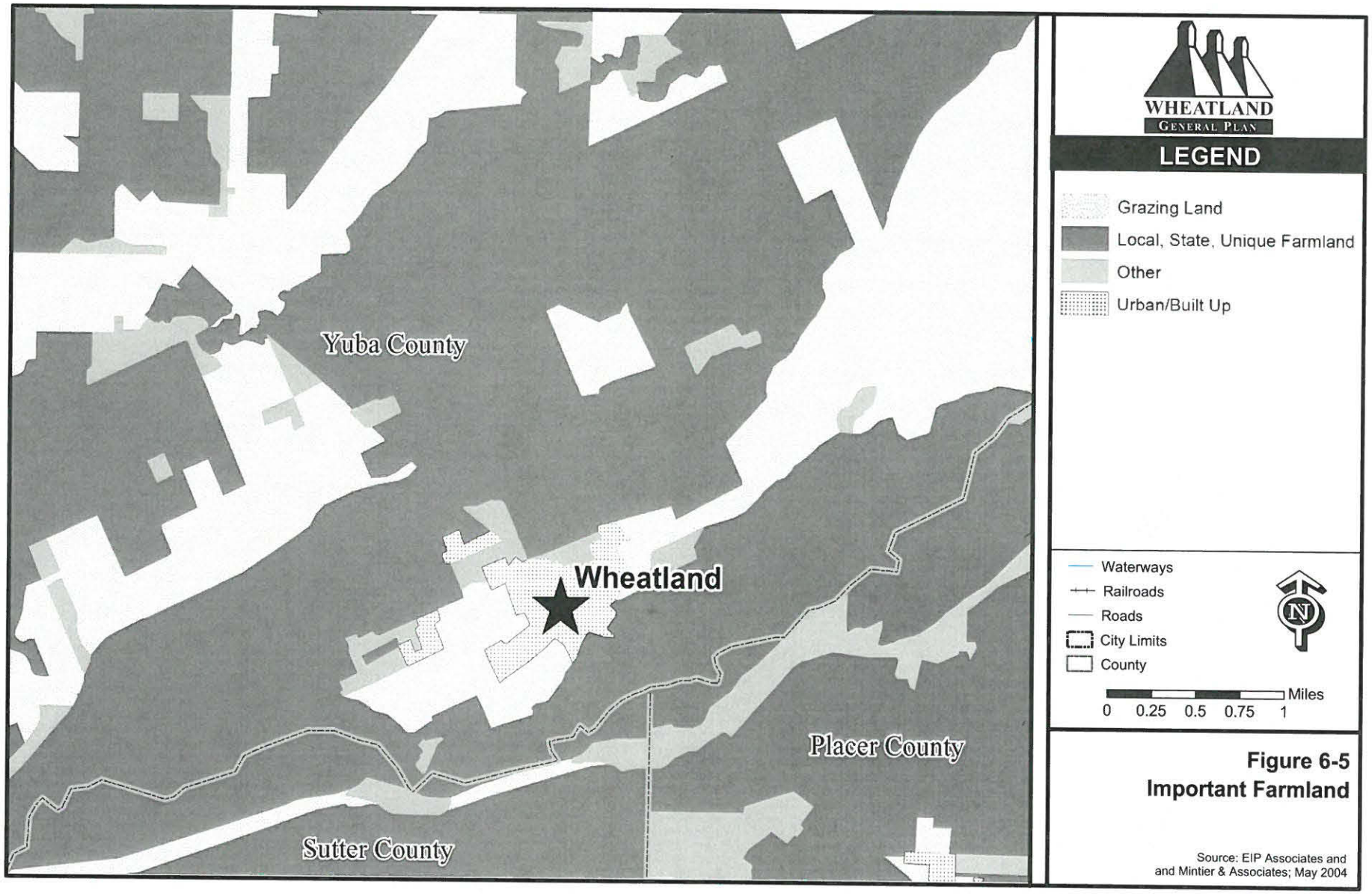

Figure 6-5
Important Farmland

Source: EIP Associates and
and Mintier & Associates; May 2004

Unique Farmland

Unique farmland, as defined by the California Department of Conservation, is land of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards, as found in some climatic zones in California. The land must have been cultivated at some time during the two update cycles prior to the mapping date (or since 1994).

