

PUBLIC DRAFT

Sutter Subbasin GSP Amendment

Chapter 2: Plan Area

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Sutter Subbasin GSAs

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Acronyms

AB	Assembly Bill
AF	acre-feet
AFY	acre-feet per year
ASR	Aquifer storage and recovery
AWMP	Agricultural Water Management Plan
CASGEM	California Statewide Groundwater Elevation Monitoring
CDEC	California Data Exchange Center
CDP	Census Designated Place
CSD	Community Services District
CVP	Central Valley Project
CV-RWQCB	Central Valley Regional Water Quality Control Board
CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
CWC	California Water Code
DDW	Division of Drinking Water, California State Water Resources Control Board
DPR	Department of Pesticide Regulation
DWR	California Department of Water Resources
GAMA	Groundwater Ambient Monitoring and Assessment
GMP	Groundwater Management Plan
GPS	Global Positioning System
GQTM	Groundwater Quality Trend Monitoring
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IC	Irrigation Company
ILRP	Irrigated Lands Regulatory Program
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan
MWC	Mutual Water Company
NWIS	United States Geological Survey National Water Information System

PLSS	Public Land Survey System
RD	Reclamation District
SB	Senate Bill
SCEHD	Sutter County Environmental Health Division
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nutrient Management Plan
SWP	State Water Project
SWRCB	State Water Resources Control Board
SWRP	Storm Water Resource Plan
USBR	United States Bureau of Reclamation
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
WD	Water District
WDL	Water Data Library

2. PLAN AREA

2.1 Plan Area Description

The Plan Area covered by this GSP includes the entirety of the Sutter Groundwater Subbasin (California Department of Water Resources [DWR] Basin 5-021.62), covering approximately 445 square miles of the Sacramento Valley floor and the area surrounding the foothills of the Sutter Buttes. The Sutter Subbasin is part of the larger Sacramento Valley Groundwater Basin located within the Sacramento River Hydrologic Region. Major features within the Sutter Subbasin include portions of the Sutter Buttes, the Feather and Sacramento Rivers, Sutter Bypass, the cities of Live Oak and Yuba City, and Sutter National Wildlife Refuge.

This section of the Sutter Subbasin GSP describes the Sutter Subbasin and includes the following:

- A detailed description of geographic areas covered by the GSP in relation to SGMA governing entities, jurisdictional boundaries, existing land use and related water sources, well density, and areas of de minimis groundwater pumping.
- Descriptions of existing water resources monitoring and management programs, including discussions of how they may limit operational flexibility and how the Plan will adapt to such limits.
- Descriptions of existing conjunctive use programs in the Subbasin.
- Discussion of general plans and other land use plans and how implementation of existing land use plans (both within and outside of the Subbasin) may change water demands or impact sustainable groundwater management, and how the Plan addresses such potential effects is also discussed.
- Descriptions of local relevant well permitting processes as they relate to land use planning.
- Any additional Plan elements included per California Water Code (CWC) §10727.4, as appropriate.

In total, this section of the Sutter Subbasin GSP satisfies §354.8 of the GSP Emergency Regulations.

2.1.1 Plan Area Definition

The Sutter Subbasin is located in the Sacramento Valley Groundwater Basin and adjoins the following seven subbasins: Butte, Wyandotte, North Yuba, South Yuba, North American, Yolo, and Colusa. The northern boundary of the Sutter Subbasin consists of the Sutter County-Butte County line, except for the portion of Biggs-West Gridley Water District Groundwater Sustainability Agency (GSA) within Sutter County that is included within the Butte Subbasin. The eastern boundary consists primarily of the Sutter County-Yuba County line to its terminus just north of Nicolaus Census Designated Place (CDP), where the Feather River forms Sutter Subbasin's eastern

boundary until the Feather River reaches the Yolo County line. The southern and western boundaries of the Sutter Subbasin follow the Sutter County boundary shared with Yolo and Colusa Counties. The Plan Area covered by this GSP, the entirety of the Sutter Subbasin, is shown in **Figure 2-1**.

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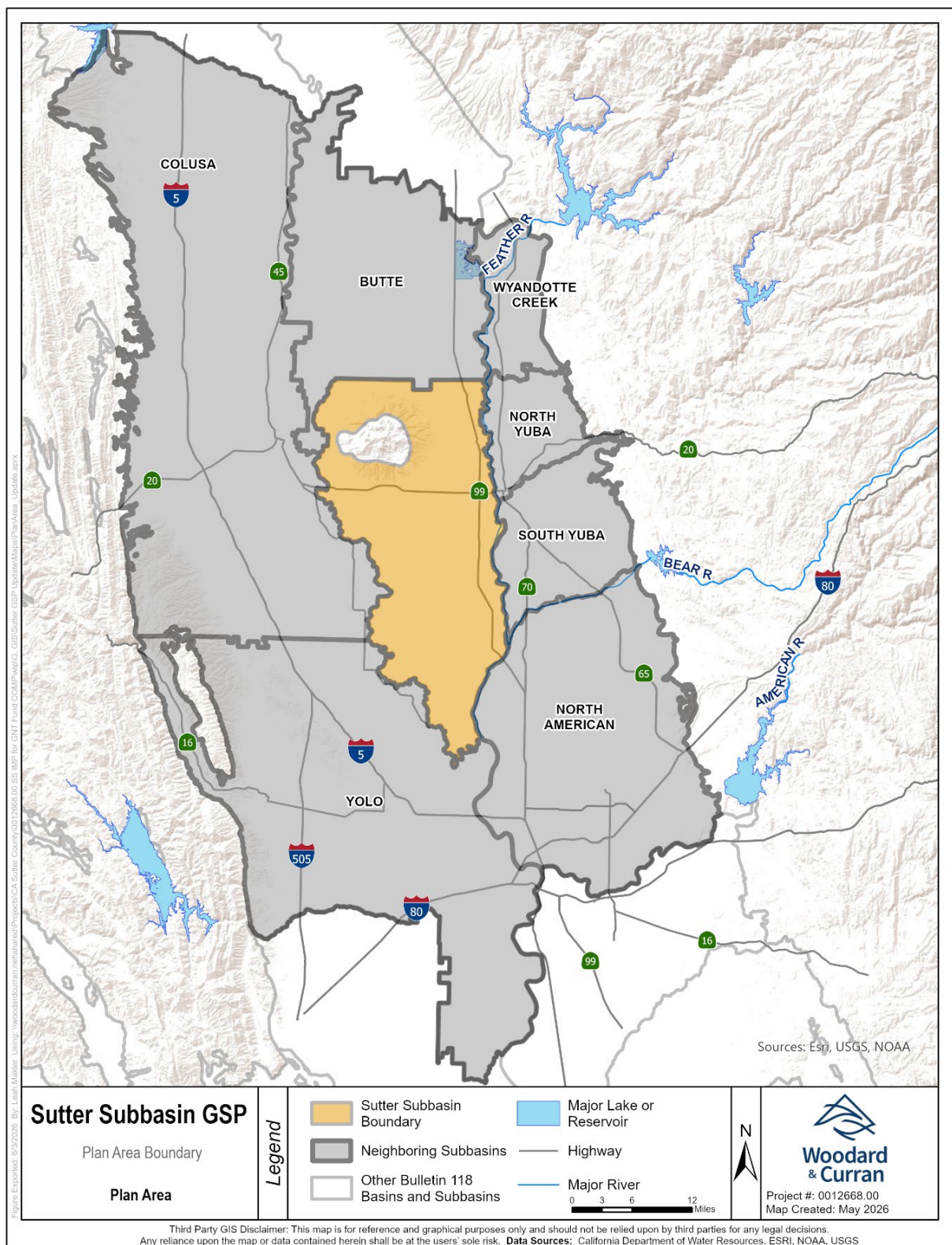


Figure 2-1. Plan Area

2.1.2 Plan Area Jurisdictional Boundaries

The Plan Area for this GSP consists of the entire Sutter Subbasin of the Sacramento Valley Groundwater Basin, which includes the following nine GSAs (**Figure 2-2**):

- Butte Water District - Sutter
- City of Live Oak
- City of Yuba City
- County of Sutter
- Reclamation District No. 70
- Reclamation District No. 1500
- Reclamation District No. 1660
- Sutter Extension Water District
- Sutter Community Services District

All GSAs within the Sutter Subbasin are exclusive GSAs. There are no adjudicated areas or areas covered by an Alternative Plan within the Sutter Subbasin.

Table 2-1 summarizes the jurisdictional areas within the Sutter Subbasin. These include counties, cities, water districts, irrigation districts, reclamation districts, mutual water companies, and state and federal agencies. Federal lands within the Sutter Subbasin consist primarily of the Sutter National Wildlife Refuge (operated by the United States Fish and Wildlife Service) and state lands consist primarily of a portion of Sutter Buttes State Park and wildlife and ecological preserve land along the Sutter Bypass and Feather River operated by the California Department of Parks and Recreation and California Department of Fish and Wildlife, respectively (**Figure 2-3**). The Subbasin also includes wildlife areas, such as Gray Lodge Wildlife Area and Lake of the Woods State Wildlife Area, as well as protected areas and private and publicly managed easements in addition to the following private duck clubs (**Figure 2-4**):

- Live Oak Duck Club
- North Butte Duck Club
- Sutter Butte Duck Club
- Sutter Basin Duck Club
- Duck Blind at Sutter Refuge

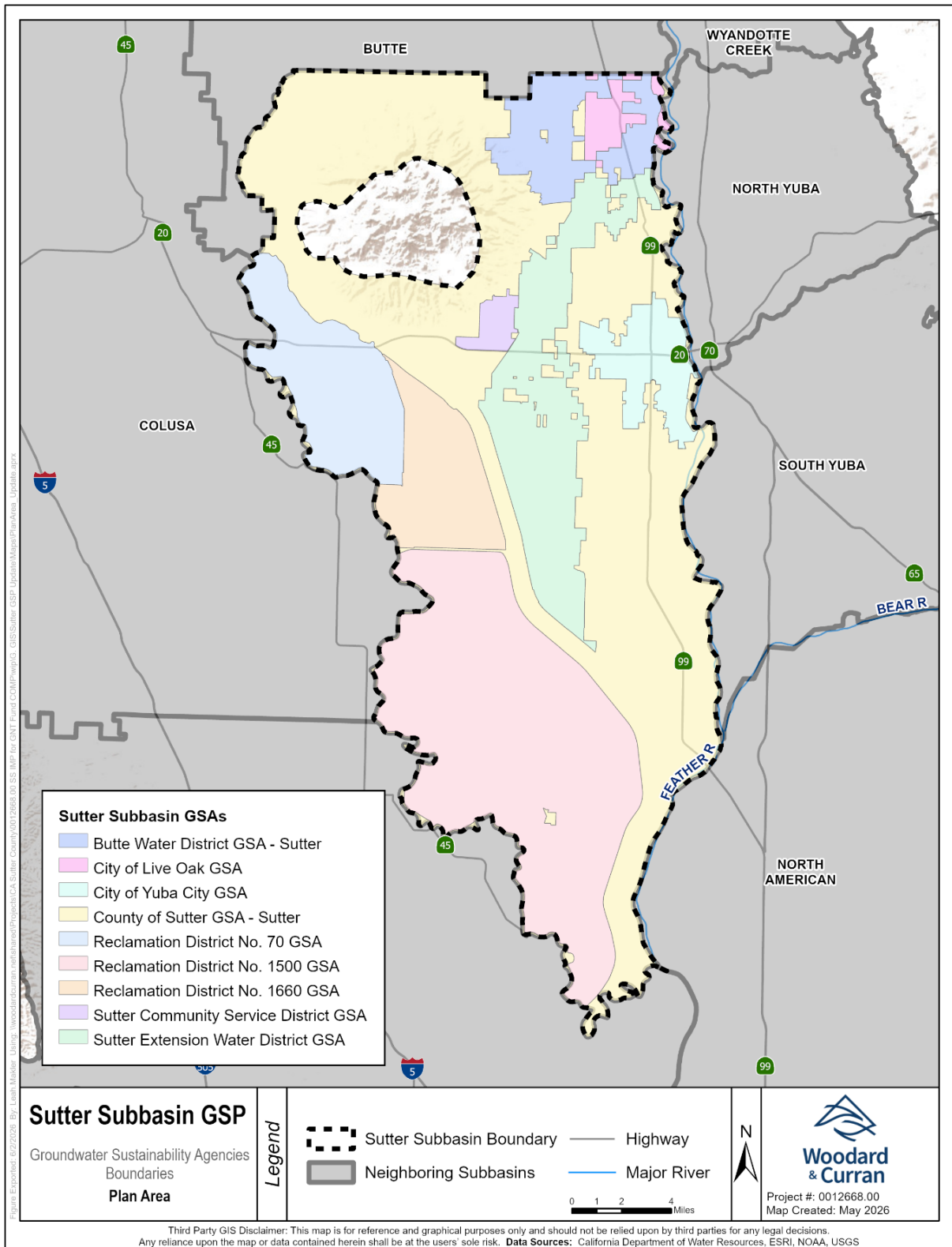


Figure 2-2. Sutter Subbasin Groundwater Sustainability Agencies

Table 2-1. Jurisdictional Areas in the Sutter Subbasin

Jurisdictional Area	List of Entities
Counties	• Sutter County
Cities	• City of Live Oak • City of Yuba City
Tribal Land	• N/A
Agencies with Water Management Responsibilities	• Butte Slough Irrigation Company (IC) • Butte Water District (WD) • East Nicolaus Mutual Water Company (MWC) • Feather WD • Garden Highway MWC • M Chaplin, B Lewis, D Lewis • Meridian Farmers Water Company (WC) • Mitzue Oji Family Partnership • Newhall Land & Farming Co. • Oji Brothers Farm Inc. • Oswald WD • Pelger MWC • Sutter Bypass Butte Slough Water Users Association • Sutter County Water Works District No. 1 (Robbins) • Sutter Extension WD • Sutter MWC • Tisdale Irrigation & Drainage Co. • Tudor MWC • Sutter Community Services District (CSD) • City of Yuba City • City of Live Oak • Reclamation District 70 • Reclamation District 777 • Reclamation District 783 • Reclamation District 1500 • Reclamation District 1660 • Reclamation District 2054 • Reclamation District 2056
Areas Covered by Relevant General Plans	• Sutter County • City of Live Oak • City of Yuba City
Federal Land	• United States Fish and Wildlife Service
State Land	• California Department of Parks and Recreation • California Department of Fish and Wildlife

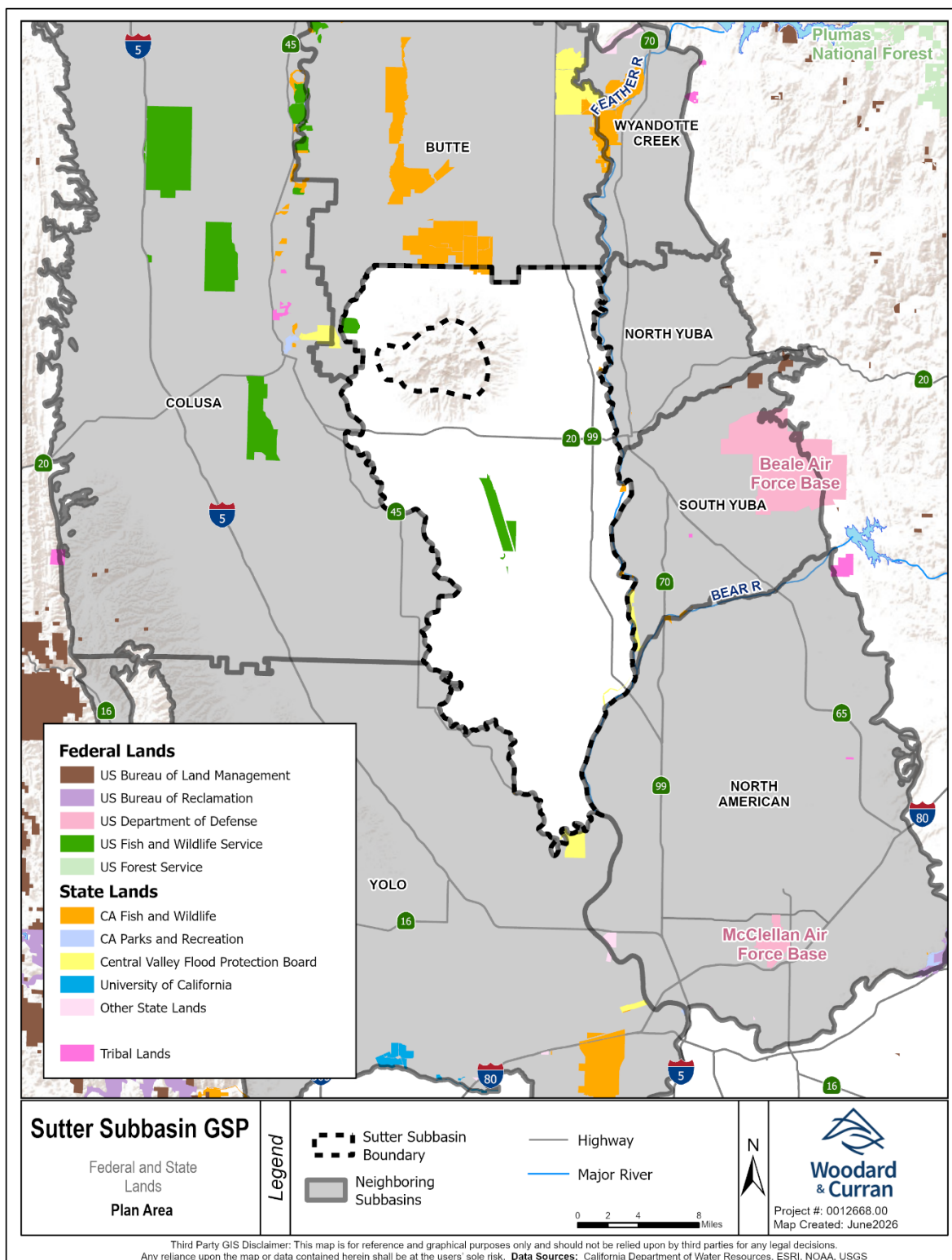


Figure 2-3. Federal and State Lands in the Sutter Subbasin

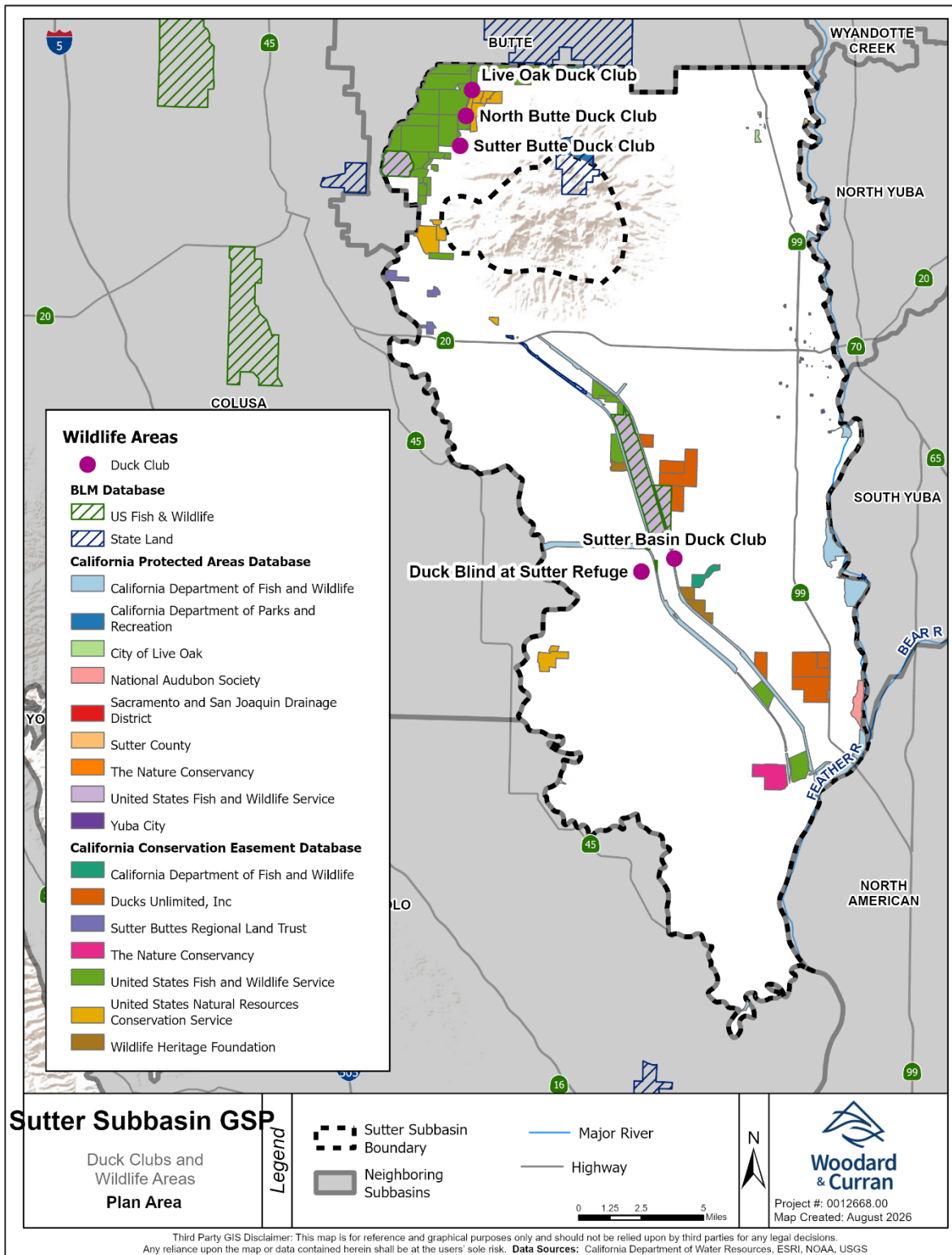


Figure 2-4. Duck Clubs and Wildlife Areas

Cities within the Sutter Subbasin include the City of Live Oak and the City of Yuba City. Sutter County is the only county overlying the Sutter Subbasin (**Figure 2-5**). There are no federal- or state-recognized tribal communities in the Sutter Subbasin; however, the following tribes have been identified as possibly having a cultural and traditional affiliation within the County:

- Estom Yumeka Maidu Tribe of the Enterprise Rancheria
- Mooretown Rancheria of Maidu Indians
- United Auburn Indian Community of the Auburn Rancheria
- Yocha Dehe Wintun Nation
- Shingle Springs Band of Miwok Indians
- Pakan'yani Maidu of Strawberry Valley Rancheria

Agencies with water management authority include reclamation districts, water districts, cities, mutual water companies, irrigation companies, and private farmland shown in **Figure 2-6** and listed in **Table 2-1**.