Grazing Land

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

Urban and Built-Up Land

Urban and built-up land, as defined by the California Department of Conservation, is occupied with structures with a building density of at least one unit to one-half acre. Uses may include, but are not limited to, residential, industrial, commercial, construction, institutional, public administration purposes, railroad yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures, and other development purposes. Highways, railroads, and other transportation facilities are mapped as part of this unit, if they are part of a surrounding urban area.

Other Land

Other land, as defined by the California Department of Conservation, is land that is not included in any other mapping categories. The following uses are generally included: rural development, brush, timber, government land, strip mines, borrow pits, and a variety of other rural land uses.

Yuba County Farmland Conversion

One of the basic underlying premises of agricultural conversion is that the proximity of agricultural land to urban uses increases the value of the agricultural land either directly through formal purchase offers, or indirectly through recent sales in the vicinity, and through the extension of utilities and other urban infrastructure into productive agricultural areas. This premise is evidenced by the fact that property values, as measured by the County Assessor's office, are higher adjacent to the urban fringe.[62]

In Yuba County, an increase in the acreage of Unique Farmland and Farmland of Local Importance has occurred; this increase is explained by the redistribution of categories in 1994 and 1998, as well as the conversion of fallow land to irrigated cropland after a long drought. Nevertheless, the total amount of agricultural land within the County decreased by

[62] U.S. Census Data, 1990.

approximately 2 percent during the six-year period from 1992 to 1998. This decrease equates to an average loss of approximately 1,470 acres of Important Farmlands annually, which includes land both in and out of production. A portion of this farmland is being lost due to economic incentives to convert land to developed uses.

Williamson Act

The California Land Conservation Act, also known as the Williamson Act, was adopted in 1965 in order to encourage the preservation of the state's agricultural lands and to prevent their premature conversion to urban uses. Under the Williamson Act, a landowner enters into a contract with the city or county, guaranteeing that the property in question will remain under agricultural production for a ten-year period. In exchange, the landowner is taxed at a lower rate than would otherwise be the case. Yuba County does not participate in the Williamson Act program.

Agricultural Production

The *Yuba County Agricultural Crop Report for 2003* presents the most recent figures for estimated acreage, yield, and gross value of agricultural products in Yuba County.[63] The gross value of the County's agricultural production for 2003 was $154.6 million, an increase of $15.5 million over 2002. Rice continued to be the most valuable crop in the County, valued at $43.6 million. Rice was followed in value by peaches, prunes, walnuts, and cattle/calves. Within the unincorporated part of the Wheatland General Plan Update Study Area, agriculture is the primary existing land use, specifically orchards and row crops, along with some grazing and fallow lands. Estimated figures for acreage, yield, and gross value of agricultural products in the Study Area were not available at the time of writing.

REGULATORY SETTING

City of Wheatland General Plan (1980)

As described by the City of Wheatland General Plan, the gradual elimination of prime agricultural and recreational lands by expanding urban areas is a local, State, and national problem.[64] Urbanization displaces agricultural operations, forcing them to move to marginal lands. In addition to food production, agricultural lands also serve a valuable purpose in preserving aesthetic qualities and open space. Therefore, it is imperative that fragmented urban development not take place on prime agricultural lands.

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[63] Yuba County Department of Agriculture, 2004

[64] *City of Wheatland General Plan,* p. 33. 1980.

The General Plan Open-Space Element lists the following goals and policies:

Goal 1: To retain the highest quality agriculture lands for agricultural use.

Goal 2: To provide open-space through the preservation of prime agricultural lands and recreational areas.

Policy 1: Encourage the continued agricultural use of the prime lands in the planning area.

Policy 2: Future urban developments should be encouraged to locate within the existing city boundaries with further annexation discouraged.

Yuba County General Plan (1994)

The Yuba County General Plan states that agriculture is the most extensive land use in the County and the most significant component of the County's economy.[65] The Plan further states that the value of agricultural land is not limited to the provision of food, fiber, and jobs, but also includes open space, which provides psychological and aesthetic benefits as well as important wildlife habitat.

The County General Plan designates all unincorporated lands within the Wheatland Sphere of Influence as Wheatland Community Valley Agriculture. The Valley Agriculture classification is applied to areas of the County outside of community boundaries that are suitable for commercial agriculture and are desirable to retain in agricultural uses. The designation is intended to (a) protect the agricultural community from encroachment of unrelated agricultural uses that would diminish the viability of agricultural production, and to (b) encourage the preservation of agricultural land, both productive and potentially productive.

6.5 | MINERAL RESOURCES

EXISTING SETTING

According to the Yuba County General Plan,[66] raw or manufactured mineral products are used every day in developed nations. Unlike most natural resources, minerals are not renewable. A mineral resource is a concentration of elements in a particular location in such a form that a usable mineral commodity can be extracted from the deposit.

Mineral resources present in Yuba County include precious metals (gold, platinum, molybdenite), copper, zinc, Fullers earth, sand and gravel, and crushed stone. Most of Yuba County lies within the Sierra Nevada gold belt districts with sparse seam-type auriferous

[65] *Yuba County General Plan, Volume I: Environmental Setting and Background*, Section 8.2. May 1994
[66] *Yuba County General Plan, Volume I: Environmental Setting and Background*, Section 2.6. May 1994

deposits. Each of these unique resources should be carefully managed to meet the current and future requirements of the County.

The mineral resources under greatest urbanization pressure are the construction materials, especially sand and gravel, and crushed stone. Increasing urbanization in the San Francisco Bay and Sacramento areas has resulted in the depletion or obliteration of local aggregate resources. These areas are looking to more remote areas to meet their resource requirements. The *Yuba County General Plan* stresses that planning should be undertaken to ensure continued access to the mineral resources present in Yuba County.

Study Area

The California Geological Survey (formerly California Division of Mines and Geology [CDMG]) has not identified the potential for mineral resources within the proposed Wheatland General Plan Update Study Area.[67] Approximately three miles to the northwest, mineral resources have been evaluated, as described in CDMG Special Report 132 (1988) which delineated the Yuba City-Marysville production-consumption region for Portland Cement Concrete (PCC) grade aggregate. However, the information given in the report is not adequate to identify the potential for resources in close proximity to the Study Area. Borings from drill holes less than one mile outside the northwestern boundary of the Study Area indicate the potential for commercial grade aggregate deposits.

The Yuba County General Plan identifies one mineral resource extraction site within the Wheatland General Plan Update Study Area (Figure 6-6).[68] The Wheatland Clay Pit is located approximately 2.5 miles north of downtown Wheatland in the Nichols Ranch area and is operated by Gladding McBean. The disturbed area is approximately one acre.

6.6 | WATER RESOURCES

BACKGROUND

The Yuba County General Plan states that consideration of growth in the county must go hand-in-hand with consideration of watershed environmental quality, in order to protect the quantity and quality of water resources.[69] Natural waterways provide water for domestic, agricultural, and industrial uses are invaluable recreational resources and provide vital habitat for native plants and wildlife. Wetlands such as riparian forests, marshes, and swamps are crucial to maintaining surface water quality, due to their ability to absorb and filter pollutants that would otherwise migrate into rivers, lakes, and reservoirs. Wetlands also stabilize riverbanks, reduce the effects of flooding, and serve as buffers between waterways and other land uses.