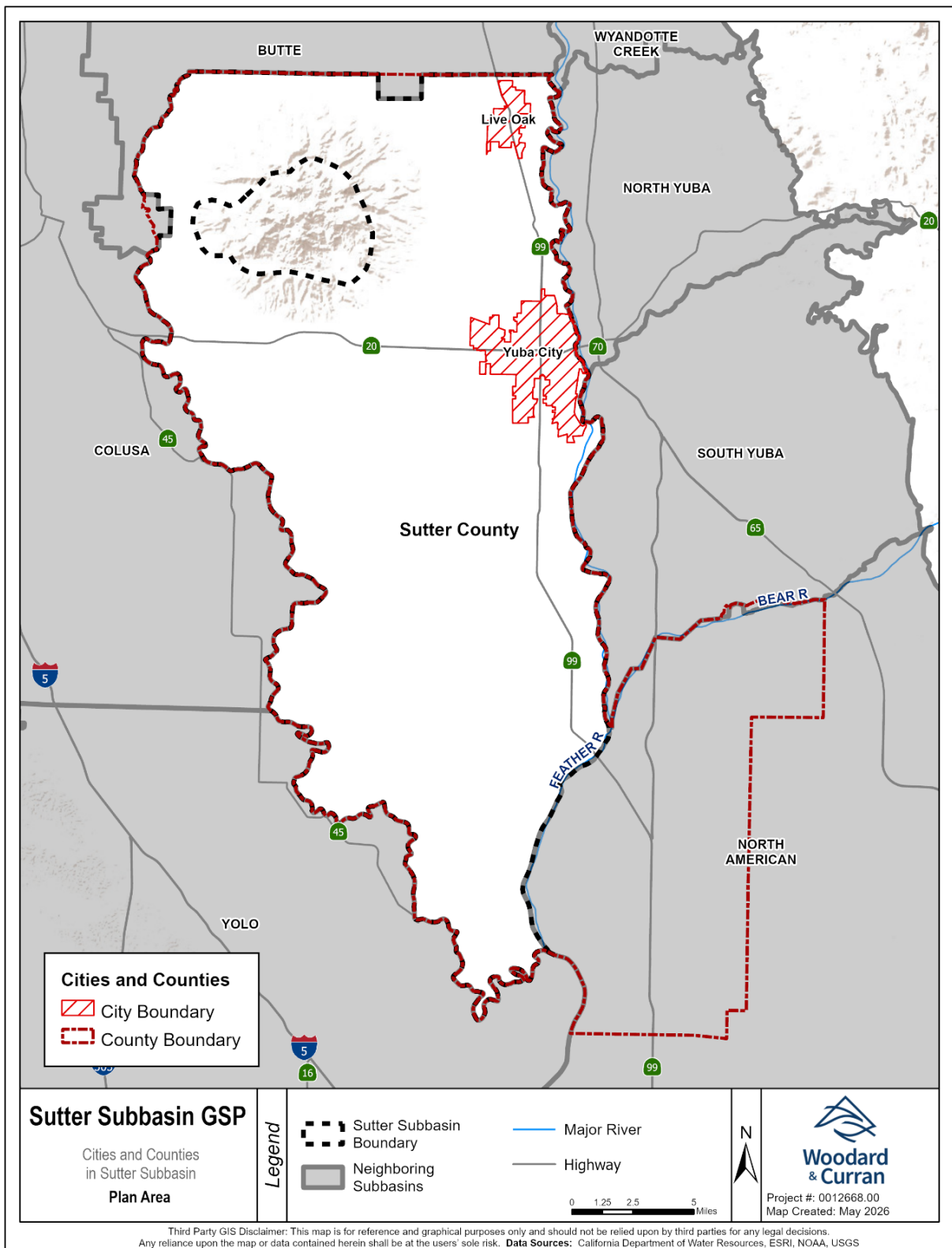


Figure 2-5. Cities and Counties in the Sutter Subbasin

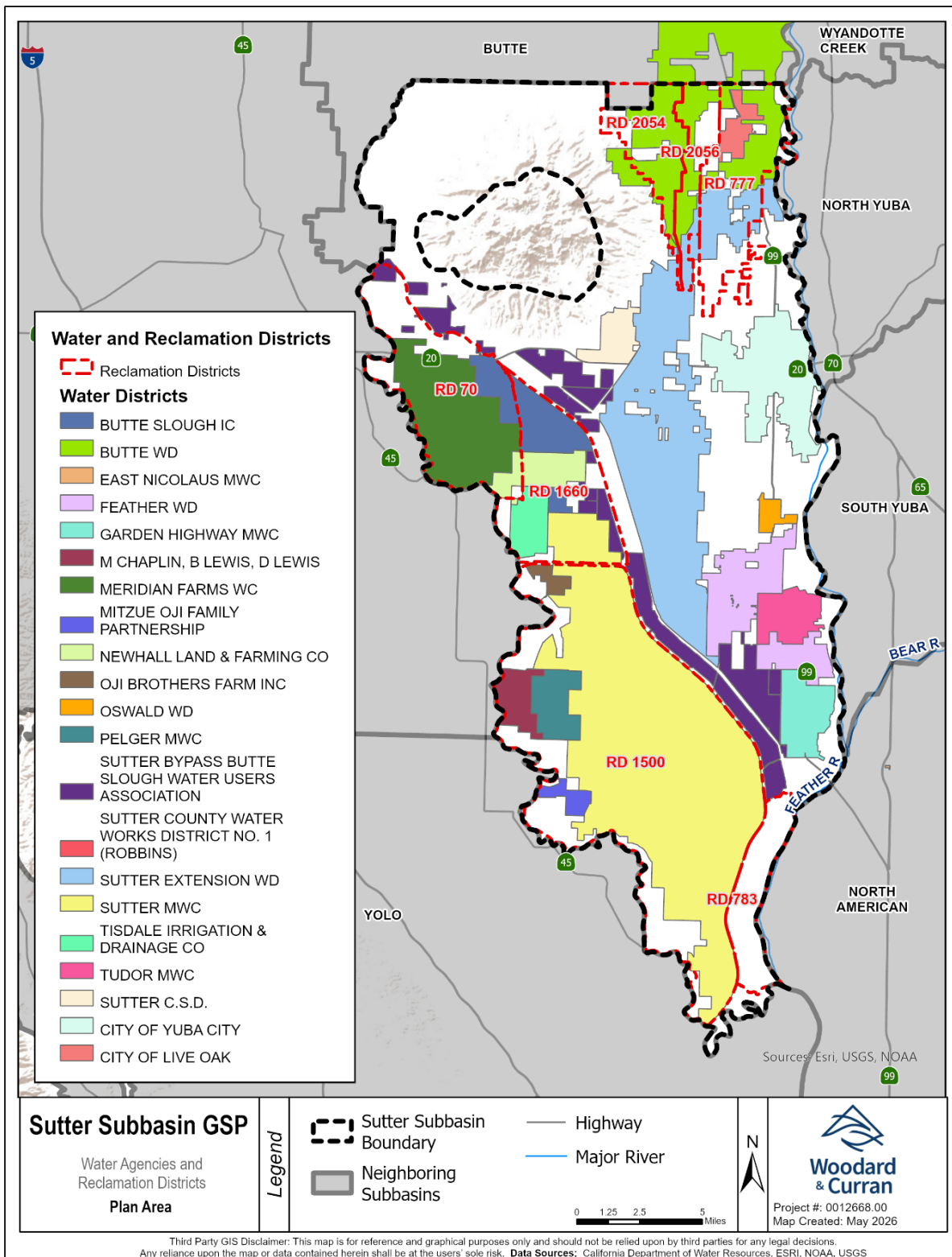


Figure 2-6. Agencies with Water Management Responsibilities in the Sutter Subbasin

2.1.3 Plan Area Setting

Water use within the Sutter Subbasin is largely supplied by a mix of surface water and groundwater. Approximately 60 percent of agricultural users utilize only surface water for irrigation purposes, while 20 percent utilize only groundwater and 20 percent irrigate with a mix of surface water and groundwater (Wood Rodgers, 2012). The predominant source of water for permanent crops is groundwater. Smaller communities and individual domestic well owners rely exclusively on groundwater while the City of Yuba City provides mostly surface water and a smaller proportion of groundwater.

2.1.3.1 Groundwater Use

Groundwater in the Sutter Subbasin is used for municipal, industrial, irrigation, domestic, stock watering, frost protection, and other purposes. Communities reliant upon groundwater include Sutter, Meridian, Robbins, and Live Oak (**Figure 2-7**). Users within white areas not served by a water purveyor, primarily within the Sutter County GSA, are reliant upon groundwater and are considered *de minimis* groundwater extractors (**Figure 2-8**).

Figure 2-9 through **Figure 2-11** show the density per square mile (PLSS Section) of domestic, production, and public wells in the Sutter Subbasin as identified by the California Department of Water Resources' (DWR) Well Completion Report Map Application. Domestic wells are defined as individual domestic wells which supply water for the domestic needs of an individual residence or system of four or less service connections (DWR, 1981). Within the Sutter Subbasin, there are an estimated total of 1,583 domestic wells, where the majority of PLSS Sections contain five or fewer domestic wells (124 out of 180 PLSS Sections have five or fewer domestic wells) (**Figure 2-9**). One PLSS section southeast of the Sutter Buttes is estimated to contain 225 domestic wells. As shown in **Figure 2-9**, domestic well depths range from 62 to 700 feet below ground surface. Across most PLSS sections in the Subbasin, mean domestic well depths range from 100 to 200 feet below ground surface, with an overall average depth of 145 feet below ground surface.

Production well statistics include wells that are designated as irrigation, municipal, public, and industrial on well completion reports, generally indicating wells designed to obtain water from productive zones containing good quality water (DWR, 1991). There are estimated to be 801 production wells in the Sutter Subbasin, where the majority of PLSS Sections contain only between one and three production wells (143 out of 226 PLSS Sections with three or fewer production well) and only 13 PLSS sections have ten or more production wells (**Figure 2-10**). Public wells are defined as wells that provide water for human consumption to 15 or more connections or regularly serve 25 or more people daily for at least 60 days out of the year (SWRCB, n.d.(b)). Within the Sutter Subbasin, there are 39 public wells listed in the DWR database where 20 PLSS Sections have only one public well and six PLSS Sections have two or more public wells (**Figure 2-11**). The status of the wells (e.g., active, abandoned, or destroyed)

contained in the DWR Well Completion Report Map Application have not been independently confirmed and it should be noted the well quantities are only estimated since not all well completion reports are in the map application and, at times, the well location has been mislocated on the well completion report.

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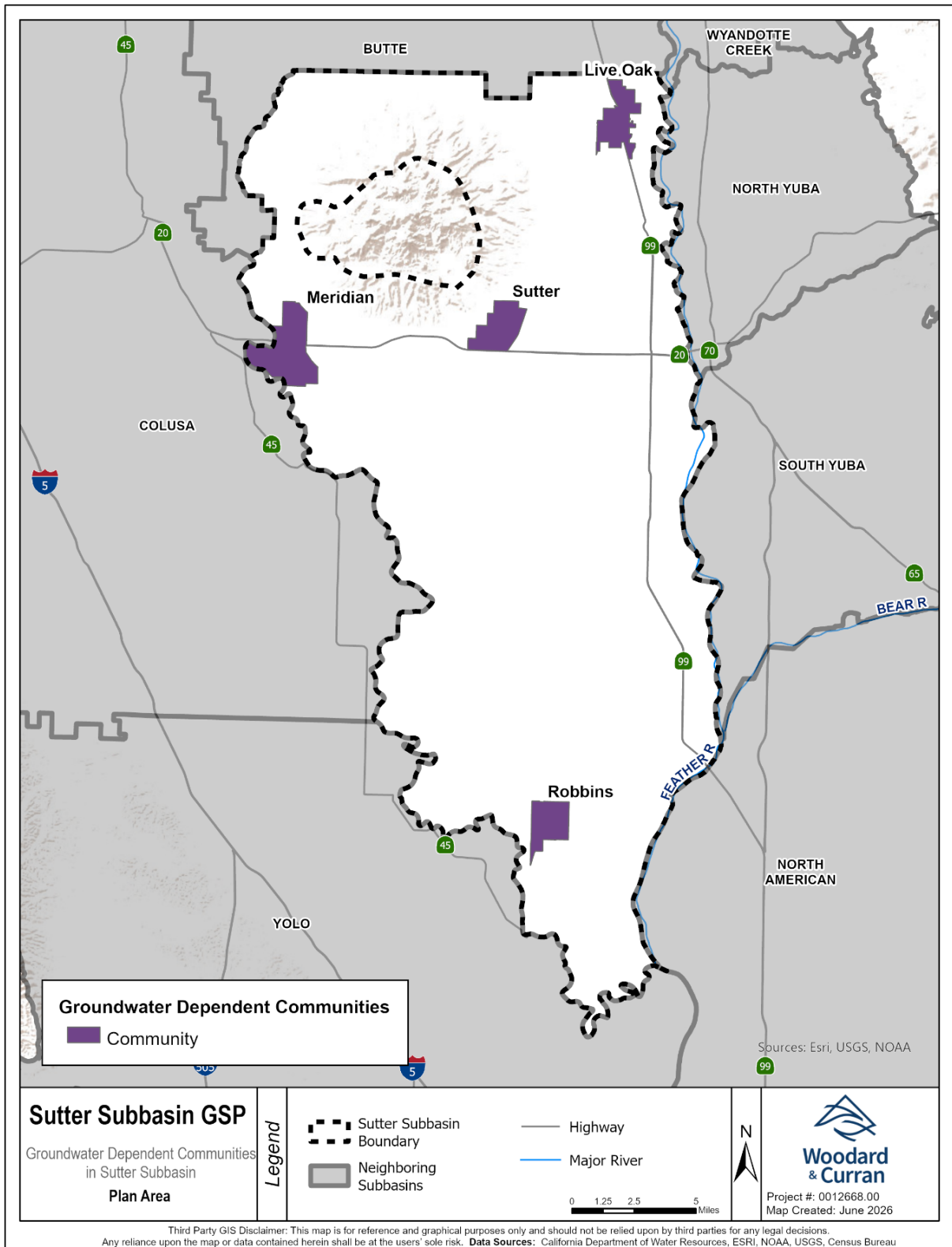


Figure 2-7. Communities Dependent Upon Groundwater in the Sutter Subbasin

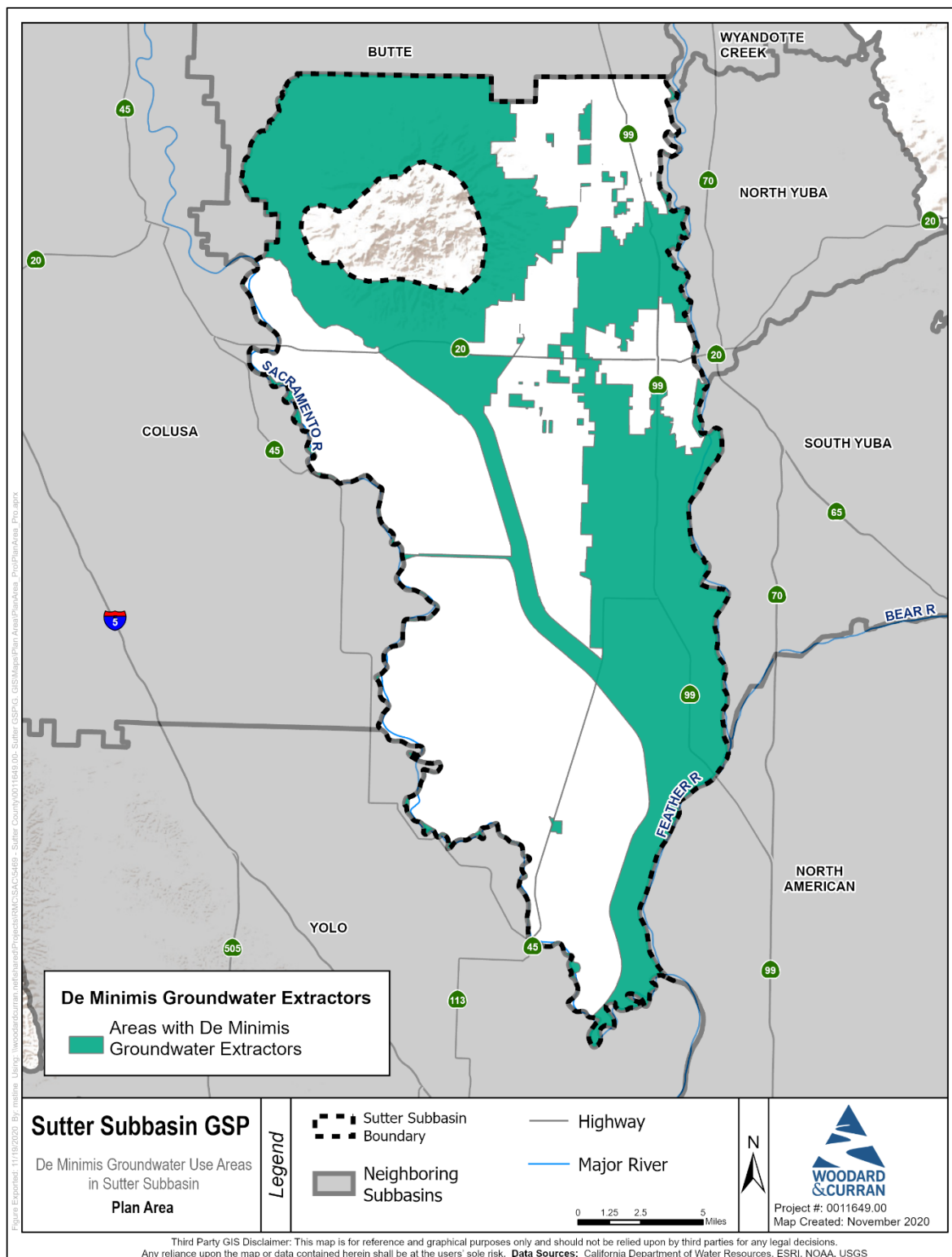


Figure 2-8. De Minimis Groundwater Production Areas in the Sutter Subbasin

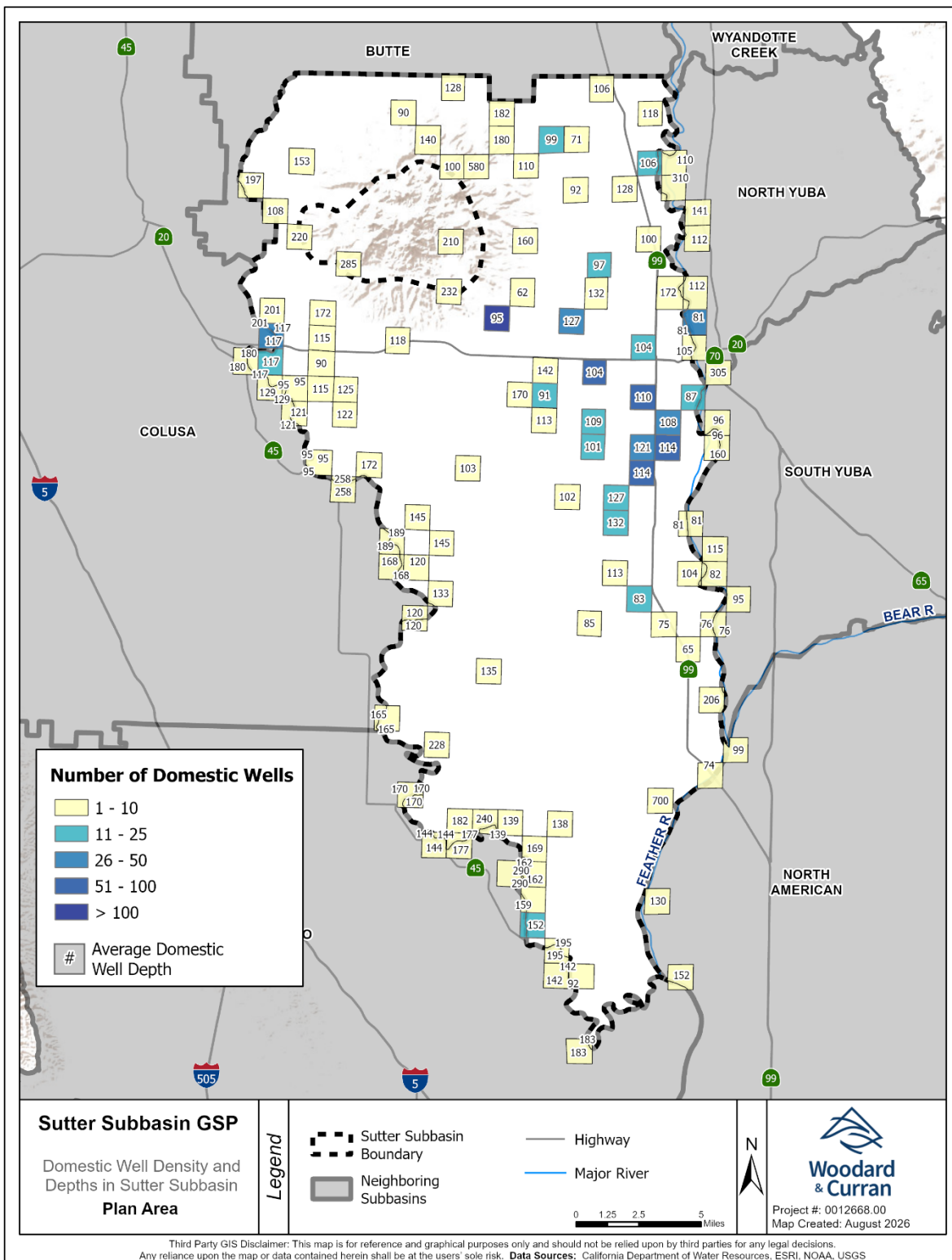


Figure 2-9. Density of Domestic Wells Per Square Mile

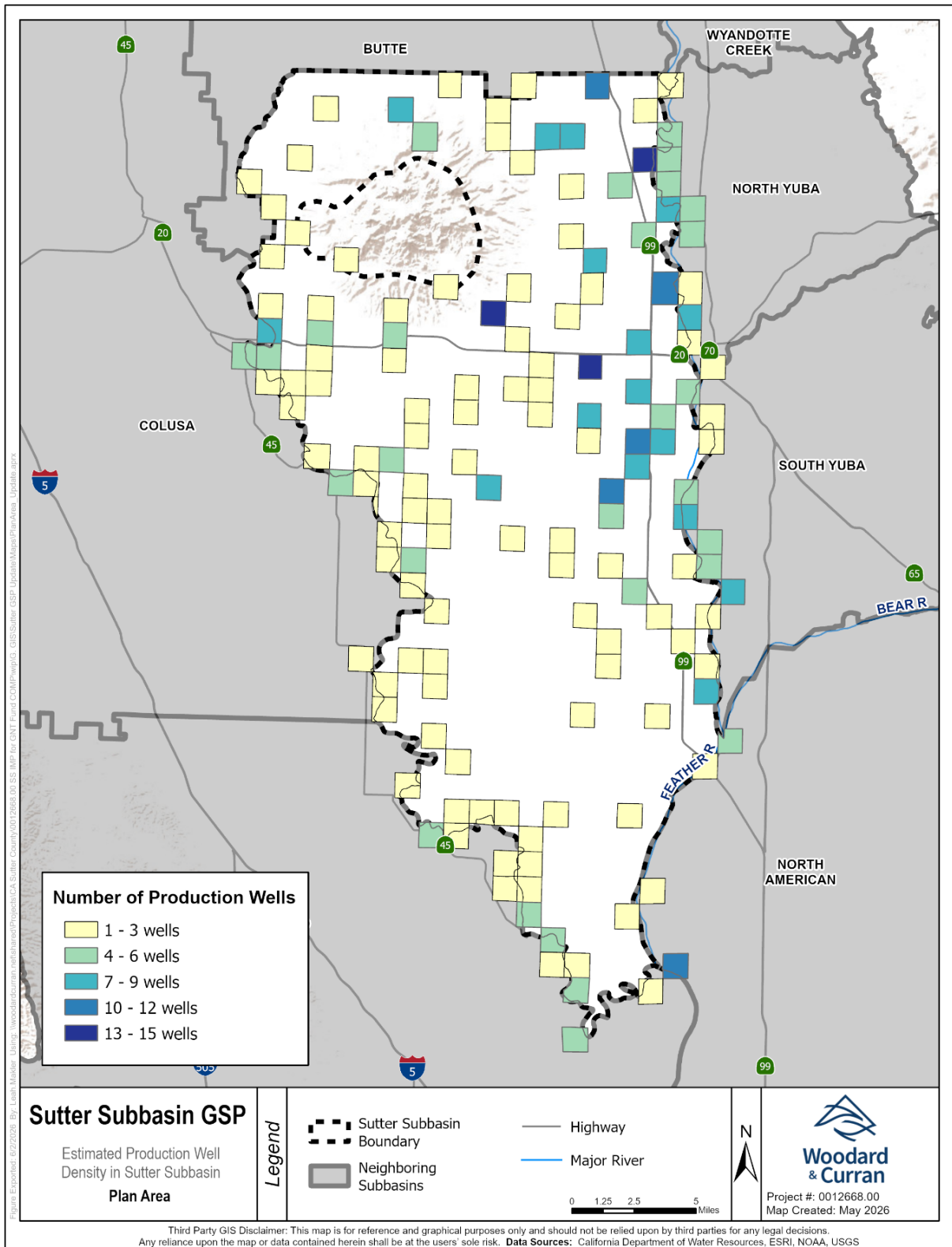


Figure 2-10. Density of Production Wells Per Square Mile

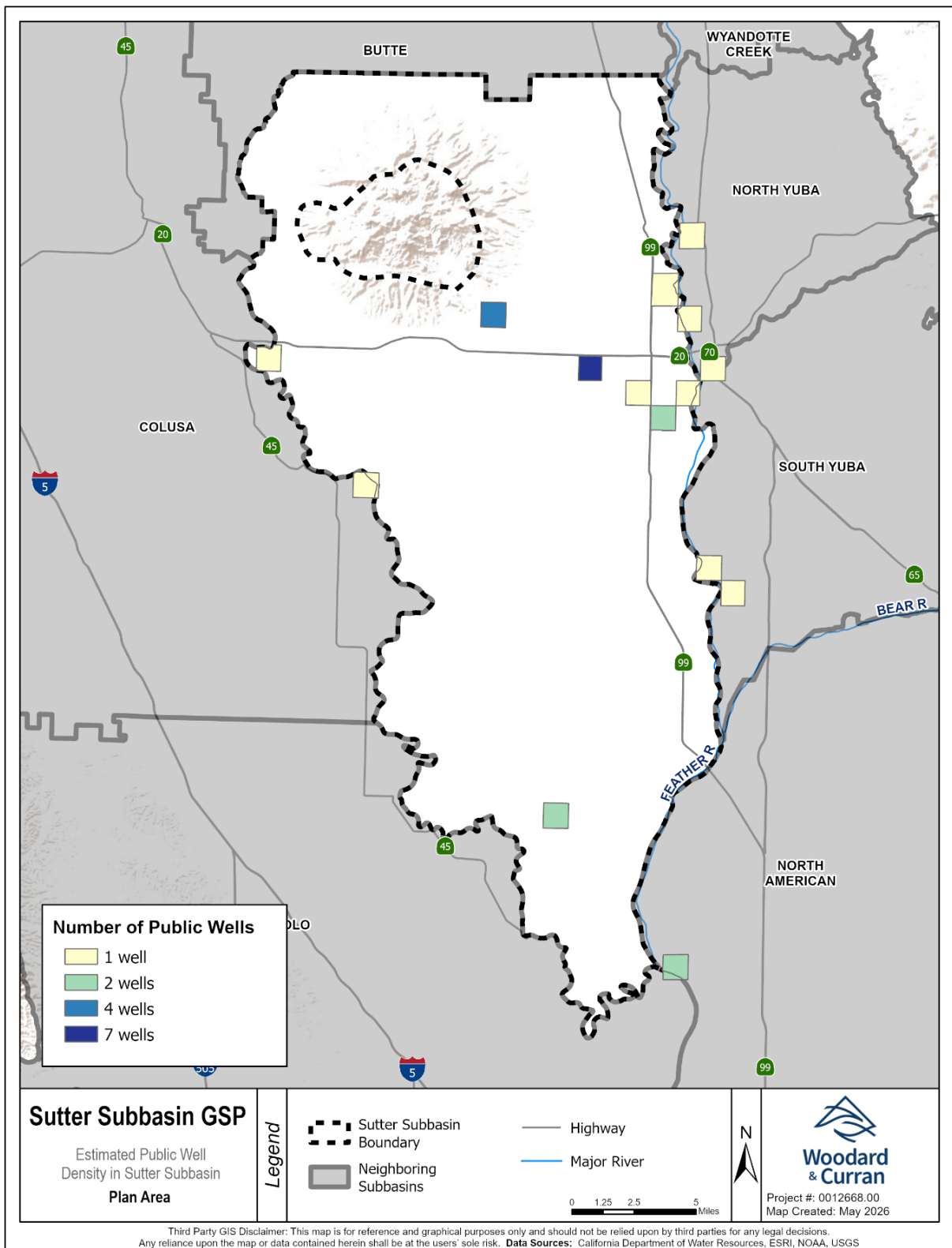


Figure 2-11. Density of Public Wells Per Square Mile

2.1.3.2 Surface Water

The following subsections describe watershed and surface water features, flood management, and surface water use within the Sutter Subbasin.

2.1.3.2.1 Watershed and Surface Water Features

The Sutter Subbasin is located within the Sacramento River watershed, which is bounded on the west by the Sacramento River and east by the Feather River (Wood Rodgers, 2012). The Sacramento River watershed includes tributaries originating in the Sierra Nevada, the Coast Range, and the Cascade Mountains. The main tributaries to the Sacramento River that impact surface water supplies within the Sutter Subbasin include Feather River and Bear River.

The Sacramento River is the major surface water feature within the Sutter Subbasin, defining the western boundary of the Sutter Subbasin with the Butte, Colusa, and Yolo Subbasins. Running north-south along the western part of the Subbasin, the Sacramento River is the main drainage for the Sacramento Valley watershed on its way to the Sacramento-San Joaquin Delta and San Francisco Bay. The Sacramento River supports many beneficial uses including recreational, agricultural, and wildlife.

The Feather River is a major tributary of the Sacramento River and outlines a major portion of Sutter Subbasin's eastern boundary shared with the North Yuba and South Yuba Subbasins. The river trends north-south along the northern and central portions of the Subbasin to the convergence with the Bear River, where it changes course and flows southwest through the south-central portion of the County until it intersects the Sutter Bypass and the Sacramento River. Like the Sacramento River, the Feather River provides beneficial uses including recreation, agricultural, and wildlife.

The Bear River is a tributary to the Feather River and enters Sutter County from Placer County near the City of Wheatland in Yuba County. It roughly forms the boundary between Sutter and Yuba Counties up to the convergence with the Feather River. The Bear River generally flows west until it converges with the Feather River, approximately one mile upstream from the rural community of Nicolaus. Although smaller than the Sacramento and Feather Rivers, the Bear River also provides beneficial uses that include recreation, agricultural, and wildlife. Discharges within the river are partially controlled by several upstream reservoirs. The Camp Far West Reservoir (located in the counties of Yuba, Placer, and Nevada) is the last downstream reservoir on the river and subsequently regulates surface water discharges to downstream users.

2.1.3.2.2 Flood Management

The Sutter Bypass is another major surface water feature in the Sutter Subbasin. An artificial flood corridor constructed in the 1930s, the Sutter Bypass is described by the Army Corps of Engineers as "... a leveed portion of the natural floodway in the Sutter Basin. The bypass is south of the Sutter Buttes from Colusa to Verona between the Sacramento and Feather Rivers. Flows enter the Sutter Bypass from the Butte Basin at

its upper end near Colusa at the Butte Slough. Other flows enter from Wadsworth Canal, interior drainage from pumping plants, and the Sacramento River by way of the Tisdale Weir and Bypass. Flows exit the Sutter Bypass and combine with the Sacramento River, Feather River, Natomas Cross Canal, and Yolo Bypass upstream from the Fremont Weir near the town of Verona” (Wood Rodgers, 2012). During periods of heavy precipitation and runoff, a portion of the flow within the Sacramento River is diverted through the Sutter Bypass to alleviate the flood control system along the Sacramento River.

Flows in all of the major rivers in Northern California are managed by dams, such as Lake Oroville and Lake Shasta. The reservoirs are managed to provide flood protection while collecting runoff from the watershed. Releases from the reservoirs occur from spring through summer to provide irrigation water for agriculture as well as provide drinking water and base flows downstream. Aside from the major rivers and tributaries within Sutter County, there are no significant surface water storage reservoirs within the Sutter Subbasin.

2.1.3.2.3 Surface Water Use

Surface water is primarily used for agricultural purposes within the Sutter Subbasin and obtained through Sacramento River Settlement Contracts Central Valley Project (CVP) contracts, Feather River diverters, and surface water rights held by individual users. The Sacramento River is currently not used for municipal or domestic water supplies within the Sutter Subbasin. Yuba City obtains a large portion of its annual water supplies for municipal and domestic use from the Feather River.

The U.S. Bureau of Reclamation (USBR) currently contracts with approximately 145 water districts, water purveyors, or private users for water rights to the Sacramento River (Wood Rodgers, 2012). The total amount of water under the settlement contracts is approximately 2.2 million acre-feet and covers a total of almost 440,000 acres of land bordering the Sacramento River and its tributaries between Redding and Sacramento. The Settlement Contracts were originally executed in 1964 with a term not to exceed 40 years. Since 2004, new contracts have been executed with approximately 145 existing Sacramento River Settlement Contracts.

The Settlement Contracts include a Base Supply and Project Water. The Base Supply is the amount that reflects the agreed upon water right of the respective entity. This is generally regarded as pre-1914 water rights and also water rights perfected after 1914 and reflect water that would be available to the respective entities under “natural” conditions. Project Water represents the amount of water USBR agrees to provide from its CVP yield. Under the provisions of the Settlement Contracts, both the Base Supply and Project Supply could be reduced by 25 percent of the total contract amount, but only in certain water year types.

In accordance with the CVP Improvement Act (CVPIA), USBR negotiated long-term water services contracts in 2007. According to Section 3404c of the CVPIA, Renewal of

Existing Long-Term Contracts requires the USBR to renew any existing long-term repayment or water service contract for the delivery of water from the CVP for a period of 25 years and may renew such contracts for successive periods of up to 25 years each.

The long-term renewal contracts, unlike the Settlement Contracts, have no specified reductions in delivery; during critically dry or water-short years, the water supply available from the Project will be allocated among the contractors. The long-term renewal contracts also contain a tiered pricing provision. The Base Supply is 80 percent of the total contract amount, and Tier 1 and Tier 2 supplies represent 10 percent each of the remaining contract amount. Each tier has an incrementally higher water cost. The Tier 1 and Tier 2 water, which is available in most years, is typically not used due to the incremental higher cost of water.

Feather River diverters in the Sutter Subbasin hold diversion agreements with DWR to transport water from the Feather River using State Water Project facilities for both diversion and storage. Butte Water District and Sutter Extension Water District entered into agreement with DWR in May 1969 along with the Biggs-West Gridley Water District and Richvale Irrigation District. Feather Water District and Garden Highway Mutual Water Company hold separate contracts with DWR for diversion of Feather River water. These diversion agreements do not alter or modify existing water rights held on the Feather River by these districts/agencies.

2.2 Land Use Elements

Land use within the Sutter Subbasin is managed by the cities of Live Oak and Yuba City, as well as Sutter County, and is predominantly agricultural. Rice is the predominant permanent crop grown in the Subbasin along with walnuts, stone fruits, tomatoes, and sunflowers. **Figure 2-12** shows the distribution of different land use types across the subbasin, while **Table 2-2** summarizes the respective acreage of land use in the Sutter Subbasin by land use type.

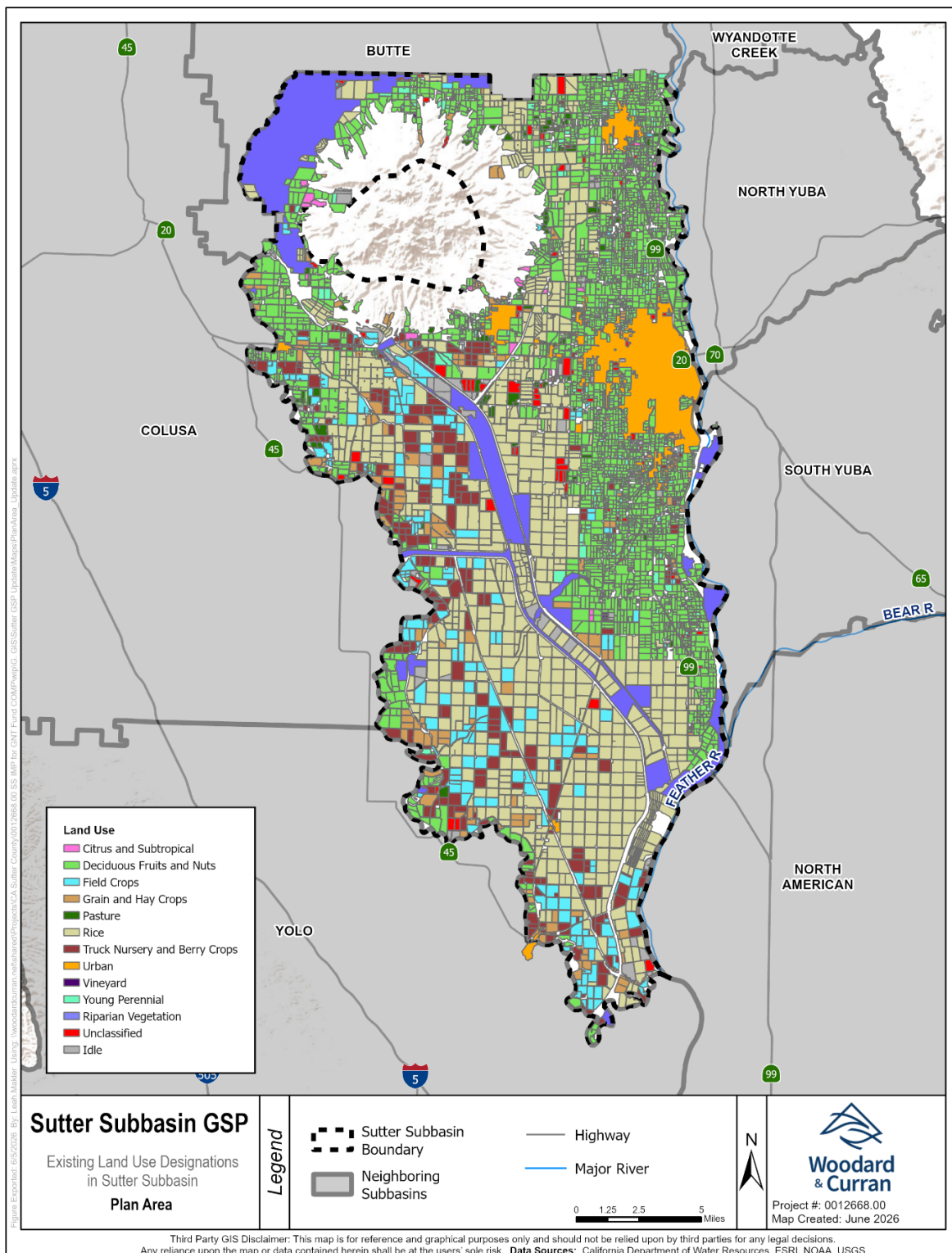
Surface water from the Feather and Sacramento Rivers and groundwater are the water sources used for irrigation, managed wetland, municipal and industrial, and urban/domestic purposes (**Figure 2-13**). Areas served by water agencies primarily utilize surface water as the primary supply source, with the exception of the City of Live Oak and Sutter Community Services District (**Figure 2-14**). Although surface water is available in areas served by water agencies, supply may also be augmented by groundwater, particularly during prolonged dry or drought periods. Most of the area served by Sutter County GSA (known as the County “white areas”) relies on groundwater, where there are large areas of ranchland surrounding the Sutter Buttes that is not irrigated.

Table 2-2. Crop Category Acreage in the Sutter Subbasin

Statewide Crop Mapping Category	Acres
Citrus and Subtropical	771
Deciduous Fruits and Nuts	65,300
Field Crops	15,104
Grain and Hay Crops	8,579
Riparian Vegetation	21,291
Pasture	2,276
Rice	71,978
Truck Nursery and Berry Crops	14,974
Urban	12,413
Vineyard	78
Unclassified	6,087
Young Perennial	2,568
Total Acreage	221,419

Source: 2023 Statewide Cropping Data; California Natural Resources Agency (April 2026)

Note: Crop categories and acreage are consistent with the source data.



Source: 2023 Statewide Cropping Data; California Natural Resources Agency (April 2026)

Note: Crop categories and acreage are consistent with the source data.