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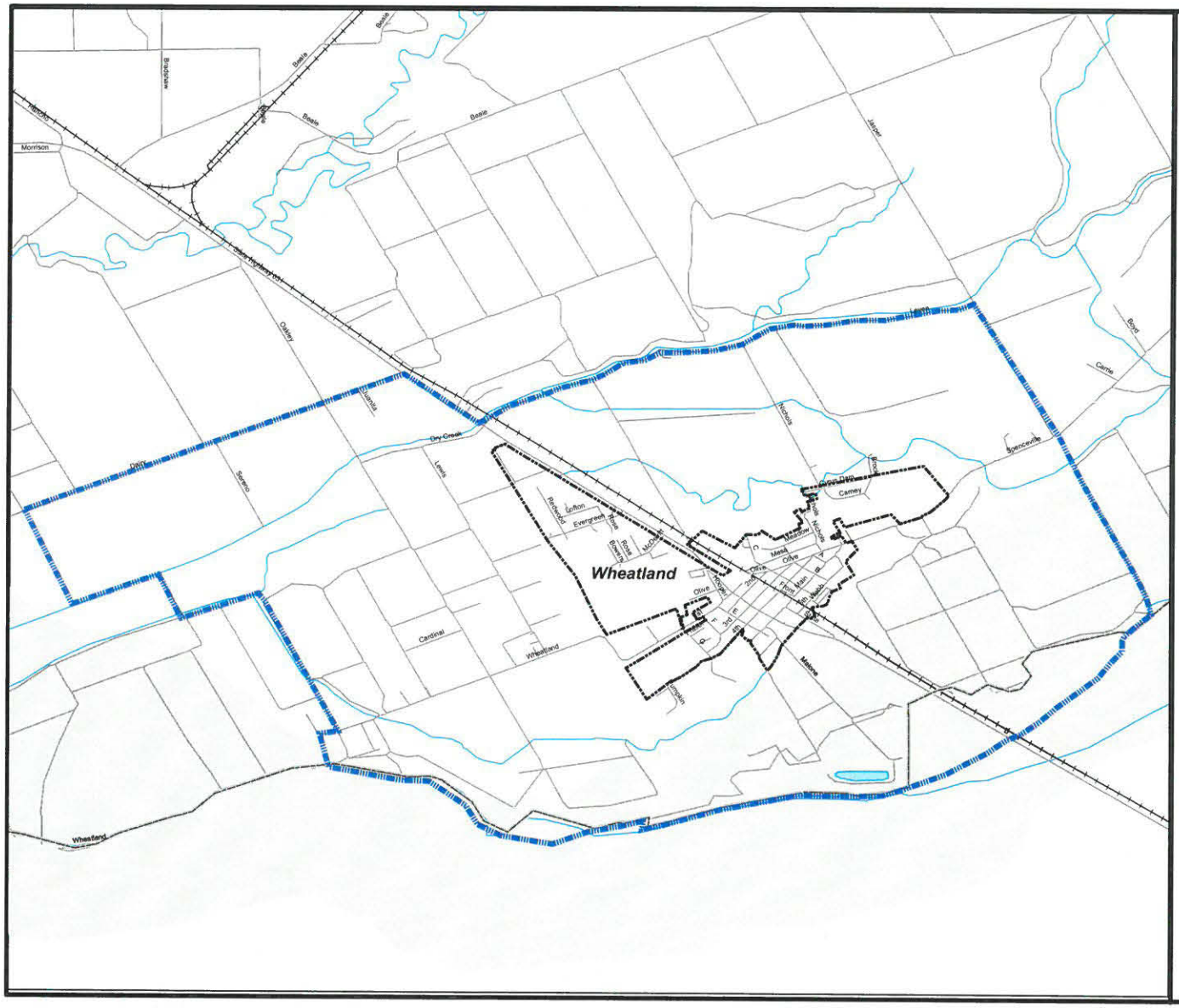
[67] City of Wheatland. *Environmental Setting for the City of Wheatland General Plan Update,* Section 4.1. April 1996

[68] *Yuba County General Plan, Volume I: Environmental Setting and Background,* Figure 2.11. May 1994

[69] *Yuba County General Plan, Volume I: Environmental Setting and Background,* Figure 2.11. May 1994



WHEATLAND
GENERAL PLAN

LEGEND

Groundwater Recharge Areas

Study Area

Waterways

Railroads

Roads

City Limits

Yuba County

Miles

0 0.25 0.5 0.75 1

Figure 6-6
Groundwater Recharge Areas

Source: EIP Associates and and Mintier & Associates; May 2004

SURFACE WATER

The Study Area is located in the Bear River watershed.[70] The Bear River is one of the primary drainages in Yuba County, with headwaters based near Emigrant Gap and Lake Spaulding in the Sierra Nevada. The river flows southwest to a point north of Auburn, where it turns toward the west and its eventual confluence with the Feather River. The Bear River forms the southern boundary of the Study Area and is located immediately south of the Yuba/Sutter County line.