Figure 2-12. Existing Land Use Designations in the Sutter Subbasin

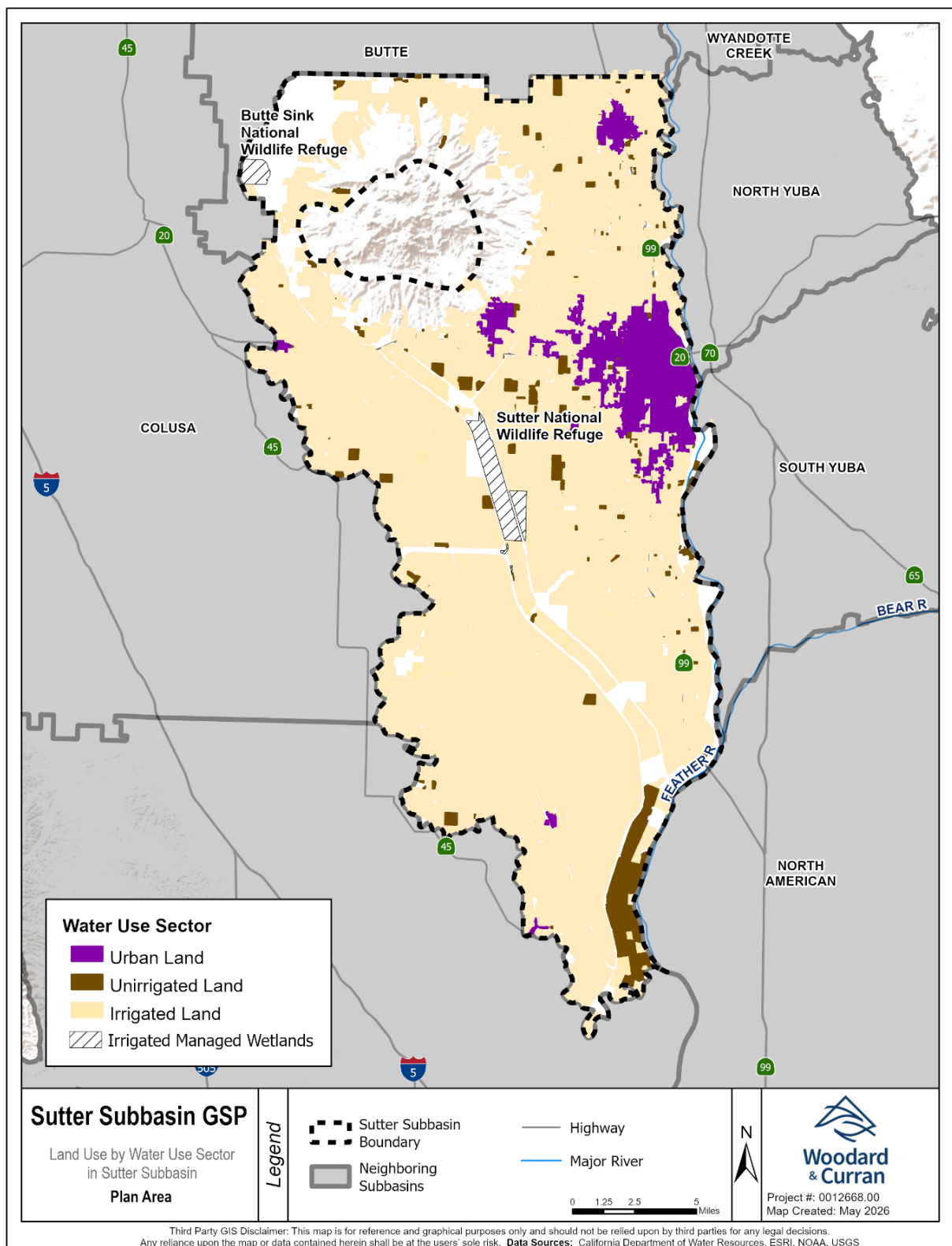


Figure 2-13. Land Use by Water Use Sector in the Sutter Subbasin

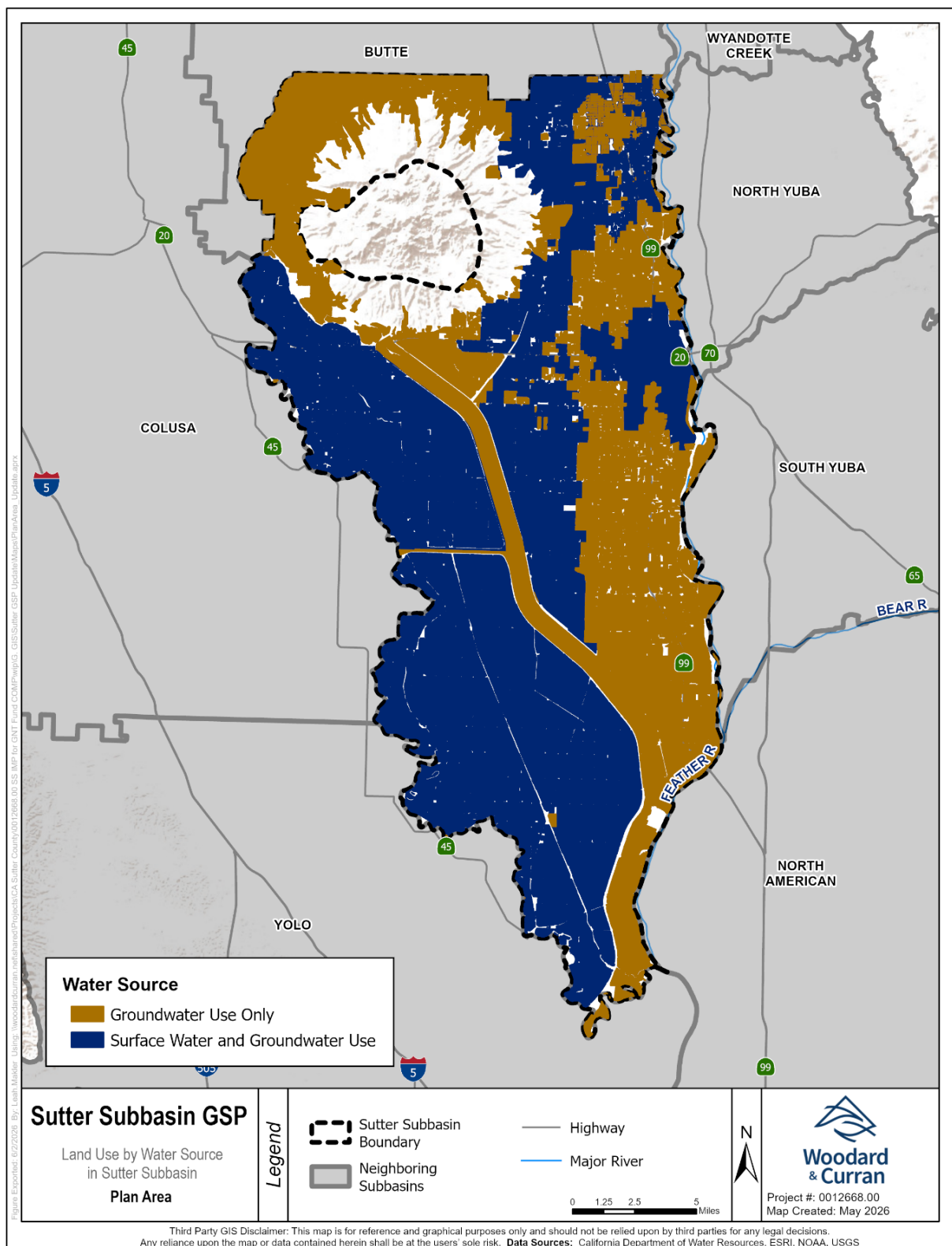


Figure 2-14. Land Use by Water Source in the Sutter Subbasin

2.2.1 General Plans in the Plan Area

Sutter County and the cities of Live Oak and Yuba City have developed General Plans to plan and guide land use within their respective spheres of influence. The following sections provide a general description of these General Plans and how implementation of existing land use plans may change water demands within the Subbasin, how implementation of this GSP may affect water supply assumptions of relevant land use plans, and how implementation of land use plans outside of the Subbasin could impact sustainable groundwater management within the Sutter Subbasin.

Figure 2-15 shows the location of relevant General Plans. The following section describes the General Plan policies and objectives relevant to water resources management in the Sutter Subbasin. This section satisfies §354.5(f) of the GSP Emergency Regulations under SGMA.

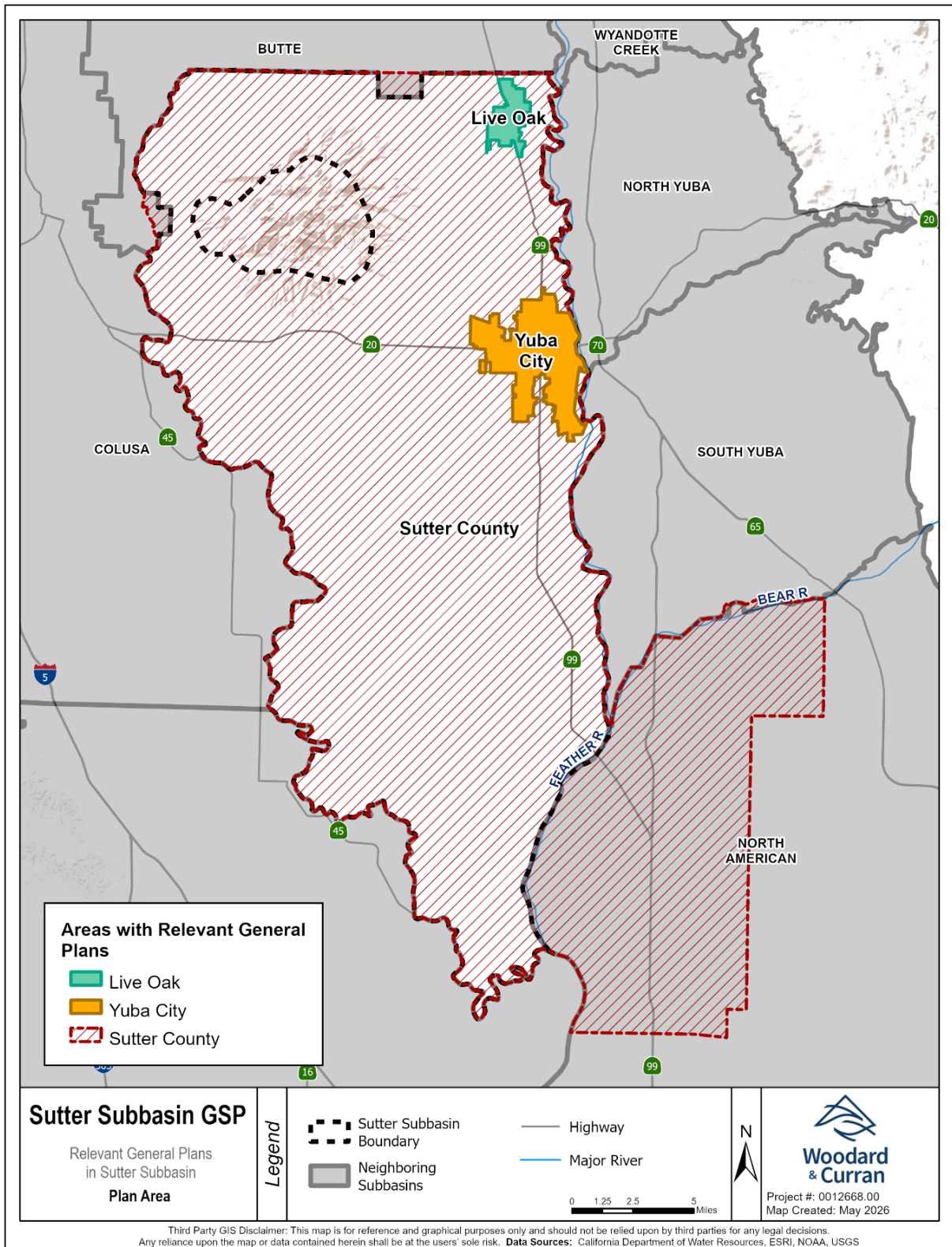


Figure 2-15. Relevant General Plans

2.2.1.1 Sutter County 2030 General Plan

The Sutter County 2030 General Plan (Sutter County, 2011) presents a vision for the County through 2030 and beyond. The General Plan is a result of the collective efforts of elected and appointed officials, citizens, business owners, and County staff who all contributed to defining a desired framework for growth and conservation in unincorporated Sutter County. It is the intent of the General Plan to ensure a future for Sutter County that is distinguished by its livable nature – a place that is sustained in the long term by striking a suitable balance between strong agricultural traditions, natural resource preservation, and economic growth opportunities.

The following policies from each relevant General Plan Element, as well as implementation programs, may potentially influence implementation of the GSP or be influenced by GSP implementation.

2.2.1.1.1 Land Use Element

- **Goal LU 9.** Designate adequate and compatible sites for governmental/public uses and take a lead role when feasible on regional issues of importance to Sutter County, its residents, and businesses.
- **Policy LU 9.5.** Regional Planning Efforts. Support and participate as appropriate in countywide, regional, and other multi-agency planning efforts related to land use, housing, revenue, economic development, tourism, agriculture, natural resources, air quality, habitat conservation, transportation, transit, infrastructure, water supply, flood control, solid waste disposal, emergency preparedness, and other issues relevant to the County.

2.2.1.1.2 Agricultural Resources Element

- **Goal AG-3.** Protect the natural resources needed to ensure that agriculture remains an essential and sustainable part of Sutter County's future.
- **Policy AG 3.1.** Efficient Water Management. Support the efficient management and use of agricultural water resources where economically feasible to support agriculture.
- **Policy AG 3.2.** Water Conservation and Recycling. Support the efforts of the multiple water agencies operating in Sutter County to adopt water conservation practices and explore the feasibility of water recycling for agriculture.
- **Policy AG 3.3.** Water Quality and Quantity. Support efforts to maintain water resource quality and quantity for the irrigation of productive farmland.
- **Policy AG 3.4.** Water Competition from Urban Uses. Oppose the loss of agricultural water due to competition from urban water consumption both within and outside the County.

- **Policy AG 3.5.** Water Use Reduction. Encourage reduction measures in the Climate Action Plan targeted to manage agricultural water use. Such measures may include encouraging agricultural water users to conserve water and providing information on technologies that reduce agricultural water use.
- **Policy AG 3.6.** Groundwater Resources. Support the efforts of the local water agencies to promote groundwater recharge, conjunctive use, conservation of significant recharge areas, and other activities to protect and manage Sutter County's groundwater resources.
- **Policy AG 3.7.** Alternative Energy. Support the use of energy-saving technologies and alternative energy sources (solar, wind, biofuels) in all agricultural industries and operations such as the pumping of irrigation water, food processing, and water treatment. Support the use of alternative energy-powered farm vehicles and trucks.
- **Policy AG 3.8.** Habitat Protection. Promote wildlife friendly agricultural practices. Encourage habitat protection and management that is compatible with and does not preclude or restrict on-site agricultural production.
- **Policy AG 3.9.** Chemical Use. Support the efforts of growers to follow state and federal regulations concerning the use of pesticides, herbicides, and manufactured fertilizers.
- **Policy AG 3.10.** Soil Management. Implement, as appropriate, reduction measures in the Climate Action Plan targeted to promote soil management practices that reduce nitrogen dioxide emissions.
- **Goal AG-4.** Provide for growth, expansion, and diversification of Sutter County's agricultural industries.
- **Policy AG 4.3.** New Technologies. Support the development and use of new technologies that facilitate resource efficient operation of agriculturally related industries, including food processing. These technologies may include energy development technologies, such as wind, solar and waste sources; energy and water conservation technologies; cultivation practices; global positioning system (GPS) applications; and others that improve the profitability of agriculture in Sutter County.

2.2.1.1.3 Economic Development Element

- **Goal ED 2.** Maintain a business-friendly environment for both existing and new companies.
- **Policy ED 2.1.** Infrastructure for New Business. Ensure the provision of adequate infrastructure for business development, including flood control, road and rail networks, telecommunications backbone, sewer, drainage facilities, and water supply.

2.2.1.1.4 Infrastructure Element

- **Goal I 1.** Ensure the availability of an adequate, reliable, and safe potable water supply for current and future County residents, businesses, and other water users.
- **Policy I 1.1.** Availability. Require new development to study, coordinate, and plan the provision of potable water services to support the new development and demonstrate the availability of a long-term, safe, and reliable potable water supply.
- **Policy I 1.2.** Infrastructure Planning. Require the establishment of potable water master plans for areas served, or to be served, by County-owned or County-operated water systems or private water companies. Ensure that the required infrastructure is successfully planned and designed.
- **Policy I 1.3.** Capital Funding. Require new development to construct or fully fund its needed potable water infrastructure.
- **Policy I 1.4.** Efficient Infrastructure. Require potable water infrastructure that is to be owned or operated by the County to be designed and constructed to minimize the long-term life cycle costs of the infrastructure. Require the plans and design of potable water infrastructure to be owned or operated by another public agency or private utility be approved by the servicing agency/utility.
- **Policy I 1.5.** Dedications. Require fee title dedication of land (or easements if determined appropriate by the Public Works Director) to the County to ensure adequate space for, access to, operation of, maintenance of, and repair of the potable water infrastructure.
- **Policy I 1.6.** Operations and Maintenance Funding Plans. Require new development to establish funding plans to cover the long-term operation, maintenance, and repair of the development's potable water infrastructure.
- **Policy I 1.7.** Provision of Services. Minimize County operated potable water systems serving urbanized areas. Transfer County operated potable water systems in urban areas to incorporated cities, public community service districts, or private utility companies where and when feasible and beneficial to the customers.
- **Policy I 1.8.** Require new development to provide water systems supporting the development based on the following guidelines for water supply:
 - Urban development, and suburban development on parcels less than 1 acre in size, shall utilize community water systems. Demonstrate adequate and safe long-term water supply can be provided without negatively impacting adjacent land uses or water supplies prior to development of new or expanded community water systems.
 - Rural development, and suburban development on parcels 1 acre or larger in size, shall utilize community water systems where feasible and cost effective as determined by the County. If utilizing a community water system is not

- feasible, individual wells may be used where the water demand/intensity of new development is appropriately limited and where adequate and safe long-term water supply can be provided without negatively impacting adjacent land uses or water supplies.
- Agricultural areas may utilize individual water wells.
 - **Policy I 1.9.** Connection to Community Water System. Connect existing developed areas to community water systems where practical.
 - **Policy I 1.10.** Individual Water Wells. New individual wells shall meet County well construction and water quality standards.
 - **Policy I 1.11.** Improve Water Availability. Support the creation of new water projects in appropriate locations that improve water availability for urban, rural, and agricultural water uses in Sutter County, including recycled water projects.
 - **Policy I 1.12.** Water Conservation. Support water conservation programs that increase water use efficiency and provide incentives for adoption of water-efficiency measures.
 - **Policy I 1.13.** Water-Efficient Landscaping. Require the use of water-efficient landscaping in new development.
 - **Goal I 2.** Ensure efficient and safe collection, treatment, and disposal of wastewater, biosolids, and septage.
 - **Policy I 2.1.** Availability. Require new development to study, coordinate, and plan the provision of wastewater services to support the new development and demonstrate the availability of long-term, safe, and reliable wastewater collection, treatment, and disposal.
 - **Policy I 2.2.** Establish wastewater collection and treatment master plans for areas served, or to be served, by County-owned or County-operated wastewater systems. Ensure that the required infrastructure is successfully planned and designed.
 - **Policy I 2.3.** Capital Funding. Require new development to construct or fully fund its needed wastewater infrastructure.
 - **Policy I 2.4.** Efficient Infrastructure. Require wastewater infrastructure that is to be owned or operated by the County to be designed and constructed to minimize the long-term life cycle costs of the infrastructure. Require the plans and design of wastewater infrastructure to be owned and/or operated by another public agency or private utility be approved by the servicing agency/utility.
 - **Policy I 2.5.** Dedications. Require fee title dedication of land (or easements if determined appropriate by the Public Works Director) to the County to ensure adequate space for, access to, operation of, maintenance of, and repair of the wastewater infrastructure.

- **Policy I 2.6.** Operations and Maintenance Funding Plans. Require new development to establish funding plans to cover the long-term operation, maintenance, and repair of the development's wastewater infrastructure.
- **Policy I 2.7.** Provision of Services. Minimize County operated wastewater systems serving urbanized areas. Transfer County operated wastewater systems in urban areas to incorporated cities or public community service districts where and when feasible and beneficial to the customers.
- **Policy I 2.8.** New Development. Require new development to provide wastewater systems supporting the development based on the following guidelines for wastewater collection and disposal:
 - Urban development shall utilize publicly owned treatment works (POTW).
 - Rural development and suburban development shall utilize POTW when feasible and cost effective as determined by the County. If utilizing a POTW is not feasible, individual wastewater treatment and disposal systems may be used where soil conditions are acceptable; all County, state, and federal requirements can be met; the wastewater generation/ intensity of new development is appropriately limited; and long-term disposal can be provided without negatively impacting adjacent land uses or groundwater supplies.
 - Agricultural areas may utilize individual wastewater treatment and disposal systems where soil conditions are acceptable and all County, state, and federal requirements can be met.
- **Policy I 2.9.** Connection to Publicly Owned System. Connect existing developed areas to publicly owned treatment works where practical.
- **Policy I 2.10.** Groundwater Protection. Continue to regulate the siting, design, construction, and operation of wastewater disposal systems in accordance with County regulations to minimize contamination of groundwater supplies.
- **Goal I 3.** Ensure stormwater runoff is collected and conveyed safely and efficiently.
- **Policy I 3.1.** Availability. Require new development to study, coordinate, and plan the provision of stormwater services to support the new development and demonstrate the availability of long-term, safe, and reliable stormwater collection, and reliable stormwater collection, and conveyance.
- **Policy I 3.2.** Infrastructure Planning. Establish stormwater collection master plans for areas served, or to be served, by County-owned or County-operated stormwater systems. Ensure that the required infrastructure is successfully planned and designed.
- **Policy I 3.3.** Capital Funding. Require new development to construct or fully fund its needed stormwater infrastructure.

- **Policy I 3.4.** Efficient Infrastructure. Require stormwater infrastructure that is to be owned or operated by the County to be designed and constructed to minimize the long-term life cycle costs of the infrastructure. Require the plans and design of stormwater infrastructure to be owned and/or operated by another public agency or private utility be approved by the servicing agency/utility.
- **Policy I 3.5.** Dedications. Require fee title dedication of land (or easements if determined appropriate by the Public Works Director) to the County to ensure adequate space for, access to, operation of, maintenance of, and repair of the stormwater infrastructure.
- **Policy I 3.6.** Operations and Maintenance Funding Plans. Require new development to establish funding plans to cover the long-term operation, maintenance, and repair of the development's stormwater infrastructure.
- **Policy I 3.7.** Provision of Services. Minimize County operated stormwater systems serving urbanized areas. Transfer County operated stormwater systems in urban areas to incorporated cities, water agencies, County drainage districts, or public community service districts where and when feasible and beneficial to the customers.
- **Policy I 3.8.** New Development. Require new development to provide stormwater systems supporting the development based on the following guidelines for stormwater collection and conveyance:
 - Urban development shall utilize underground storm drain systems sized to collect and convey peak flows from the 10-year storm; and may utilize overland flow systems and open channels sized to convey peak flows from the 100-year storm. Detention facilities shall be consolidated at publicly owned points in the system.
 - Rural development and suburban development shall utilize underground storm drain systems where feasible and cost effective as determined by the County, sized to collect and convey peak flows from the 10-year storm; and may utilize overland flow systems and open channels sized to convey peak flows from the 100-year storm. If utilizing an underground system is not feasible, detention facilities and open channels for stormwater collection and conveyance may be utilized, provided these systems prevent property damage from a 100-year storm event.
 - Agricultural areas may utilize detention facilities and open channels for stormwater collection and conveyance, provided these systems prevent property damage from a 100-year storm event.
- **Policy I 3.9.** Connection to Publicly Owned System. Connect existing developed areas to publicly owned stormwater drains or open channel systems where practical.

- **Policy I 3.10.** Mitigation of Stormwater Flows. Require new development to adequately mitigate increases in stormwater flow rates and volume.
- **Policy I 3.11.** Stormwater Quality. Ensure that new development protects water quality in runoff, streams, and rivers.
- **Policy I 3.12.** Joint Use of Open Channels and Detention Basins. Parks or sports fields may be located within stormwater detention basins where practical. Bicycle paths and walkways may be located within stormwater conveyance channels, or on service roads for channels, where practical. Open channels and stormwater detention basins shall normally not be used for habitat purposes.
- **Implementation Program I 1-A.** Review new development applications in unincorporated areas to ensure that adequate water service will be available through the County, or other service providers, to serve the new development. Require evidence of service availability.
- **Implementation Program I 1-B.** Condition new development to perform a water supply assessment in accordance with the requirements of state law.
- **Implementation Program I 1-C.** Develop potable water service guidelines and possible agreements with the cities of Live Oak and Yuba City for the provision of potable water within the cities' spheres of influence.
- **Implementation Program I 1-D.** Apply, and update as necessary, County improvement standards for potable water infrastructure planning, design, and construction.
- **Implementation Program I 1-E.** Develop a Countywide potable water master plan consistent with this General Plan. The design and construction of potable water systems are to be consistent with the approved master plan.
- **Implementation Program I 1-F.** Condition new development to construct infrastructure and dedicate land to support development as identified in the Countywide potable water master plan or other development studies. Condition new development to construct necessary potable water infrastructure prior to the issuance of building permits for residential development or certificate of occupancy for non-residential development; or if appropriate, ensure the potable water infrastructure is adequately financed through development impact fees, by agreement, or other mechanisms.
- **Implementation Program I 1-G.** Where the development's contribution to the potable water infrastructure exceeds its fair share, require the development to fully fund, or finance, the infrastructure and be reimbursed as the County receives impact fees/funding from other future development benefitting from the improvements.
- **Implementation Program I 1-H.** Condition new development to develop and implement a financing mechanism to fund the long-term operations and maintenance needs of potable water infrastructure. Funding plans shall ensure the

collection of sufficient funds to cover current and anticipated future expenditures, capital replacements, and cost increases.

- **Implementation Program I 1-I.** Review new development to ensure that proposed water systems are adequate and appropriate for the type of development and are consistent with federal, state, and local codes and standards, and master plans.
- **Implementation Program I 1-J.** Require a groundwater study prior to development of new well systems serving urban/suburban and rural/suburban development to identify potential effects on aquifer volume and groundwater levels and the extent to which existing municipal and agricultural wells could be affected. The results of the study shall be used to develop the proper siting, design, and operation of new or expanded well systems, including a process for ongoing monitoring and contingency planning.
- **Implementation Program I 1-K.** Require existing development currently utilizing private wells for potable water supply to connect to a community water system when the community system is within 200 feet of the development, the community system agrees to allow the connection, and the private well no longer complies with applicable regulations or requires significant repairs.
- **Implementation Program I 1-L.** Support the California State Regional Water Quality Control Board's efforts to monitor known groundwater contamination areas and ensure that existing water sources are protected and contamination is as limited as is feasible.
- **Implementation Program I 1-M.** Apply the County's water well standards and applicable development standards to ensure safe and sanitary water supplies for development utilizing wells for potable water. Update the County's water well standards as needed.
- **Implementation Program 2-A.** Review new development applications in unincorporated areas to ensure that adequate wastewater service will be available through the County, or other service providers, to serve the new development. Require evidence of service availability.
- **Implementation Program 2-B.** Develop wastewater service guidelines and possible agreements with the cities of Live Oak and Yuba City for the provision of wastewater service within the cities' spheres of influence.
- **Implementation Program 2-C.** Apply, and update as necessary, County improvement standards for wastewater infrastructure planning, design, and construction.
- **Implementation Program 2-D.** Develop a Countywide wastewater master plan consistent with this General Plan; require design of wastewater systems to be consistent with the approved master plan; and ensure wastewater systems are constructed consistent with the approved designs.

- **Implementation Program 2-E.** Condition new development to construct infrastructure and dedicate land to support development as identified in the Countywide wastewater master plan or other development studies. Condition new development to construct necessary wastewater infrastructure prior to the issuance of building permits for residential development or certificate of occupancy for non-residential development; or if appropriate, ensure the wastewater infrastructure is adequately financed through development impact fees or by agreement.
- **Implementation Program 2-F.** Where the development's contribution to the wastewater infrastructure exceeds its fair share, require the development to fully fund the infrastructure and be reimbursed as the County receives impact fees/funding from other future development benefitting from the improvements.
- **Implementation Program 2-G.** Condition new development to establish and implement a financing mechanism to fund the long-term operations and maintenance needs of the wastewater infrastructure. Funding plans shall ensure the collection of sufficient funds to cover current and anticipated future expenditures, capital replacements, and cost increases. Funding should normally be collected through service fees and assessments.
- **Implementation Program 2-H.** Review new development to ensure that proposed wastewater systems are adequate and appropriate for the type of development and are consistent with federal, state, and local codes and standards, and master plans.
- **Implementation Program 2-I.** Apply, and update as necessary, County code and development standards regarding on-site wastewater disposal. Permit on-site wastewater treatment and disposal on existing lots only when appropriate for the type of development, where a publicly owned collection system is not reasonably available, and where such disposal will not constitute a hazard to health or water supplies.
- **Implementation Program 2-J.** Condition new development, where authorized to utilize individual wastewater treatment and disposal systems as an interim measure, to connect to a publicly owned wastewater collection system and treatment works when the publicly owned collection system is within 200 feet of the development, and the system owner agrees to allow the connection.
- **Implementation Program 2-K.** Require existing development using individual wastewater treatment and disposal systems to connect to a publicly owned wastewater collection system and treatment works when the publicly owned collection system is within 200 feet of the development, the system owner agrees to allow the connection, and the individual system no longer complies with applicable regulations or requires significant repairs.

- **Implementation Program 2-L.** Restrict new development use of septic systems in areas that are prone to flooding or that have a seasonal high-water table and/or water seepage problems.
- **Implementation Program I 1-N.** Develop water conservation standards for new development to increase water use efficiency.
- **Implementation Program I 3-A.** Review new development applications in unincorporated areas to ensure that adequate stormwater service will be available through the County, or other service providers (including the State for any State-owned pump stations), to serve the new development. Require evidence of service availability. If the use of State-owned pump stations is proposed, sufficient capacity shall be demonstrated through completion of a drainage study that is incorporated into any countywide or master drainage study.
- **Implementation Program I 3-B.** Develop stormwater service guidelines and possible agreements with the cities of Live Oak and Yuba City for the provision of stormwater service within the cities' spheres of influence.
- **Implementation Program I 3-C.** Develop a Countywide stormwater master plan consistent with this General Plan; require design of stormwater systems to be consistent with the approved master plan; and ensure stormwater systems are constructed consistent with the approved designs.
- **Implementation Program I 3-D.** Apply, and update as necessary, County improvement standards regarding stormwater drainage, infrastructure, planning, and design and construction disposal.
- **Implementation Program I 3-E.** Condition new development to construct infrastructure and dedicate land to support development as identified in the Countywide stormwater master plan or other development studies. Condition new development to construct necessary stormwater infrastructure prior to the issuance of building permits for residential development or certificate of occupancy for non-residential development; or if appropriate, ensure the stormwater infrastructure is adequately financed through development impact fees or by agreement.
- **Implementation Program I 3-F.** Where the development's contribution to the stormwater infrastructure exceeds its fair share, require the development to fully fund the infrastructure and be reimbursed as the County receives impact fees/funding from other future development benefitting from the improvements.
- **Implementation Program I 3-G.** Condition new development to develop and implement a financing mechanism to fund the long-term operations and maintenance needs of the stormwater infrastructure. Funding plans shall ensure the collection of sufficient funds to cover current and anticipated future expenditures, capital replacements, and cost increases. Funding should normally be collected through service fees and assessments.

- **Implementation Program I 3-H.** Review new development to ensure that proposed stormwater systems are adequate and appropriate for the type of development and are consistent with federal, state, and local codes and standards, and master plans.
- **Implementation Program I 3-I.** Require existing development using individual detention or retention facilities to connect to a publicly owned stormwater collection system when the publicly owned collection system is within 200 feet of the development and the system owner agrees to allow the connection.
- **Implementation Program I 3-J.** Condition new development to adequately study and plan local drainage for the development. Require that new development conform to the relevant County, State, and Federal requirements and standards governing stormwater drainage and water quality.
- **Implementation Program I 3-K.** Consider opportunities for joint recreational use of new public detention basins and open channels.

2.2.1.1.5 Environmental Resources Element

- **Goal ER 2.** Conservation. Incorporate energy efficiency and water conservation, including the potential use of recycled water, in park design, development, and operations.
- **Policy ER 2.1.** No Net Loss. Require new development to ensure no net loss of state and federally regulated wetlands, other waters of the United States (including creeks, rivers, ponds, marshes, vernal pools, and other seasonal wetlands), and associated functions and values through a combination of avoidance, restoration, and compensation.
- **Goal ER 6.** Preserve and protect the County's surface water and groundwater resources.
- **Policy ER 6.1.** Integrated Water Management Programs. Integrate water management programs that emphasize multiple benefits and balance the needs of agricultural, rural, and urban users.
- **Policy ER 6.2.** Surface Water Resources. Protect the surface water resources in the County including the Sacramento, Feather, and Bear Rivers and their significant tributaries.
- **Policy ER 6.3.** Groundwater Sustainability. Protect the sustainability of groundwater resources.
- **Policy ER 6.4.** Groundwater Recharge Areas. Require new development to preserve areas that provide important groundwater recharge, stormwater management, and water quality benefits such as undeveloped open spaces, natural habitat, riparian corridors, wetlands, and natural drainage areas.

- **Policy ER 6.5.** Regional Coordination on Groundwater Use. Coordinate with local and regional jurisdictions on groundwater use to minimize overdraft conditions of aquifers.
- **Policy ER 6.6.** Groundwater Protection. Regulate stormwater collection and conveyance, as necessary, to protect groundwater supplies from contamination.
- **Policy ER 6.7.** Water Rights. Support the protection of the existing water rights of water agencies and providers within Sutter County. Do not support out-of-area water transfers where they would adversely impact water supply within Sutter County. Support either out-of-area, or in-basin water transfers that would not negatively impact water supply within Sutter County.
- **Policy ER 6.8.** Recycled Water. Explore the feasibility of utilizing recycled water, where appropriate, cost effective, and safe.
- **Policy ER 6.9.** Water Use Reduction. Encourage the reduction measures in the Climate Action Plan targeted to reduce water use. Such measures may include adopting a per capita water use reduction goal; implementing a water conservation and efficiency program; providing incentives for new development to reduce potable water use; installing water meters for uses not using wells; encouraging water suppliers to adopt a water conservation pricing schedule; encouraging upgrades in water efficiency; providing training and education on water efficiency; and increasing recycled water use.
- **Policy ER 6.10.** Stormwater Quality. Control pollutant sources from construction and operational activities, and improve stormwater runoff quality, through the use of stormwater protection measures in accordance with County, state, and federal regulations.
- **Policy ER 6.11.** New Development. Require new development to protect the quality of water resources and natural drainage systems through site design, and use of source controls, stormwater treatment, runoff reduction measures, best management practices, and Low Impact Development.
- **Policy ER 6.12.** Natural Watercourses. Require new development to integrate natural watercourses and provide buffers between waterways and urban development to minimize disturbance of watercourses and to protect water quality.
- **Policy ER 6.13.** Education. Educate the public about practices and programs to minimize water pollution.

- **Implementation Policy ER 6-A.** Develop a Countywide Groundwater Management Plan and participate in the development and implementation of an Integrated Regional Water Management Plan.
- **Implementation Policy ER 6-B.** Conduct a study to determine the feasibility of utilizing recycled water, where appropriate, cost effective, and safe.
- **Implementation Policy ER 6-C.** Update and revise the joint Yuba City–Sutter County Stormwater Management Plan to include the growth areas.
- **Implementation Policy ER 6-D.** Require new development that incorporates or is adjacent to natural watercourses to consult with the U.S. Army Corps of Engineers, California Department of Fish and Game, and/or the Regional Quality Control Board to determine the appropriate buffer width between waterways and urban development.

2.2.1.2 City of Live Oak 2030 General Plan

The City of Live Oak 2030 General Plan (City of Live Oak, n.d.) serves as a tool to identify and provide policy guidance to achieve the community's version of the future. The following policies from each relevant General Plan Element as well as implementation programs may potentially influence implementation of the GSP or be influenced by GSP implementation.

2.2.1.2.1 Land Use Element

- **Goal LU-2.** Make improvements to existing developed areas as the city grows.
- **Policy LU-2.2.** The City will encourage infill development, which is defined as development that has access to water and wastewater infrastructure in adjacent existing streets, by:
 - analyzing infrastructure deficiencies in the existing City;
 - identifying infrastructure investment priorities needed to encourage reinvestment in the existing city;
 - coordinating infill infrastructure priorities with redevelopment planning and capital improvements planning; and,
 - exploring opportunities to provide incentives for infill development, such as lower impact fees.
- **Implementation Program LU-2.1.** The City will maintain water, wastewater, and drainage master plans that identify and prioritize infrastructure improvements to the City. The City will incorporate improvements to existing City infrastructure in capital improvements planning, consistent with these master plans. The City also will identify federal, state, and regional grant and loan programs for infrastructure improvements in the existing developed City.
- **Implementation Program LU-2.2.** The City will update development impact fees, following the adoption of the 2030 General Plan update. The fees developed as a

part of this update will take into account existing infrastructure availability. Infill development will have lower fees, where it is shown to have lower costs. Infill development is defined as development that has access to water and wastewater infrastructure in adjacent existing streets.

- **Implementation Program LU-4.1.** The City's water, wastewater, and drainage master plans will provide for infrastructure improvements designed to induce redevelopment in the downtown core area. The City will incorporate downtown infrastructure in capital improvements planning. The City will identify federal, state, and regional grant and loan programs for design, planning, and implementation of the City's policies for downtown core area redevelopment and revitalization, including infrastructure improvements. The City will consult with Sacramento Area Council of Governments to identify priority transit projects that serve development downtown.

2.2.1.2.2 Community Character Element

- **Goal DESIGN-14.** Incorporate Live Oak's natural amenities into the community's built environment.
- **Policy DESIGN-14.3.** The City will encourage the use of site landscaping that uses appropriate native plant materials in order to enhance the natural character of the region; to reduce water and pesticide use; and to provide habitat to native species.

2.2.1.2.3 Conservation and Open Space Element

- **Goal AGRICULTURAL-1.** Preserve agricultural resources and support the practice of farming.
- **Policy Agriculture-1.5.** The City will work with farmers, property owners, extensions, agencies, and agricultural organizations to enhance the viability of agricultural uses and activities.
- **Implementation Program Biological-3**
- The City will adopt development standards that require a riparian protection buffer (RPB) specifying an appropriate setback distance from existing riparian habitat or natural water bodies for development or other significant disturbance. This habitat is known to occur near the west bank of the Feather River. In areas with existing development, the RPB shall not be less than 25 feet, measured from top of the bank. In all other areas, the RPB shall not be less than 100 feet, measured from top of bank. If existing riparian vegetation is greater than 100 feet in width, the RPB shall encompass all of the riparian habitat; however, in no case shall the RPB be required to exceed 250 feet. Where feasible, the riparian buffers shall be incorporated into open space corridors, public landscapes, and parks. Trails and other recreation development should be designed and constructed to be compatible with riparian ecosystem.

- **Goal AIR-1.** Plan and design the community to encourage walking, bicycling, and use of transit.
- **Policy Air-1.4.** The City will encourage and provide incentives for infill development, defined as development that has water and sewer infrastructure available in adjacent streets and does not require extension of such infrastructure to serve the subject project. (See also the Public Utilities, Services and Facilities Element and the Land Use Element.)
- **Goal WATER-1.** Maintain and improve groundwater and surface water quality.
- **Policy Water-1.1.** New development shall incorporate drainage system design that emphasizes infiltration and decentralized treatment (rather than traditional piped approaches that quickly convey stormwater to large, centralized treatment facilities), to the greatest extent feasible.
- **Policy Water-1.2.** Existing swales and sloughs should be preserved, restored, and used for stormwater drainage whenever possible.
- **Policy Water-1.3.** The City will require developments to use best management and design practices to reduce stormwater runoff levels, improve infiltration to replenish groundwater sources, and reduce pollutants close to their sources. The City will require new development to use permeable surfaces for hardscape wherever possible. Impervious surfaces such as driveways, streets, and parking lots should be interspersed with vegetated areas that allow for infiltration of stormwater. Low impact development (LID) techniques, such as rain gardens, filter strips, swales, and other natural drainage strategies, should be used to absorb stormwater, reduce polluted urban runoff, recharge groundwater, and reduce flooding.
- **Policy Water-1.4.** The City will require development projects to incorporate appropriate scaled stormwater facilities. The City will place emphasis on making these holding areas serve multiple functions, such as soccer fields or passive recreation areas.
- **Goal WATER-2.** Ensure adequate and efficient long-term water supply.
- **Policy Water-2.1.** The City will incorporate into its entitlement review process compliance with portions of state law that require demonstration of adequate long-term water supply for large development projects (Senate Bills 610 and 221).
- **Policy Water-2.2.** The City will condition approval of new development on the availability of sufficient water supply, storage, and fire flow (water pressure), per City standards.
- **Policy Water-2.3.** The City will encourage the use of native, drought-tolerant landscaping throughout the City to conserve water and filter runoff.

- **Policy Water-2.4.** Native and drought-tolerant landscaping should comprise at least 50 percent of landscapes in commercial and industrial projects and 100 percent of all medians and right-of-way landscaped areas along public streets.
- **Policy Water-2.5.** The City will require the use of water conservation technologies, such as low-flow toilets, efficient clothes washers, and more efficient water-using industrial equipment, in all new construction and retrofitted and substantially remodeled buildings, consistent with building code requirements.
- **Policy Water-2.6.** The City will support the retrofitting of existing buildings throughout Live Oak with water-saving fixtures.
- **Policy Water-2.7.** The City will participate in regional groundwater basin planning and regional water-management planning efforts to ensure that future demand for water does not overdraft the groundwater supply.
- **Policy Water-2.8.** The City will adopt water conservation pricing (e.g., tiered rate structures) to encourage efficient water use.
- **Implementation Program Water-1.** The City will revise the Public Works Improvement Standards, as necessary, to encourage use of natural drainage systems and low impact development principles in order to reduce stormwater infrastructure costs and improve water quality. The City will make revisions required to emphasize the slowing down and dispersing of stormwater by using existing landscaped swales and constructing new swales to convey stormwater runoff, encouraging sheet flow and the use of landscaped infiltration basins in planter strips along roadways, and employing other best management practices, as appropriate. The City will establish standards and fee programs to require and/or provide incentives for methods to slow down and filter stormwater, as outlined in this Element. These measures include, but are not limited to, reduced pavement, permeable pavement, vegetation that retains and filters stormwater, and the use of drainage sheet flow and filtration.
- **Implementation Program Water-2.** The City will revise landscaping requirements to include drought-tolerant, low-maintenance plants.
- **Implementation Program Water-3.** The City will participate, as appropriate, in the Sutter County Groundwater Management Plan to ensure perennial sustainable yield and avoidance of overdraft and long-term drawdown within and adjacent to the [former] East Butte subbasin, while accommodating land use change as described in the 2030 General Plan.

2.2.1.2.4 Public Utilities, Services, and Facilities Element

- **Goal PUBLIC-1.** Provide a safe and reliable water supply and delivery system.
- **Policy PUBLIC-1.1.** The City will maintain a water master plan that provides for phased, efficient extension of water delivery and water quality infrastructure,

including new wells, new pumping and storage capacity, and treatment systems, as necessary, to meet the needs of new development.

- **Policy PUBLIC-1.2.** The City will maintain and improve water quality according to state and federal standards.
- **Policy PUBLIC-1.3.** New development shall provide land for wells and other water infrastructure and shall construct and dedicate water infrastructure as directed by the City.
- **Policy PUBLIC-1.4.** New development shall contribute on a fair-share basis toward new groundwater wells, water treatment improvements, conveyance facilities, and water supply projects, consistent with the City's water master plan and City standards.
- **Policy PUBLIC-1.5.** City approval of new development requires analysis and demonstration of secure and reliable water supply prior to approval. A formal water supply assessment, as defined in California Water Code Sections 10910–10912, will be required as part of City environmental review and project approval for projects that meet the minimum size requirements defined by this state law.
- **Policy PUBLIC-1.6.** New development shall contribute on a fair-share basis toward City strategies to increase water storage capacity for domestic water supply, back-up emergency supply, and fire flow.
- **Policy PUBLIC-1.7.** The City will improve water conveyance and fire flow in the existing city to encourage redevelopment, as necessary and as funding is available.
- **Policy PUBLIC-1.8.** The City will proactively leverage state, regional, and federal funding for water supply and water quality improvements to serve developed areas.
- **Policy PUBLIC-1.9.** When water delivery improvements are made in areas adjacent to developed areas, the City will identify opportunities for existing developed properties to connect into new City water systems.
- **Policy PUBLIC-1.10.** The City will establish long-term financing mechanisms and phased improvements planning to improve water infrastructure in the existing developed city to induce infill development. The goal of the City's financing and capital improvements planning will be to fund improvement of water distribution infrastructure in developed city neighborhoods, without increasing service fees for existing customers.
- **Goal PUBLIC-2.** Ensure reliability of the City's water supply through water conservation and an efficient water distribution system.
- **Policy PUBLIC-2.1.** The City will ensure that new groundwater well sites are located where the aquifer is stable enough to avoid long-term drawdown.