Other watercourses in the immediate vicinity of the city of Wheatland include: Dry Creek, which flows westerly approximately one mile north of the city; Grasshopper Slough, which is between Dry Creek and the city, and roughly parallels Dry Creek until the two merge approximately four miles west of the city; and Grasshopper Slough South, which originates in the southern part of the city of Wheatland, and flows west to merge with Grasshopper Slough. Surface waters in the city generally drain into Grasshopper Slough or Grasshopper Slough South. Major surface water drainages identified in the Study Area are described in Section 5.4

During the Gold Rush era, siltation caused by hydraulic mining in the Sierra Nevada foothills extensively altered the original hydrological characteristics of the Sacramento Valley, resulting in significant damage. Streambeds rose by as much as 70 feet in the Wheatland vicinity, causing widespread flooding. The area's drainage patterns were altered further by the construction of levees and agricultural canals, as well as land leveling for farming operations. Some channels, including Grasshopper Slough, have been blocked.

Surface Water Quality

Water quality in the Study Area is primarily characterized by surrounding land uses. In the Study Area, the water quality of Grasshopper Slough, Dry Creek, and the Bear River could be influenced by both adjacent and upstream rural/agricultural land uses. Possible constituents associated with rural/agricultural land uses include fertilizers and pesticides, sediments, and to a lesser extent, heavy metals, petroleum hydrocarbons, and other pollutants attributed to the use of vehicles and agricultural equipment, as well as historic mining operations.

Agricultural Uses in the Study Area

The Study Area currently consists of agricultural, residential, commercial, and industrial land uses. The agricultural crops are usually treated with pesticides and/or herbicides. Although most chemicals used for agricultural purposes in the last ten years tend to have short residual life in the soil, there is the potential that chemicals could leach into detained water on the site.

According to the California DPR, the top five agricultural pesticides used in Yuba County in 2002 (the most recent year for which data is available) were petroleum oil, mineral oil, sulfur, copper sulfate (pentahydrate), and propanil.[71] Petroleum oil, mineral oil, and sulfur are used

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[70] *Yuba County General Plan, Volume I: Environmental Setting and Background*, Section 4.1.1. May 1994

[71] California Department of Pesticide Regulation 2004. *Top Five Pesticides Used by County, 2002.*

predominantly on orchards, while copper sulfate is used on rice, walnuts and for landscape maintenance and propanil is used on rice.

The Yuba County General Plan states that major importation of water to the Bear River watershed occurs near the headwaters.[72] Some irrigation spill and ditch seepage enters from the ridge between the South Yuba and Bear Rivers. Exports from the Bear River watershed are made through conveyance facilities owned by Pacific Gas and Electric (PG&E) and the Nevada Irrigation District (NID). The diversions include nearly all of the imported water and some of the natural flow. The diverted water is used for irrigation, power generation, and domestic uses in the Auburn area. The net effect of the upstream uses, exports, and imports in the Yuba and Bear River basins has been to deplete the streamflow at the base of the foothills. However, the average depletion of the Bear River above Wheatland is relatively minor due to the imports of water from the Yuba Basin, located farther upstream. The Camp Far West Reservoir, located approximately 12 miles east of the Study Area, is fed by the Bear River, Rock Creek, and other minor tributaries. The reservoir has a capacity of 103,000 acre-feet and is owned by the South Sutter Water District.

A major tributary to the Bear River is Dry Creek, which runs parallel to the Bear River and is located near the northern Study Area boundary. Dry Creek conveys approximately 11,200 acre-feet of water per year, imported via irrigation spill and flows from the Wolf Creek drainage north of Auburn.