- **Policy PUBLIC-2.2.** The City will explore the use of recycled water from the City's wastewater treatment plant for landscape irrigation and other appropriate uses.
- **Policy PUBLIC-2.3.** The City will plan for, and new development shall be consistent with state law requirements for water conservation through the City's Urban Water Management Plan (California Water Code sections 10630–10656).
- **Policy PUBLIC-2.4.** New development should install water-conserving appliances and faucets, drought-tolerant landscaping, recycled water systems, and other water conservation improvements and programs, to the greatest extent feasible.
- **Policy PUBLIC-2.5.** The City will encourage water conservation measures not required by state law, such as recycled water systems.
- **Policy PUBLIC-2.6.** The City will establish use-based water rates. The City will consider adopting relatively low rates for a basic water allocation, and higher water rates beyond this basic allocation.
- **Policy PUBLIC-2.7.** The City will provide education to residents and businesses on benefits and methods of water conservation.
- **Implementation Program PUBLIC-1.1.**
 - The City will adopt a water master plan that is consistent with the 2030 General Plan, to provide for phased improvements to meet future needs. The master plan will include an inventory of existing development, estimates of future demand within the existing city, and estimates of future growth within areas planned for annexation, consistent with the General Plan. The City will incorporate analysis from the water master plan into its capital and ongoing fee programs.
 - The master plan will identify improvements to serve the needs of new development and will also identify any deficiencies in the existing developed city. The master plan will provide a plan to address any such deficiencies.
 - The master plan will identify potential locations for new well sites where a stable and reliable supply should be available, and where City use would not cause long-term drawdown.
 - The City will also prepare and adopt an Urban Water Management Plan for water conservation in the City, consistent with state law requirements. The City will implement the Urban Water Management Plan through enforcement of standards for new growth. The City will identify improvements that should be made to the existing City to conserve water and will phase in these improvements, as feasible.
 - The City will explore opportunities in the water master plan, as well as the Urban Water Management Plan, to encourage water conservation measures

- not required by state law. The City will, if feasible, provide incentives that are substantial enough to encourage new and existing development to install and use recycled water systems and other water-conserving improvements. Incentives could include lower up-front water hookup fees and lower ongoing water rates, depending on the extent of water conservation measures included.
- The City will update the water master plan, as necessary, to address growth needs, regulatory changes, and water quality issues.
 - **Implementation Program PUBLIC-1.2.** The City will continue the arsenic removal program, as necessary, in order to meet all federal and state standards for all groundwater wells in the city. The City will implement a study to investigate the need for additional programs for water treatment, monitoring, and cleanup of other constituents (pollutants), as necessary. The City will implement a nitrate monitoring program that will include periodic monitoring and impose time standards for any cleanup needed.
 - **Goal PUBLIC-3.** Use environmental best practices and provide cost effective wastewater collection, conveyance, and treatment systems to serve new and existing portions of the city.
 - **Policy PUBLIC-3.1.** The City will prepare a wastewater master plan that provides for phased, efficient extension of wastewater collection and improvements to wastewater treatment and disposal systems, to meet existing and future needs.
 - **Policy PUBLIC-3.4.** City sewer connection fees and ongoing sewer rates should be proportionally lower for properties that fund and install recycled water systems and are able to reduce overall wastewater demand.
 - **Policy PUBLIC-3.9.** The City will ensure compliance with state and federal standards for wastewater disposal. Monitoring and reporting programs may be required, as appropriate.
 - **Implementation Program PUBLIC-3.1.**
 - The City will adopt a wastewater master plan that is consistent with the 2030 General Plan, to provide for phased improvements to meet future needs. The master plan will include an inventory of existing development, estimates of future demand within the existing city, and estimates of future demand within areas planned for annexation. The wastewater master plan will provide cost-effective methods for expanding the system to meet future growth needs without raising sewer rates in the existing city. The master plan will identify deficiencies in the existing developed city that need to be addressed prior to, or in advance of infill development.

- The Wastewater Master Plan will identify improvements and funding required to comply with Regional Water Quality Control Board and other applicable state and federal water quality standards.
- The City will update the wastewater master plan, as necessary, to address growth needs, regulatory changes, technological innovations, and regional plans for wastewater treatment and disposal. As part of the wastewater master planning process, the City will identify improvements needed to meet applicable state and federal wastewater disposal standards. The City will incorporate analysis from the wastewater master plan into its capital and ongoing fee programs.
- The City will examine whether installation of recycled water systems and/or installation of drought tolerant landscaping would substantially reduce the costs of wastewater treatment plant capacity upgrades and conveyance facilities compared to a scenario that does not use these water-saving features. The City will explore opportunities to pass savings related to wastewater infrastructure to properties that install and use recycled water and install drought tolerant landscaping, as feasible.
- **GOAL PUBLIC-4.** Provide storm drainage systems that protect property and public safety and that prevent erosion and flooding.
- **Policy PUBLIC-4.2.** As part of the master plan and capital improvements planning, the City will set priorities and make repairs to the City's existing stormwater drainage system.
- **Policy PUBLIC-4.3.** The City will develop a funding mechanism to improve existing drainage systems and develop new ones in existing City areas that currently lack stormwater drainage infrastructure.
- **Policy PUBLIC-4.12.** New development shall be designed to control surface runoff discharges to comply with City standards, National Pollutant Discharge Elimination System Permit requirements, and Regional Water Quality Control Board standards, as applicable.
- **Implementation Program PUBLIC-4.1**
 - The City will adopt a drainage master plan, consistent with the policy direction in the 2030 General Plan, to provide for phasing and financing of drainage improvements in the existing developed city and in the new growth area.
 - The master plan will include an inventory of existing development, estimates of future needs in the existing city, and estimates of future growth in the new growth area. The drainage master plan will address how to meet future growth needs, if possible, without any rate increases in the existing city.

- The drainage master plan will also identify deficiencies and provide for drainage improvements in the existing developed city. As part of both the Drainage Master Plan and capital improvements planning, the City will set priorities and make repairs to the City's existing stormwater drainage system. Areas in the existing developed city that lack drainage infrastructure will take priority in the improvement schedule.
- The City will update the drainage master plan, as necessary, to address growth needs, regulatory changes, and technological innovations. The City will incorporate analysis from the wastewater master plan into its capital and ongoing fee programs.
- **Goal PUBLIC-5.** Use best environmental practices in the City's drainage systems to ensure water quality and take advantage of cost-saving multi-use opportunities.
- **Policy PUBLIC-5.1.** The City's drainage master plan will plan and provide for appropriate components of natural drainage systems, which not only can be less costly to construct and maintain compared to a traditional piped system, but also provide water quality benefits and allow stormwater facilities to provide community amenities.
- **Policy PUBLIC-5.2.** The City's drainage master plan should incorporate the use of newly constructed, appropriately landscaped drainage swales to filter, slow down, and better convey stormwater runoff.
- **Policy PUBLIC-5.3.** Existing Reclamation District 777 and Reclamation District 2056 drainage channels should be improved, to the greatest extent feasible, to create more naturalized swales that provide stormwater conveyance. These channels should be restored with native, low-maintenance landscaping to filter stormwater and enhance neighborhood aesthetics.
- **Policy PUBLIC-5.8.** New development should use LID techniques such as preserving or restoring natural landscape features for drainage, minimizing hard (impervious) surfaces, and using other methods that reduce, recycle, and filter stormwater.
- **Implementation Program PUBLIC-5.1**
 - The City will adopt a drainage master plan, consistent with the policy direction in the 2030 General Plan, to provide for phasing and financing of drainage improvements in the existing city and in the new growth area.
 - The City's drainage master plan will implement natural drainage systems that use newly constructed or restored drainage swales to convey stormwater runoff.
 - The City's drainage and parks and recreation planning and fees should account for the cost savings of this dual-use application of both park and

drainage impact fees. Planning and fees should consider savings of LID techniques, where appropriate.

- **Goal PUBLIC-11.** Ensure that adequate infrastructure, water supply, water storage, and water pressure is available for fire flow requirements.
- **Policy PUBLIC-11.1.** The City will provide adequate water supply, storage, and appropriately-sized distribution pipelines to provide appropriate fire flows and emergency reserve, according to County fire flow standards until such time as the City adopts its own standards.
- **Policy PUBLIC-11.2.** New development shall provide adequate minimum fire flow pressures and emergency fire reserve capacity, as required by the City, to ensure public safety and protection of property.

Public Safety

- **Goal PS-2.** Minimize the loss of life and damage to property caused by flood events.
- **Policy PS-2.7.** As feasible, new development should incorporate stormwater treatment practices that allow percolation to the underlying aquifer and minimize off-site surface runoff (and therefore flooding).
- **Goal PS-4.** Protect the community from the harmful effects of hazardous materials.
- **Policy PS-4.3.** The City will coordinate with appropriate federal, state, and regional agencies to address local sources of groundwater and soil contamination, including underground storage tanks, septic tanks, agriculture, and industrial uses.
- **Policy PS-4.5.** The City will support efforts to identify and remediate soils and groundwater contaminated with toxic materials, and to identify and eliminate sources contributing to such contamination.

2.2.1.3 City of Yuba City General Plan

In 2025, the City of Yuba City adopted an update to its General Plan known as the “2040 General Plan Update” (Placeworks 101, 2024). The Plan was coordinated with and supports ideas in the Sutter County General Plan and a variety of other planning efforts within the City. The 2040 General Plan Update was developed with the vision of a growing community that preserves much of its small town feel and social fabric with an improved economy, new job opportunities, affordable housing, improved public services and facilities, new parks, an urban growth boundary that protects the much-prized rural agricultural landscape, and an overall improved quality of life.

The following policies from each relevant General Plan Element as well as implementation programs may potentially influence implementation of the GSP or be influenced by GSP implementation.

2.2.1.3.1 Public Utilities Element Guiding Goals and Policies

- **Goal UT 1-1.** Ensure that an adequate supply of water is available to serve existing and future needs of the City and maintain existing levels of water service by preserving and improving infrastructure, replacing water mains as necessary, and improving water transmission facilities.
- **Policy UT 1-1:** Decline requests for extension of water beyond the sphere of influence (SOI), except in cases of existing documented health hazards or areas where the City has agreements to provide services.
- **Policy UT 1-2:** Coordinate capital improvements planning for all municipal water service infrastructure with the direction, extent, and timing of growth.
- **Policy UT 1-3:** Establish equitable methods for distributing costs associated with providing water service to development, including impact mitigation fees where warranted.
- **Goal UT 2-1.** Ensure that necessary water supply infrastructure and storage facilities are in place prior to or concurrent with construction of new development.
- **Policy UT 2-1:** Evaluate the adequacy of water infrastructure in areas where intensification of land use is anticipated to occur and develop a strategy to implement projects in the Water Supply Master Plan to offset deficiencies in capacity.
- **Goal UT 3-1.** Encourage water conservation with incentives for decreased water use and active public education programs.
- **Policy UT 3-1:** Explore ways to encourage the use of reclaimed water for irrigation and landscaping purposes.
- **Policy UT 3-2:** Utilizing reclaimed water is currently not cost-effective. Should the costs of reclaimed water become more attractive, the City should define a program for encouraging reclaimed water use.
- **Policy UT 3-3:** Continue to implement the City's guidelines and standards for water conservation, implement State Water Efficiency standards and actively promote use of water-conserving devices and practices in both new construction and major alterations and additions to existing buildings.
- **Goal UT 4-1.** Ensure that adequate wastewater treatment capacity is available to serve existing and future needs of the City.
- **Policy UT 4-1:** Maintain existing levels of wastewater service by preserving and improving infrastructure, including replacing sewer mains as necessary.
- **Policy UT 4-2:** Evaluate the adequacy of sewer infrastructure in areas where land use intensification is anticipated to occur and develop a strategy to address potential deficiencies in capacity.

- **Policy UT 4-3:** Coordinate capital improvements planning for all sewer service infrastructure with the direction, extent, and timing of growth.
- **Policy UT 4-4:** Decline requests for sewer extensions beyond the SOI, except in cases of existing documented health hazards and in areas where the City has prior agreements to provide services.
- **Policy UT 4-5:** Establish equitable methods for distributing costs associated with providing wastewater services to development, including impact mitigation fees where warranted.

2.2.1.3.2 Conservation and Open Space Element

- **Goal EC 6-1.** Enhance the quality of surface water and groundwater resources and prevent their contamination.
- **Policy EC 6-1:** Establish conservation programs and measures for Yuba City employers, residents, and service providers.
- **Policy EC 6-2:** Comply with the Central Valley Regional Water Quality Control Board's regulations and standards to maintain and improve the quality of both surface water and groundwater resources.
- **Policy EC 6-3:** Continue to control stormwater pollution and protect the quality of the City's waterways, by preventing oil and sediment from entering the river.
- **Policy EC 6-4:** Continue to regularly monitor water quality to maintain high levels of water quality for human consumption and ecosystem health.
- **Policy EC 6-5:** Protect waterways by prohibiting the dumping of debris and refuse in and near waterways and storm drains.
- **Policy EC 6-6:** Require new construction to utilize best management practices such as site preparation, grading, and foundation designs for erosion control to prevent sediment runoff into waterways, specifically the Feather River.
- **Policy EC 6-7:** If areas of groundwater contamination are identified, the City shall work with the appropriate agencies to limit further contamination and to protect public health.
- **Policy EC 6-8:** Support the application of reclaimed water to reduce the demand on municipal water supplies, if economically feasible.

2.2.1.4 Existing Land Use Plans and Impacts to Sustainable Groundwater Management

The vast majority of land use in Sutter County is preserved for agriculture (Sutter County, 2011). Sutter County consists of 389,120 acres that predominantly overlie two groundwater subbasins, the Sutter and North American Subbasins (with a small portion

of the Butte Subbasin located within Sutter County). The General Plan and the following discussion cover the entire County and does not divide the information by subbasin.

Approximately 92 percent of the total County area is predicted to have a stable population and is not expected to change in character within the timeframe (25-year planning horizon) of the Sutter County General Plan. The areas of change are relatively few and small in size. In total, approximately 32,681 acres, or slightly over 8 percent of unincorporated lands, have been identified as potential urban growth areas. **Table 2-3** provides the projected growth areas and population as contained within the Sutter County General Plan (2011).

Table 2-3. Sutter County Population, Historical and Projected

Town or City	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Live Oak	4,090	4,280	4,543	4,842	4,976	5,282	5,536	5,698	5,865	5,971	6,090	6,229
Yuba City	26,000	27,000	28,728	30,180	31,385	33,395	34,071	34,543	35,030	35,574	36,040	36,758
Balance Of County	31,700	32,450	32,888	33,575	34,217	33,525	33,941	34,332	34,804	35,112	35,333	35,943
County Total	61,800	63,700	66,159	68,597	70,578	72,202	73,548	74,573	75,699	76,657	77,463	78,930

Town or City	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Live Oak	6,295	6,339	6,380	6,473	6,603	7,266	7,890	8,255	8,355	8,422	8,517	8,243
Yuba City	45,506	46,792	48,505	51,034	57,975	60,197	61,835	62,974	64,042	64,818	65,487	66,096
Balance Of County	27,921	27,955	28,133	27,590	22,519	21,901	21,838	21,754	21,521	21,525	21,587	21,609
County Total	79,722	81,086	83,018	85,097	87,097	89,364	91,563	92,983	93,918	94,765	95,591	95,948

Town or City	2013	2014	2015	2016	2020	2025	2030	2035	2040
Live Oak	8,184	8,339	8,331	8,346	8,441	8,558	8,765	8,792	8,909
Yuba City	66,513	66,716	67,779	68,052	82,390	95,513	110,725	128,361	148,806
Balance Of County	21,490	21,470	20,838	20,910	18,108	15,342	13,610	14,299	14,760
County Total	96,187	96,525	96,948	97,308	108,939	119,413	133,100	151,452	172,475

Implementation of existing land use plans is unlikely to affect the water supply and groundwater sustainability over the planning and implementation horizon. The largest planned changes are related to urban growth with a reduction of agricultural lands.

2.2.1.5 Urban Water Supply

Sutter County has had limited urban growth since 1989, with its population increasing by about 50 percent. Urban development has occurred in Yuba City, Live Oak, and a few small towns and communities including Robbins, Sutter, and Tisdale. **Table 2-3** provides the historical and projected future population for the entire Sutter County. Urban growth in the Subbasin is summarized in **Table 2-3**, while the remaining “Balance of County” is essentially within the North American Subbasin. The population in the Sutter County portion of the Sutter Subbasin as of 2016 is projected to double by 2040, almost entirely in Yuba City.

The source of water for the increased population in Yuba City will be surface water. Groundwater is not anticipated to be used for future growth (Carollo Engineers, 2016), though a couple of wells will be maintained for use during droughts. The City of Live Oak is planning to support its growth with eight new wells (EcoLogic, 2009). The estimated groundwater supply is expected to increase from 3,100 acre-feet (AF) in 2015

to 11,800 AF by 2030 (EcoLogic, 2009). However, the City of Live Oak has not observed the population growth that was originally anticipated in the 2009 Water Master Plan and estimates for groundwater supply needed by 2030 are no longer anticipated to be accurate and are likely lower.

Population in the Sutter Community Services District area has the capacity to grow on groundwater, but without a new wastewater treatment plant, the community will not be allowed to increase its population. The Sutter County Development Services Department is currently prohibiting further development within the community of Robbins due to high wastewater treatment usage compared to treatment capacity, therefore restricting population growth within the community. Golden State Water Company received authorization from the California Public Utility Commission in 2021 to acquire the Robbins water system from Sutter County, with the transfer completed in late 2021. Improvements to the Robbins water system include drilling a new well, rehabilitating the existing well, and customer meters.

2.2.1.6 Agricultural Water Supply

The County has been historically, and continues to be, an agricultural community. Irrigated agricultural land accounts for about 70 percent of the total area in the County. The remaining land is used for habitat preserves, open range land grazing, roads, and other infrastructure. The largest land use is for rice production, averaging about 40 percent of the total County and has ranged from 31 to 46 percent. Pasture is the next largest land use followed by orchards which average about 16 percent and has ranged from 12 to 19 percent. Since about 1994, agricultural land use has been relatively stable with a slight decline in rice acreage and a slight increase in orchards.

Existing agricultural irrigation entities in Sutter County include the following: Garden Highway Mutual Water Company; Meridian Farms Water Company; Sutter Bypass Butte Slough Water User Association; Butte Slough Irrigation Company; Sutter Extension Water District; Sutter Mutual Water Company; Tisdale Irrigation and Drainage Company; Tudor Mutual Water Company; Butte Water District; Feather Water District; and Oswald Water District. These entities supply surface water from the Feather and Sacramento Rivers. Reclamation districts have the capacity to place pumps in drainage canals and reuse water.

The types of crops that can be grown are determined by soil types, water supply market conditions, availability of surface water, and water quality. In many areas, the soil types are conducive to rice production and access to good quality surface water has been secure relative to many other areas of California. These conditions have supported stability in both the amount of land devoted to agricultural production and in the types of crops grown on these lands.

As noted above, an important reason for the stability of both irrigated acreage and of cropping patterns in the Subbasin is the large area within the Subbasin having soils suitable for rice cultivation. Rice is mainly grown on soils favorable to the maintenance

of standing water: specifically, clay soils with low vertical hydraulic conductivity. Soil features, such as fine-texture or cemented layers with low vertical hydraulic conductivity, are common over broad areas in the Subbasin and are considered advantageous for flooded rice culture. Although deep ripping of restrictive layers can make these soils more suitable for non-flooded crops, it would also reduce suitability for rice planting.

Sacramento Valley rice farmers use mainly surface water for irrigation. The quality of this water is generally high having been derived from melting snow that enters rivers through managed reservoir discharge. Salinity is removed from the land by runoff and percolating water, mostly fairly early in the reclamation process, so there is little residual salinity in established rice fields.

Sutter County's agricultural water usage for the entire county is approximately 60 percent surface water, 20 percent groundwater, and 20 percent that is irrigated by both surface water and groundwater. The predominant source of water for permanent crops is groundwater (Wood Rodgers, 2012), whereas rice and irrigated truck crops typically use surface water. Groundwater use has varied from 122,000 AFY to 235,000 AFY.

2.2.1.7 Managed Wetlands Water Supply

The Central Valley Project Improvement Act (CVPIA) Refuge Water Supply Program (RWSP) ensures annual water deliveries of a specified quantity, of suitable flow rate and timing, and suitable quality to identified wetland habitat areas to maintain and improve wetland habitat areas (CDFW, n.d.). The CVPIA RWSP mandates are to acquire or secure the water supply necessary to meet delivery requirements, convey the water, and upgrade or build new conveyance facilities. USBR implements long-term water supply contracts through the refuge managing agencies, which include U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and Grassland Resource Conservation District. Each refuge managing agency provides an annual water delivery schedule and updates the schedule monthly based on their allocated Level 2 water supply and the estimated acquisition of Incremental Level 4 water supply. Level 2 water supply represents the historical average amount of water deliveries prior to CVPIA enactment in 1992 and is the baseline water required for wildlife habitat management. Incremental Level 4 water supply represents the additional increment of water required for optimal wetland habitat. Full Level 4 water deliveries are satisfied when both Level 2 and Incremental Level 4 supply requirements are met in full.

Almost all Level 2 water supply requirements are secured annually and received by refuges due to long-term contracts with USBR (CDFW, n.d.). Only 43% of Incremental Level 4 allocations were required and delivered each year from willing sellers on an average annual basis from 2005 to 2014 due to too few willing sellers and/or too little funding to buy willing seller's water. Incremental 4 water supplies may be acquired through voluntary measures such as water conservation, conjunctive use, purchase, lease, donation, or similar activities. Currently, both the Gray Lodge Wildlife Area and

Sutter National Wildlife Refuge are not able to receive full Level 4 water allocations based on incomplete water conveyance infrastructure. A small portion of the Gray Lodge Wildlife Area is located in the Sutter Subbasin and refuge water delivery points are located in the Butte Subbasin. For the Sutter National Wildlife Refuge, the Level 2 water contract quantity is 23,500 AFY and the 100% Incremental Level 4 water contract quantity is 6,500 AFY, therefore Full Level 4 water deliveries are 30,000 AFY (USBR, July 2004).

2.2.1.8 Land Use Plans Outside Sutter Subbasin

Land use plans outside of the Sutter Subbasin generally include general plans in Butte, Yuba, Placer, Yolo, and Colusa Counties. Areas neighboring the Sutter Subbasin within Butte, Placer, Yolo, and Colusa Counties are generally projected to continue present agricultural uses. The North Yuba and South Yuba Subbasins, located within Yuba County, submitted a joint initial GSP to DWR in January 2020 as well as an amended GSP and first Periodic Evaluation in January 2025. Implementation of the Yuba Subbasins GSP is anticipated to continue sustainable management of groundwater in the Yuba Subbasins and is not anticipated to affect the water supply assumptions in the relevant general plans within the subbasins. Therefore, it is anticipated that land use plans within the neighboring North Yuba and South Yuba Subbasins will not affect the ability of the Sutter Subbasin to achieve sustainable groundwater management.

2.3 Existing Water Resources Monitoring and Management Programs

As required by §354.8(c) and (d) of the GSP Emergency Regulations, the following section describes existing water resources-related management and monitoring plans, and a discussion of how these programs will either impact GSP implementation and/or will be incorporated into the GSP.

2.3.1 Water Resources Management Programs

Existing water resources management programs include local Groundwater Master Plans (GMPs), the City of Yuba City Water Treatment Plant and Distribution System Master Plan, the City of Yuba City 2025 Urban Water Management Plan, Agricultural Water Management Plans, the North Sacramento Valley Integrated Regional Water Management Plan (IRWMP), Irrigated Lands Regulatory Program (ILRP), and Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS).

2.3.1.1 Sutter County Groundwater Management Plan

Sutter County developed a Groundwater Management Plan (Wood Rodgers, 2012) that is compliant with Assembly Bill (AB) 3030, Senate Bill (SB) 1938, and AB 359 legislation. The Sutter County GMP was prepared with input and direction from County stakeholders, with financial and technical assistance from DWR, with the purpose of:

- Summarizing the current understanding of groundwater underlying Sutter County and its role in the County's overall water supply, making that information publicly available.
- Formulating goals and objectives that can be used as guidelines to help manage groundwater resources to meet current and future demands in Sutter County.
- Establish a plan for the County's involvement in ongoing monitoring and management of groundwater to promote these goals and objectives.
- Maintain eligibility for grant funding administered by DWR to increase the understanding of groundwater basins underlying Sutter County.

The plan covers the entire county, including the entire Sutter Subbasin. Since adoption of the Sutter Subbasin GSP and submittal to DWR in January 2022, the GMP has been superseded by the GSP. The GMP now serves as a reference document from which the GSP builds.

2.3.1.2 Butte Water District Groundwater Management Plan

The Butte Water District GMP (No author, 1996) is compliant with AB 3030 and developed with the purpose of managing and monitoring groundwater resources existing and available within the District boundaries. The Butte Water District GMP has been implemented in a cooperative manner with other local private and or public water-purveying public agencies for the purpose of preserving, protecting, and monitoring basin area groundwater extraction, distribution, allocation, or exportation to ensure compliance with Water Code Section 1745.10.

Since adoption of the Sutter Subbasin GSP and submittal to DWR in January 2022, the GMP has been superseded by the GSP. The GMP now serves as a reference document from which the GSP builds.

2.3.1.3 Feather Water District Groundwater Management Plan

The Feather Water District GMP (No author, 2005) is compliant with AB 3030 with the objective and purpose to manage, monitor, and preserve groundwater resources existing and available within its current and future boundaries in order to maintain and maximize long-term reliability of the groundwater supply, to prevent significant depletion of the groundwater storage over the long term, to prevent significant degradation of the quality of the groundwater, and to protect natural recharge and investigate possible use of intentional recharge of groundwater supply. Feather Water District has coordinated with other local private or public water purveying public agencies for the purpose of preserving, protecting, and monitoring basin area groundwater extraction, distribution, allocation, and exportation to ensure compliance with Water Code Sections 1745.10, et seq.

Since adoption of the Sutter Subbasin GSP and submittal to DWR in January 2022, the GMP has been superseded by the GSP. The GMP now serves as a reference document from which the GSP builds.

2.3.1.4 Reclamation District No. 1500 Groundwater Management Plan

The Reclamation District No. 1500 GMP (CH2M Hill, 2012) was developed in association with Sutter Mutual Water Company and Pelger Mutual Water Company and is compliant with SB 1938. The GMP supports effective and sustainable groundwater management, which includes delivering cost-effective, quality irrigation water for sustainable agricultural protection and environmental benefit. The objectives of the GMP include:

- Maintaining Sutter Basin long-term agricultural viability
- Promoting resource sustainability
- Increasing long-term water supply reliability
- Promoting cooperative regional outreach and regulatory compatibility

Since adoption of the Sutter Subbasin GSP and submittal to DWR in January 2022, the GMP has been superseded by the GSP. The GMP now serves as a reference document from which the GSP builds.

2.3.1.5 Sutter Extension Water District Groundwater Management Plan

The Sutter Extension Water District GMP (No author, 1995) is compliant with AB 3030 and developed with the purpose of managing and monitoring groundwater resources existing and available within the District boundary. Sutter Extension Water District has coordinated and cooperated with other local private or public water purveying public agencies for the purpose of preserving, protecting, and monitoring basin area groundwater extraction, distribution, or exportation ensuring compliance with Water Code Sections 1745.10, et seq.

Since adoption of the Sutter Subbasin GSP and submittal to DWR in January 2022, the GMP has been superseded by the GSP. The GMP now serves as a reference document from which the GSP builds.

2.3.1.6 City of Yuba City Water Treatment Plant and Distribution System Master Plan

The City of Yuba City's Water Treatment Plant and Distribution System Master Plan (Water Master Plan) (West Yost Associates, 2019) identifies strategies for cost-effectively meeting the City's water treatment plant and distribution system needs; guides capital expenditures for the water treatment plant and distribution system; and presents comprehensive renewal and replacement strategies. The resulting Water Master Plan provides a comprehensive road map for the City for future planning.

2.3.1.7 City of Yuba City 2025 Urban Water Management Plan

The City of Yuba City's 2025 Urban Water Management Plan (UWMP) (Trinity Consultants & Zanjero, 2026) addresses the City's water management planning efforts to assure adequate water supplies to meet forecast demands over the next 25 years. As required by the Urban Water Management Planning Act, the City's 2025 UWMP specifically assesses the availability of its supplies to meet forecast water uses during average, single-dry, and five consecutive drought years through 2050. Verification that future demands will not exceed supplies and assuring the availability of supplies in dry-year conditions are critical outcomes of the City's 2025 UWMP. UWMPs are prepared every five years by law to support urban water suppliers' long-term resources planning.

2.3.1.8 Yuba City Basin Storm Water Resource Plan

The Yuba City Basin Storm Water Resources Plan (SWRP) (West Yost Associates, 2018) is a comprehensive document that identifies, prioritizes, and schedules storm water projects within the Yuba City Basin. Development of the SWRP was led by the City of Yuba City and meets the requirements of SB 985, as the Yuba City Basin SWRP has been reviewed and approved by the State Water Resources Control Board (SWRCB) and Central Valley Regional Water Quality Control Board (CV-RWQCB) (California Water Boards, June 2020). SWRP content includes an introduction and description of the watershed and sub-watersheds; public outreach and coordination; data collection; quantitative methods; SWRP project evaluations, quantitative methods, and project ranking/prioritization; implementation strategy and schedule; standard provisions; and SWRP checklist and self-certification.

2.3.1.9 Agricultural Water Management Plans

Agricultural Water Management Plans (AWMPs) must include background and description of the service area covered by the Plan, an inventory of water supplies, a water balance analysis, evaluation of potential climate change impacts and adaptation strategies, and an evaluation of water management activities and opportunities related to efficient water management practices and water use efficiency improvements.

Three agricultural water suppliers within the Sutter Subbasin were required to submit 2015 AWMPs to DWR: Butte Water District, Sutter Extension Water District, and Sutter Mutual Water Company. Butte Water District and Sutter Extension Water District published individual Supplier Plan Components in the 2015 Feather River Regional AWMP as members of the Northern California Water Association (NCWA, 2016). Sutter Mutual Water Company submitted the original *Sacramento Valley Regional Water Management Plan* with other members of the Sacramento River Settlement Contractors (SRSC) (SRSC, 2012).

No agricultural water suppliers in the Sutter Subbasin were required to submit AWMPs in 2020 or 2025. However, Butte Water District voluntarily elected to update their individual supplier AWMP components in the 2020 Feather River Regional AWMP

Update (NCWA, 2021). Similarly, Meridian Farms Water Company and Sutter Mutual Water Company participated in the development of a 2023 update to the *Sacramento Valley Regional Water Management Plan* (SRSC, 2023).

2.3.1.10 North Sacramento Valley 2014 Integrated Regional Water Management Plan

The 2014 North Sacramento Valley Integrated Regional Water Management Plan (IRWMP), updated in March 2020, includes all or portions of Butte, Colusa, Glenn, Shasta, Sutter, and Tehama Counties. The IRWM region is managed by the North Sacramento Valley Regional Water Management Group (NSV RWMG), which consists of three members selected by the respective county Board of Supervisors.

The NSV RWMG, with the help of its Technical Advisory Group, began development of the IRWMP in 2012 in an open and transparent process with all NSV Board meetings held in compliance with the Brown Act. Collaboration with the public and other local, state, and federal agencies throughout the IRWMP development and implementation process has been a key component in developing and carrying out the goals and objectives of the IRWMP. As a basis for the broad category goals and specific objectives identified in the IRWMP, the following statement of intent was established for the NSV IRWMP:

To establish a regional collaborative structure with the objective of ensuring an affordable, sustainable water supply that supports agricultural, business, environmental, recreational, and domestic needs in the Northern Sacramento Valley.

The following goals and objectives were drafted to support and further the region's statement of intent for the IRWMP.

- **Goal 1:** Water Supply Reliability
- **Objective 1-1:** Document baseline conditions and trends for surface water and groundwater resources.
- **Objective 1-1a:** Adaptation to changes in the amount, intensity, timing, quality, and variability of runoff recharge.
- **Objective 1-2:** Quantify current and future water demands.
- **Objective 1-3:** Maximize efficient utilization and reliability of surface and groundwater supplies in coordination with local GMPs.
- **Objective 1-4:** Coordinate and protect regional groundwater resources, consistent with locally developed GMPs that monitor groundwater levels, groundwater quality, and inelastic land subsidence. The effects of sea level rise on groundwater quality have been considered and determined to be inapplicable to the NSV region.

- **Objective 1-5:** Develop regional water transfer guidelines to facilitate efficient management of water supplies that recognize the NSV Region as having the first priority for use.
- **Objective 1-6:** Protect existing and established surface water rights.
- **Objective 1-7:** Honor and preserve area-of-origin statutory protections.
- **Objective 1-8:** Protect existing and established regional CVP and State Water Project (SWP) water contract supplies.
- **Objective 1-9:** Increase surface water storage and hydropower generation within the region.
- **Objective 1-10:** Develop and implement a regional drought preparedness strategy to minimize socio-economic impacts.
- **Objective 1-11:** Develop and improve water resources infrastructure to increase water supply reliability within our region.
- **Objective 1-12:** Develop, update, and implement GMPs through local jurisdictions.
- **Goal 2:** Flood Protection and Planning
 - **Objective 2-1:** Develop and coordinate flood risk reduction plans and projects consistent with current law and regulation to provide protection for agricultural, urban, and rural communities.
 - **Objective 2-2:** Evaluate new flood control projects that have potential economic impacts on agricultural land.
 - **Objective 2-3:** Develop and coordinate flood preparedness programs and alert systems for flood-prone areas consistent with existing flood and hazard mitigation plans.
 - **Objective 2-4:** Implement mutually beneficial flood risk reduction and floodplain ecosystem enhancement programs and projects on a voluntary basis.
- **Goal 3:** Water Quality Protection and Enhancement
 - **Objective 3-1:** Develop and improve infrastructure to meet State and Federal standards for drinking water quality.
 - **Objective 3-2:** Develop and improve infrastructure for wastewater collection, treatment, discharge, and reuse.
 - **Objective 3-3:** Meet State and Federal standards for water quality in surface water bodies and groundwater basins.
 - **Objective 3-4:** Minimize adverse water quality impacts from point sources to surface and groundwater.

- **Objective 3-5:** Minimize adverse water quality impacts from non-point sources to surface and groundwater.
- **Goal 4:** Watershed Protection and Management
- **Objective 4-1:** Aggressively manage invasive species within the watershed.
- **Objective 4-2:** Integrate mutually beneficial agricultural production and habitat conservation programs and projects that do not redirect impact to neighbors.
- **Objective 4-3:** Improve and protect riparian and fish habitat, and fish passage.
- **Objective 4-4:** Implement healthy forest/foothill management activities that improve watersheds
- **Objective 4-5:** Protect wetlands that are critical to hydrologic function.
- **Objective 4-6:** Integrate recreational opportunities within water resource programs and projects.
- **Objective 4-7:** Evaluate habitat conservation and ecosystem improvement programs and projects that have potential economic impacts on agricultural lands.
- **Goal 5:** IRWM Sustainability
- **Objective 5-1:** Preserve the autonomy of local governments, special districts, and Tribes.
- **Objective 5-2:** Enhance communication and coordination among federal, state, Tribal, and local governments, and other stakeholders.
- **Objective 5-3:** Maintain a governance structure to update the IRWMP and support IRWMP project implementation.
- **Objective 5-4:** Coordinate with neighboring IRWM regions to identify opportunities to enhance water management.
- **Objective 5-5:** Pursue funding opportunities to implement programs and projects consistent with the IRWMP.
- **Objective 5-6:** Coordinate IRWM activities with land-use planning.
- **Goal 6:** Public Education and Information Dissemination
- **Objective 6-1:** Conduct public education and outreach to promote IRWMP goals.
- **Objective 6-2:** Develop and disseminate information to protect regional water supplies.
- **Objective 6-3:** Disseminate information on flood risks, Federal Emergency Management Agency's (FEMA's) flood insurance rate maps (FIRM), and new FEMA policies.

- **Objective 6-4:** Develop and disseminate water quality information throughout the region.
- **Objective 6-5:** Develop and disseminate scientific information on aquatic, riparian, and watershed resources.

2.3.1.11 Irrigated Lands Regulatory Program

Groundwater quality from agricultural lands in the area is managed under the Irrigated Lands Regulatory Program (ILRP) by the SWRCB, which has separate requirements for rice land and irrigated land. Groundwater quality sampling in selected monitoring wells occurs every two years. The ILRP, initially implemented in 2003, regulates waste from commercially irrigated lands that discharge into surface water and groundwater under the Porter-Cologne Water Quality Control Act. The CV-RWQCB works directly with regional or crop-based coalitions as well as growers to reduce impacts of irrigated agricultural discharges to waters of the State. Pollutants of concern regulated under the ILRP include pesticides, fertilizers, salts, pathogens, and sediment. The Sutter Subbasin is within two different voluntary coalitions related to ILRP: The California Rice Commission and the Sacramento Valley Water Quality Coalition, specifically the Butte-Yuba-Sutter Sub-watershed. These coalition groups work directly with member growers to assist in compliance with CV-RWQCB requirements by conducting surface water monitoring and preparing regional plans to address water quality issues.

2.3.1.12 CV-SALTS

The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a joint effort between CV-RWQCB, SWRCB, and stakeholders to reduce salt and nitrate impacts, restore groundwater quality, and provide safe drinking water supplies throughout the Central Valley. CV-SALTS was established in 2006 as a collaborative basin planning effort aimed at developing and implementing comprehensive salinity and nitrate management throughout the Central Valley. The Central Valley Salt and Nitrate Management Plan (SNMP) (CV-SALTS, December 2016) was adopted by the CV-RWQCB in March 2016 and the SWRCB adopted amendments to the Sacramento and San Joaquin Basin Plan and Tulare Lake Basin Plan to incorporate the Central Valley SNMP in October 2019.

Implementation of the Central Valley SNMP occurs under two programs – the Nitrate Control Program and the Salinity Control Program. For the Nitrate Control Program, dischargers are provided two compliance pathways: (1) traditional permitting as an individual discharger or as a coalition (i.e., irrigated lands coalition), or (2) groundwater management zone permitting. Zone permitting allows dischargers to work as a collective in collaboration with the CV-RWQCB to provide safe drinking water with the option to extend time to achieve nitrogen balance. The Sutter Subbasin is ranked as “Not Prioritized” in the Central Valley SNMP, meaning the Sutter Subbasin will need to comply with the SNMP in the future but implementation of SNMP requirements will be

phased in by the CV-RWQCB as resources allow. For the Salinity Control Program, discharges are also provided two compliance pathways: (1) traditional permitting as an individual discharger or as a coalition (i.e., irrigated lands coalition), or (2) participation in the Prioritization and Optimization (P&O) Study. Implementation of the Salinity Control Program does not prioritize groundwater subbasins as under the Nitrate Control Program and Notices to Comply with the Salinity Control Program were issued in January 2021. At present, the Yuba City Water Treatment Plant and City of Live Oak water system and wastewater treatment plant all participate in the P&O Study.

2.3.2 County Well Construction/Destruction Standards and Permitting

Sutter County Environmental Health Division (SCEHD) is the well permitting agency Sutter Subbasin. One permit application is used for a new well or to deepen, reconstruct, recondition, or destroy a well (SCEHD, July 2013). The permit application requires a site plan showing the location of the well and the accessor's parcel number. A C-57 Water Well Contractor's license and signature of licensee is required by the contractor completing the permit and work. The design and construction of the well shall be in conformance with the State's Water Well Standards as denoted in Bulletin 74-81, "Water Standards: State of California" and Bulletin 74-90, "California Well Standards" as referenced in the County of Sutter Department of Public Works Improvement Standards (2005, rev. 2010). Water wells are also addressed in the Sutter County Code of Ordinances, 700 – Health and Sanitation, Chapter 765 Water Wells (Sutter County, n.d.).

2.3.3 Water Resources Monitoring Programs

Existing water monitoring programs in the Sutter Subbasin are operated by federal, state, and local agencies to quantify and track groundwater and surface water conditions. Descriptions of existing water monitoring programs within the Sutter Subbasin are included in the following subsections.

2.3.3.1 Groundwater

2.3.3.1.1 CASGEM

The California Statewide Groundwater Elevation Monitoring (CASGEM) program is implemented by DWR to collect groundwater level monitoring data from primarily low- and medium-priority groundwater basins not monitored under a GSP. While monitoring under SGMA has largely superseded the CASGEM program in medium- and high-priority groundwater basins, SGMA builds on the CASGEM program efforts and further strengthens groundwater monitoring efforts statewide. The CASGEM program continues its groundwater level monitoring efforts by facilitating voluntary data collection to supplement monitoring under SGMA for GSP implementation.

Groundwater levels are still monitored at 19 wells voluntarily under the CASGEM program within the Sutter Subbasin, as indicated by wells that were last monitored as of

2025. Additional information about CASGEM-monitored wells can be found at:

<https://casgem.water.ca.gov/>.

2.3.3.1.2 Department of Water Resources, Groundwater Levels and Quality

DWR's Water Data Library (WDL) includes a compendium of groundwater level and quality data. DWR's statewide groundwater level monitoring network consists of approximately 1,300 wells covering 78 Bulletin 118-2003-defined groundwater basins, 17 non-alluvial basins, and six hydrologic regions (DWR, 2003). Approximately half of the wells monitored by DWR are located within the Sacramento River Hydrologic Region (DWR, 2003). DWR actively monitors 194 wells for groundwater levels within the Sutter Subbasin with data reported to the WDL database and accessible via the SGMA Data Viewer (California Department of Water Resources, 2026). DWR no longer monitors groundwater quality in the Subbasin.

2.3.3.1.3 Irrigated Lands Regulatory Program

As part of the ILRP, growers in the Sutter Subbasin participate in Groundwater Quality Trend Monitoring (GQTM) through the California Rice Commission and Butte-Yuba-Sutter Sub-watershed of the Sacramento Valley Water Quality Coalition. The GQTM Program is intended to monitor shallow groundwater to ensure irrigated agricultural discharges do not impair access to safe and reliable drinking water.