GROUNDWATER

The city of Wheatland is located above the Sacramento Valley Groundwater Basin, a 5,000 square mile basin which encompasses Butte, Colusa, Glenn, Placer, Sacramento, Solano, Sutter, Tehama, Yolo, and Yuba Counties. Specifically, the city lies atop the South Yuba Subbasin, a 138 square mile aquifer system bounded on the north by the Yuba River, on the west by the Feather River, on the south by the Bear River, and on the east by the Sierra Nevada.[73] Elevations range from about 150 feet in the northwest corner of the subbasin to about 30 feet in the southwest corner near the confluence of the Feather and Bear Rivers.

The South Yuba Subbasin is comprised of water-bearing continental deposits of Quaternary (Recent) to Late Tertiary (Miocene) age. The cumulative thickness of these deposits increases from a few hundred feet near the Sierra Nevada foothills to over 1,400 feet along the western margin of the basin. The base of the aquifer system overlies Pre-Tertiary metamorphosed igneous and sedimentary rock of the Sierra Nevada block. The deposits include historic dredger tailings as well as alluvium, stream channel deposits, and floodplain deposits.

The Bear River channel has been identified as a significant groundwater recharge area for Yuba County.[74] Groundwater recharge areas identified in the Study Area are illustrated in Figure 6-6.

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[72] *Yuba County General Plan, Volume I: Environmental Setting and Background*, Section 4.1.1. May 1994

[73] DWR. *Sacramento Valley Groundwater Basin, South Yuba Subbasin*. 2003.

[74] *Yuba County General Plan, Volume I: Environmental Setting and Background*, Figure 4-5. May 1994

Groundwater Quality

Water quality is generally excellent in most portions of the South Yuba Subbasin, particularly at depths below 100 feet from the ground surface. The high quality of the groundwater is indicated by its low salinity. In general, total dissolved solids (TDS) concentrations are below 500 milligrams per liter (mg/L) throughout the Subbasin. State-monitored water quality wells in the Subbasin indicate a median TDS concentration of 224 mg/L. The groundwater chemistry is primarily calcium magnesium bicarbonate or magnesium calcium bicarbonate. The City of Wheatland currently (June 2004) draws its entire water supply from six (6) municipal well sites.

Groundwater quantity within the South Yuba Subbasin varies by location, but overall reliance upon groundwater for domestic and agricultural use in the Sacramento Valley has increased steadily over the past few decades. The number of domestic and irrigation wells in the region increased from 9,109 in 1970 to 37,046 in 2002.[75] The reasons for this increase include more demand, the need for reliable water supplies, the high costs of new surface water storage, and environmental concerns leading to the reduced diversion of surface water.

The California Department of Water Resources has estimated natural and applied inflows and outflows for the South Yuba Subbasin.[76] Basin inflows include natural recharge of 53,700 acre-feet per year (afy) and applied recharge of 26,000 afy. Basin outflows include urban extraction of 6,000 afy, agricultural extraction of 93,400 afy, and subsurface outflow of 24,900 afy. The figures indicate a net deficit of 44,600 afy. Estimated total groundwater storage capacity in the South Yuba Subbasin is approximately 1,090,000 acre-feet.

Between 1950 and 1982, the Subbasin became increasingly overdrafted.[77] Groundwater storage declined by 280,000 acre-feet, and a well-developed cone of depression formed. Within the cone of depression, groundwater levels dropped below adjacent river levels on the Bear, Feather, and Yuba Rivers, and fell below sea level as well. Beginning in 1982, an increase in surface water irrigation supplies, and corresponding reduction in groundwater pumping, allowed groundwater levels to return to an elevation above sea level. The depth to ground water in the Wheatland area is currently (June 2004) approximately 80 to 100 feet. The City of Wheatland's wells draw water from depths ranging from 200 feet to 400 feet below grade. Currently, groundwater quantity problems in the City's wells do not exist.

The Yuba County General Plan recognizes that surface water supply cannot be divorced from consideration of groundwater recharge.[78] The Plan states that some surface water must be reserved for groundwater recharge, as well as for protection of the aquatic environment.

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[75] Fulton, Allan, Toccoy Dudley, and Kelly Staton. *Incentives for Groundwater Management in the Northern Sacramento Valley*. 2002.
[76] DWR. *Sacramento Valley Groundwater Basin, South Yuba Subbasin*. 2003.
[77] Yuba County Water Agency. *Ground Water Resources and Management in Yuba County*. 1992.
[78] *Yuba County General Plan, Volume I: Environmental Setting and Background*, Section 4.1.4. May 1994.

Regulatory Setting

Water quality objectives for all waters in the state are established under applicable provisions of Section 303 of the federal Clean Water Act (CWA) and the California Porter-Cologne Water Quality Control Act.

Inland Surface Water Plan

In March 2000, the State Water Resources Control Board (SWRCB) adopted Inland Surface Water Plan/Enclosed Bays and Estuaries Program (ISWP/EBEP) Phase I water quality objectives for inland surface waters.[79] Included among the provisions of these objectives are: (a) that all point and nonpoint discharges must comply with identified water quality objectives; and (b) that effluent limits are to be imposed, either through National Pollutant Discharge Elimination System (NPDES) permits or Waste Discharge Requirements (WDRs), such that water quality objectives shall not be exceeded in the receiving water outside a designated mixing zone. The Central Valley Regional Water Quality Control Board (CVRWQCB) is responsible for ensuring that stormwater discharges meet the adopted numerical objectives within the Wheatland General Plan Update Study Area.

California General Construction Activity Stormwater Permit

The U.S. Environmental Protection Agency (U.S. EPA) and the SWRCB regulate point sources of pollution, such as construction sites, that have the potential to discharge pollutants into the waters of the United States. This is accomplished through the issuance of NPDES stormwater discharge permits. NPDES Phase II regulations took effect in March 2003, requiring that applicants proposing construction activities involving disturbance of from one to five acres, and associated stormwater discharge, must obtain a NPDES permit from the State.[80] Construction activities larger than five acres were already regulated, under NPDES Phase I (1990). (Phase II also required that small [population < 100,000] municipal separate storm sewer system [MS4] operators obtain a NPDES permit.) Landowners are responsible for applying for coverage under the permit and complying permit requirements, but may delegate specific duties to developers and contractors by mutual consent.

Permit applicants are required to prepare, and retain at the construction site, a Storm Water Pollution Prevention Plan (SWPPP), which describes the site, erosion and sediment controls, means of waste disposal, implementation of local plans, control of post-construction sediment and erosion control measures and maintenance responsibilities, and non-stormwater management control. Dischargers are also required to inspect construction sites before and after storms to identify stormwater discharge from construction activity, and to identify and implement controls where necessary.

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[79] SWRCB. *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.* 2000.

[80] U.S. Environmental Protection Agency. *Construction General Permit.* 2004.

According to the California Department of Water Resources (DWR),[81] basic information for many of the state's groundwater basins is lacking. To this end, the California Legislature mandated in the Budget Act of 1999 that the Department of Water Resources prepare:

> "... the statewide update of the inventory of groundwater basins contained in Bulletin 118-80, which includes, but is not limited to, the following: the review and summary of boundaries and hydrographic features, hydrogeologic units, yield data, water budgets, well production characteristics, and water quality and active monitoring data; development of a water budget for each groundwater basin; development of a format and procedures for publication of water budgets on the Internet; development of the model groundwater management ordinance; and development of guidelines for evaluating local groundwater management plans."

Groundwater use in the Sacramento Valley Groundwater Basin is largely unregulated, although some local agencies in the Sacramento Valley have chosen to write groundwater management plans based on AB 3030, the Groundwater Management Act of 1992 [*California Water Code Sections 10750-10756*].[82] The Groundwater Management Act provides a systematic procedure for an existing local agency to develop a groundwater management plan.

6.7 | CULTURAL RESOURCES

EXISTING SETTING

The Cultural Resources analysis evaluates known prehistoric and historic uses in the Study Area, and the potential for existence of currently unknown heritage sites. A discussion of regulatory context is also included. Information used in this section is derived from Lindstrom's *City of Wheatland General Plan Update Heritage Resource Inventory – Wheatland, California / Yuba, Sutter, and Placer Counties* (1996), as well as from Peak Associates (2004).

Environmental review policies, in compliance with California Environmental Quality Act (CEQA) guidelines and county procedures, require that heritage resources be considered as part of the environmental assessment process. In compliance with CEQA regulations, a heritage resource evaluation was conducted for the Wheatland General Plan Update Study Area in order to analyze the potential impacts to extant heritage resources which could be affected by the adoption of the proposed general plan, and to determine what type of further study will be required in any given area during project level review. In order to accomplish this, the scope of the heritage resource evaluation is threefold: (1) to provide a broad overview of the history and prehistory of the Wheatland General Plan Update Study Area; (2) to conduct a literature search to identify existing heritage resources and provide a compilation of known heritage sites and their current condition (if known); and (3) to develop a sensitivity assessment of the Study Area based upon the expected likelihood of various locales to contain heritage resources. The Cultural Resources section presents the findings of this evaluation.

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[81] DWR. *California's Groundwater: Bulletin 118*. 2004.
[82] DWR. *AB 3030 – Groundwater Management Act*. 2004.

Prior archaeological investigations indicate that the overall archaeological sensitivity of the general region ranges from low to high, depending upon the particular microenvironment. The potential exists for both historic and prehistoric heritage resources to be found virtually anywhere, even in areas thought to be of relatively low sensitivity. Areas of "non-sensitivity" for heritage resources do not exist within the Study Area. Overall, the Study Area is highly sensitive to contain historic resources and of low sensitivity to contain prehistoric resources. However, one prehistoric site is reported in the Study Area, consisting of a possible midden deposit reported to contain human remains. The site is the only known prehistoric site in the Study Area, and has been damaged by agricultural activities. The site was recorded in 1977 as CA-YUB-751.

Research entailed a general literature review of prehistoric and historic sources concerning the project area (see Works Cited section). Apart from a vehicular tour of the Wheatland Study Area, no archaeological field reconnaissance was conducted. Archaeological inventories on file with North Central Information Center at California State University, Sacramento (NCIC-CSUS) and the Northeast Information Center at California State University, Chico (NEIC-CSUC) were conducted in order to identify any recent properties listed on the National Register, state registers and other listings, including the files of the State Historic Preservation Office.

Prefield research was also initiated with representatives of the Wheatland Historical Society and the City of Wheatland. Detailed published and unpublished information on the history of Wheatland is almost exclusively maintained by the Wheatland Historical Society.[83] Wheatland City Hall maintains an incomplete file of city documents (original ordinances and resolutions since ca. 1876); no historical maps are included in this collection.[84] An 1874 map showing lot ownership in Wheatland has been prepared by Peggy Luyster of the Yuba County Recorder's Office (on file at Wheatland Historical Society).[85] Sanborn Map Company Fire Insurance Maps for the City of Wheatland, December 1909, are also maintained by the Wheatland Historical Society. Other regional historical organizations and museums contain general regional histories as well, but do not carry specific information on the history of Wheatland (Mary Aaron Museum, Marysville, Karen Burrow, Curator, personal communication 1996; Sutter County Historical Society, Yuba City, Julie Stark, Assistant Curator, personal communication 1996). Oral histories were collected from residents knowledgeable in local history. In addition to the official records and maps for archaeological sites and surveys in Placer, Sutter, and Yuba counties, the following historic references were also reviewed: the National Register of Historic Places Listed Properties and Determinations of Eligibility – (1990 plus updates), California Historical Landmarks (1990 plus updates), California Points of Historical Interest (1992 plus updates), and the Directory of Properties in the Historic Resources Inventory (HRI, June 1994). Other local histories and secondary sources consulted are listed in the Works Cited sections of this report. General county histories and general information on the regional history are on file with the Yuba County Library, California Room in Marysville (Robertson, personal communication, 1996).

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[83] Neyens, personal communication. 1996.
[84] Belden, personal communication. 1996
[85] Luyster, personal communication. 1996.