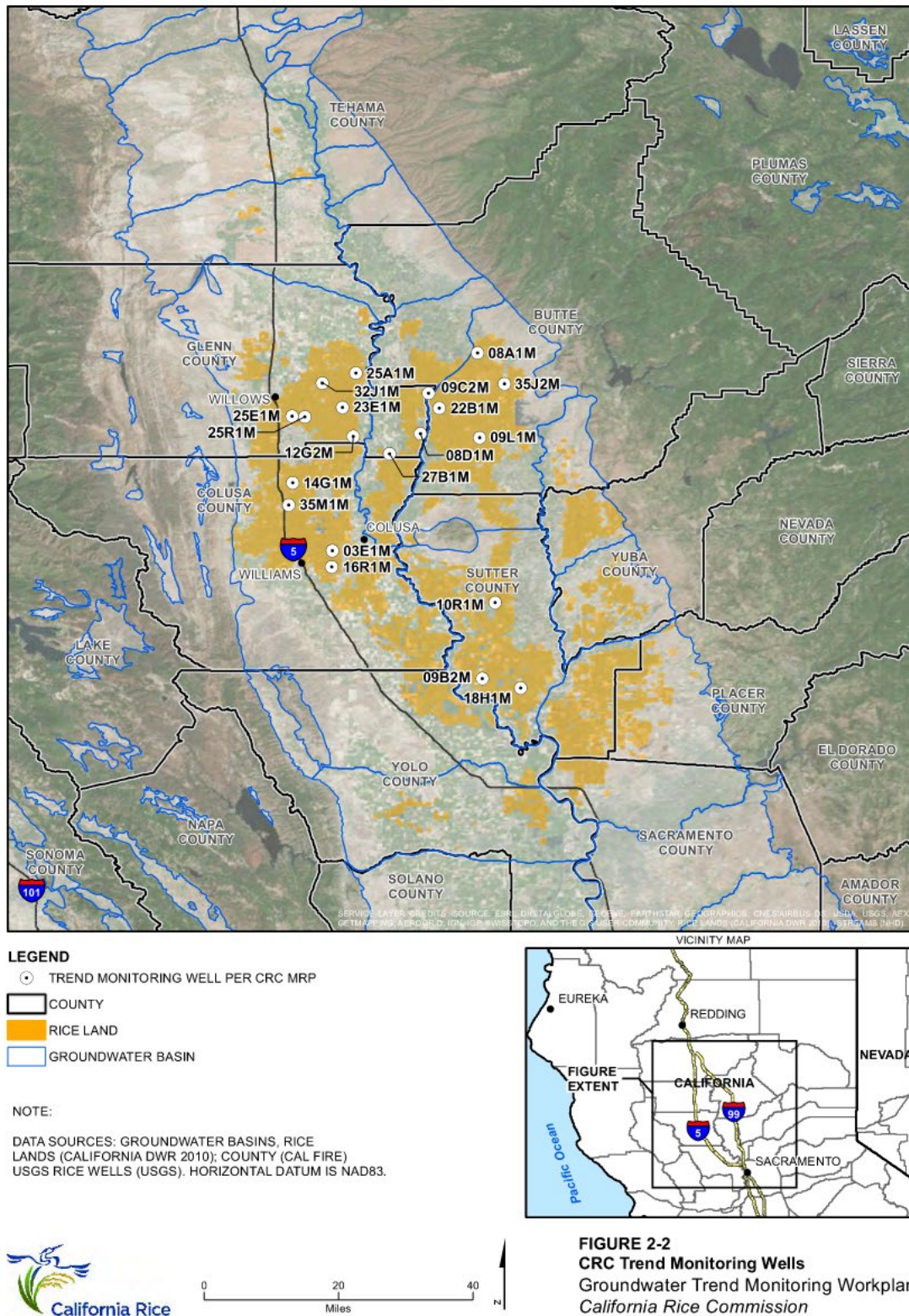
The objectives of the GQTM Program developed by the California Rice Commission (CH2M Hill, March 2016) are to determine current water quality conditions of groundwater relevant to rice operations and to develop long-term groundwater quality information that can be used to evaluate the regional effects of rice operations and its practice. The California Rice Commission has selected 20 active wells in the U.S. Geological Survey (USGS) groundwater monitoring network as part of the trend network surrounded by land used to grow rice is located closer to the edges of rice fields. Field parameters, including conductivity, pH, dissolved oxygen, and temperature, as well as total dissolved solids, nitrate + nitrite as nitrogen, and total ammonia as nitrogen will be monitored annually at each well, while anions (carbonate, bicarbonate, chloride, and sulfate) and cations (boron, calcium, sodium, magnesium, and potassium) will be monitored for initially (beginning in 2017) and then once every 5 years at each well.

Figure 2-16 shows the location of the California Rice Commission trend monitoring wells, with 3 wells located in the Sutter Subbasin. These 3 wells in the Sutter Subbasin were sampled for water quality parameters in 2018 and 2020. As of May 2020, the California Rice Commission has not recommended future monitoring of these 3 wells under the ILRP (Jacobs and Montgomery & Associates, May 2020).

The Sacramento Valley Water Quality Coalition has identified one well within the Sutter Subbasin portion of the Butte-Yuba-Sutter Sub-watershed GQTM Program (**Figure 2-17**) (LSCE, July 2018). Well SVWQC_002 will be monitored for nitrate as N, electrical conductivity, pH, dissolved oxygen, temperature, oxidation-reduction potential, and turbidity on an annual basis, and total dissolved solids, carbonate, bicarbonate, chloride,

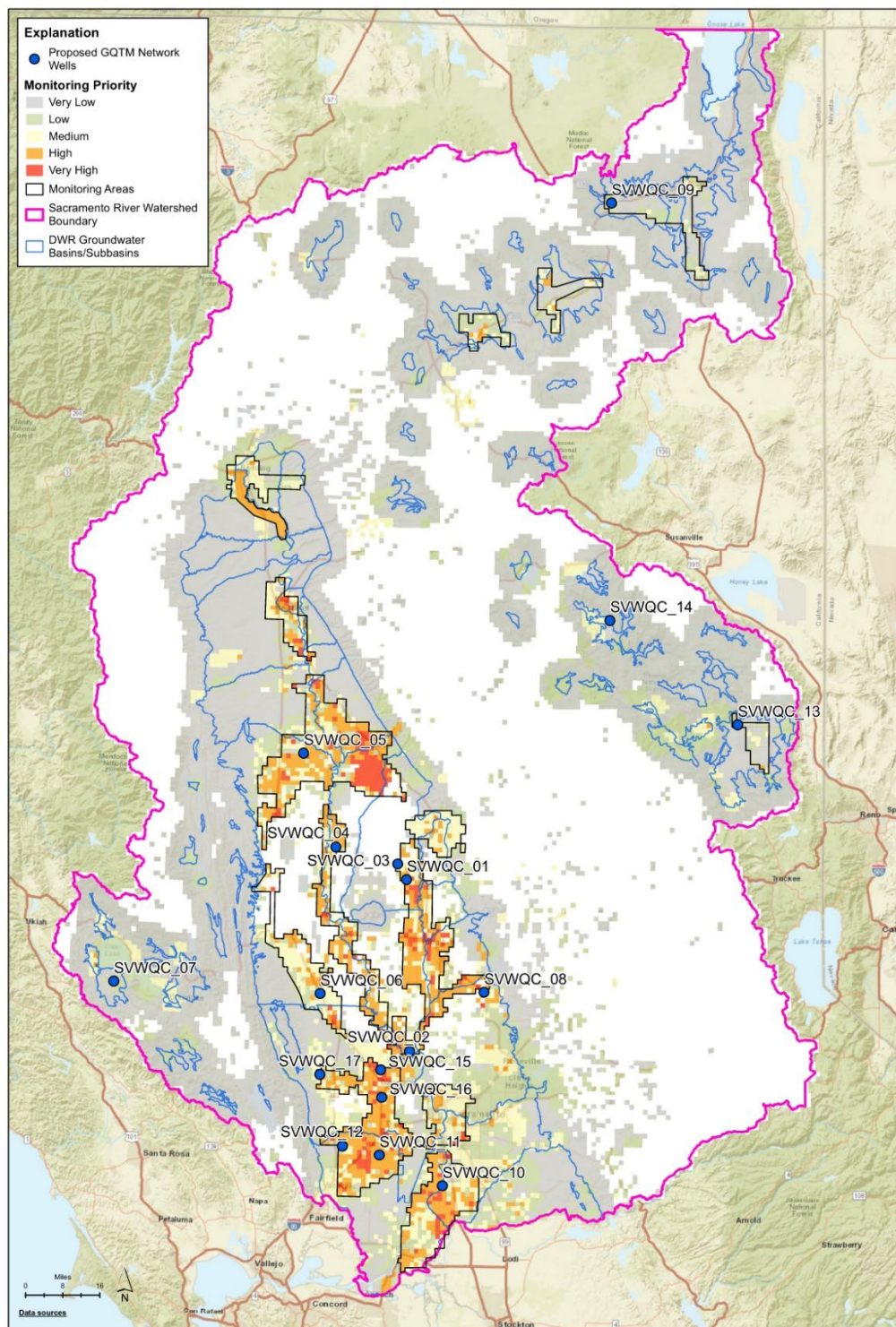
sulfate, boron, calcium, sodium, magnesium, and potassium every five years. The well was not sampled as part of the most recent Five-Year Assessment Report on the GQTM network conducted in 2022 (LSCE, 2023).

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Figure 2-16. California Rice Commission GQTM Program Network



ADDENDUM FIGURE 3

Map of GQTM Network Wells

Groundwater Quality Trend Monitoring Workplan Addendum
Sacramento Valley Water Quality Coalition

Figure 2-17. Sacramento Valley Water Quality Coalition GQTM Program Network

2.3.3.1.4 Groundwater Ambient Monitoring and Assessment Program

The Groundwater Ambient Monitoring and Assessment (GAMA) Program, established in 2000, is a statewide groundwater quality monitoring program based on interagency collaboration among the SWRCB and the Regional Water Quality Control Boards, DWR, Department of Pesticide Regulation (DPR), USGS, and Lawrence Livermore National Laboratory, and cooperation with local water agencies and well owners (California Water Boards, July 2020). The primary goals of GAMA are to improve statewide comprehensive groundwater monitoring and increase the availability to the general public of groundwater quality and contamination information. Additional goals of GAMA include to establish ambient groundwater quality on a basin wide scale, continue periodic groundwater sampling and groundwater quality studies in order to characterize chemicals of concern and identify trends in groundwater quality, and centralize the availability of groundwater information to the public and decision makers to better protect California's groundwater resources.

GAMA includes several projects to monitor groundwater quality. Within the Sutter Subbasin, the Middle Sacramento Valley Deep Aquifer Assessment (Bennett et al., 2011) was conducted as part of the Priority Basin Project, which provides a comprehensive statewide assessment of groundwater quality to help identify and understand the risks to groundwater. Monitoring data collected under the GAMA program are available via several online tools (California Water Boards, December 2020(a)), including GeoTracker GAMA.

2.3.3.1.5 GeoTracker

GeoTracker is the SWRCB's data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

GeoTracker contains records for sites that require cleanup, such as Leaking Underground Storage Tank (LUST) sites, Department of Defense sites, and Cleanup Program sites. GeoTracker also contains records for various unregulated projects as well as permitted facilities including Irrigated Lands, Oil and Gas production, operating Permitted USTs, and Land Disposal Sites. The Subbasin contains 21 active cleanup sites, primarily located in the eastern portion (California Water Boards, 2026a). As reported on GeoTracker, there are 101 actively monitored groundwater wells in the Sutter Subbasin (SWRCB, 2026).

2.3.3.1.6 State Water Resources Control Board, Division of Drinking Water

The SWRCB's Division of Drinking Water (DDW) monitors public water system wells for California Code of Regulations Title 22 requirements relative to levels of organic and inorganic compounds such as metals, microbial compounds, and radiological analytes. Data are available for active and inactive drinking water sources, for water systems that serve the public, and wells defined as serving 15 or more connections, or more than 25 people per day for 60 or more days per year. DDW wells throughout the state are

monitored for Title 22 requirements, including pH, alkalinity, bicarbonate, calcium, magnesium, potassium, sulfate, barium, copper, iron, zinc, and nitrate.

2.3.3.1.7 SGMA Data Viewer

DWR's SGMA Data Viewer provides access to groundwater-related datasets that are organized by the requirements of SGMA and the GSP regulations for the purposes of supporting GSP development and implementation (DWR, n.d.(b)). SGMA Data Viewer provides centralized data access to improve coordination of datasets collected and displayed across various state and federal portals and applications for the purpose of helping GSAs meet the requirements of SGMA and the GSP regulations. Data types presented within SGMA Data Viewer include periodic and continuous groundwater level measurements from DWR and U.S. Geological Survey; groundwater level contours; Well Completion Reports; land subsidence data including extensometers, continuous GPS, and InSAR; CDEC stations; climate change factors; land use; soil and geologic data; and jurisdictional boundaries.

2.3.3.1.8 National Water Information System

The U.S. Geological Survey's National Water Information System (NWIS) database contains surface water data collected by automatic recorders and field measurements as well as chemical, physical, and biological sampling results from wells across the country and within the Sutter Subbasin (USGS, n.d.). Real-time and daily data are available to describe river state, streamflow, lake levels, surface water quality, rainfall, groundwater levels, and groundwater quality.

2.3.3.2 Surface Water

2.3.3.2.1 State Water Resources Control Board Surface Water Ambient Monitoring Program

The SWRCB's Surface Water Ambient Monitoring Program (SWAMP) operates four primary statewide monitoring programs to evaluate the condition of surface waters: Bioaccumulation Monitoring Program, Bioassessment Program, Freshwater CyanoHABs Program, and Stream Pollution Trends Program (California Water Boards, December 2020(b)). Data for the Sutter Subbasin is available on the SWAMP Data Dashboard from December 2000 through November 2025 (California Water Boards, 2026b).

2.3.3.2.2 Department of Pesticide Regulation Surface Water Protection Program

The California Department of Pesticide Regulation's (DPR's) Surface Water Protection Program monitors agricultural and non-agricultural sources of pesticide residues in surface water. The goal of the Surface Water Protection Program is to characterize pesticide residues, identify the source of contamination, determine the mechanisms of off-site movement of pesticides to surface water, and develop site-specific mitigation strategies (CDPR, n.d.). The program includes both a preventative and response

component toward reducing the presence of pesticides in surface water. The preventative component includes local outreach to promote management practices that reduce pesticide runoff, while the response component includes mitigation options to meet water quality goals and identify self-regulating efforts to reduce pesticide exposure. Data are available in CEDEN from January 1998 through April 2005.

2.3.3.2.3 Sacramento Watershed Coordinated Monitoring Program

The Sacramento Watershed Coordinated Monitoring Program is a coordinated effort between the CV-RWQCB and DWR Northern Region to monitor water quality trends in the Sacramento River Watershed (California Water Boards, June 2019). Coordinated monitoring was initiated in the fall of 2008 and monitoring sites are sampled on a quarterly basis for water column toxicity, total organic carbon, nutrients, and *E. coli*, where a subset of monitoring sites are also monitored for sediment toxicity (California Water Boards, 2009). There are two sampling sites within the Sutter Subbasin: Butte Slough near Meridian and Sutter Bypass at RD-1500 Powerplant. Both sites within the Sutter Subbasin are integrator sites for SWAMP Statewide Stream Contaminant Trend Monitoring. Additionally, there are four sampling sites directly adjacent to the Sutter Subbasin located within neighboring subbasins: Sacramento River above Colusa Basin Drain near Knights Landing, Colusa Basin Drain near Knights Landing, Feather River near Verona, and Sacramento River near Knights Landing (California Water Boards, February 2009). Data by water quality parameter is available for download at the Sacramento River Watershed Data Portal website (Sacramento River Watershed Data Program, n.d.).

2.3.3.2.4 California Data Exchange Center Monitoring Program

The California Data Exchange Center (CDEC) installs, maintains, and operates an extensive hydrologic data collection network including automatic snow reporting gages for the Cooperative Snow Surveys Program and precipitation and river stage sensors for flood forecasting (DWR, n.d.(a)). CDEC provides provisional real-time data along with historical 15-minutes, hourly, and daily data for monitoring sites on the Sacramento River, Feather River, and Sutter Bypass within the Sutter Subbasin. CDEC displays real-time data from DWR as well as the following cooperative agencies: National Weather Service, U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, U.S. Geological Survey, California Department of Fish and Wildlife, Sacramento Municipal Utilities District, Pacific Gas & Electric Company, East Bay Municipal Utilities District, and local entities.

2.3.3.2.5 National Water Information System

Refer to **Section 2.3.3.1.8** for an overview of the U.S. Geological Survey's NWIS.

2.3.3.3 Land Surface

2.3.3.3.1 DWR and USBR Subsidence Monitoring

Until recently, DWR, in coordination with local, State, and federal partners (including Sutter County), monitored for potential land subsidence throughout the Sacramento Valley. The subsidence monitoring network consisted of 32 GPS monuments and one extensometer located within Sutter County (Wood Rodgers, 2012). A baseline survey of the GPS monuments was conducted in 2008 by DWR and USBR in coordination with the Sacramento Valley Height-Modernization Project (DWR and USBR, September 2008). The primary purpose of this survey (the Sacramento Valley GPS Subsidence Project) was to provide a comprehensive Sacramento Valley GPS subsidence network to serve as a framework for monitoring land subsidence resulting from groundwater extractions. The baseline observations began on March 17, 2008 and were concluded on June 17, 2008. Plans were for network monitoring every five years, although 2013 monitoring did not occur due to budget limitations.

DWR resurveyed the monument network in 2017 with assistance from 19 state, county, and local agencies and a private entity (DWR NRO, December 2018). The methodology used was similar to the DWR survey. Analysis of the results was performed to depict the change in height at each monument from 2008 to 2017. Observed subsidence during this time period was less than 0.4 feet throughout the Sutter Subbasin.

As of 2022, a decision was made by DWR to discontinue monitoring in 2022 and no future monitoring is anticipated to occur at this time.

2.3.3.3.2 Interferometric Synthetic Aperture Radar Imagery

The National Aeronautics and Space Administration's (NASA) Jet Propulsion Laboratory (JPL) uses interferometric synthetic radar (InSAR) imagery to evaluate land surface fluctuations from satellite imagery. Analysis of these images show that the Sutter Subbasin has not subsided materially within the last several years. JPL data showing cumulative vertical displacement in feet from June 2015 to October 2025 (**Figure 2-18**) ranged from -0.25 feet to 0.25 feet and annual vertical displacement from October 2024 to October 2025 (**Figure 2-19**) ranged from -0.1 feet to 0.1 feet in much of the Subbasin, with small areas ranging from -0.2 feet to -0.1 feet likely resulting from field leveling.

2.3.4 Implications of Existing Monitoring and Management Programs in this GSP

Existing monitoring and management programs within the Sutter Subbasin support groundwater management and are not anticipated to limit operational flexibility. Monitoring under the Sutter Subbasin GSP will be coordinated to the extent possible with these other, existing monitoring programs.

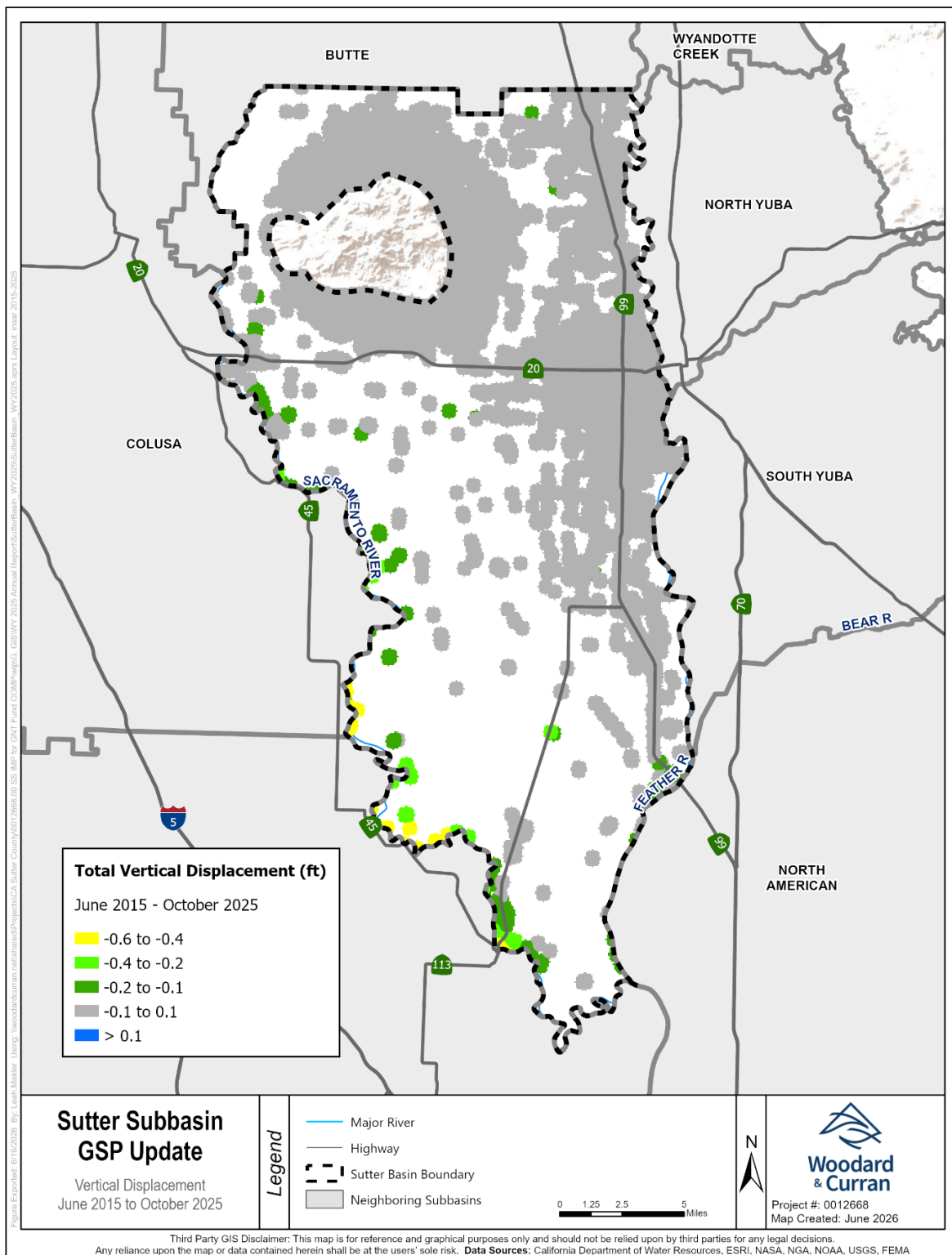


Figure 2-18. Total Subsidence in Sutter Subbasin, JPL InSAR Imagery (June 2015 to October 2025)

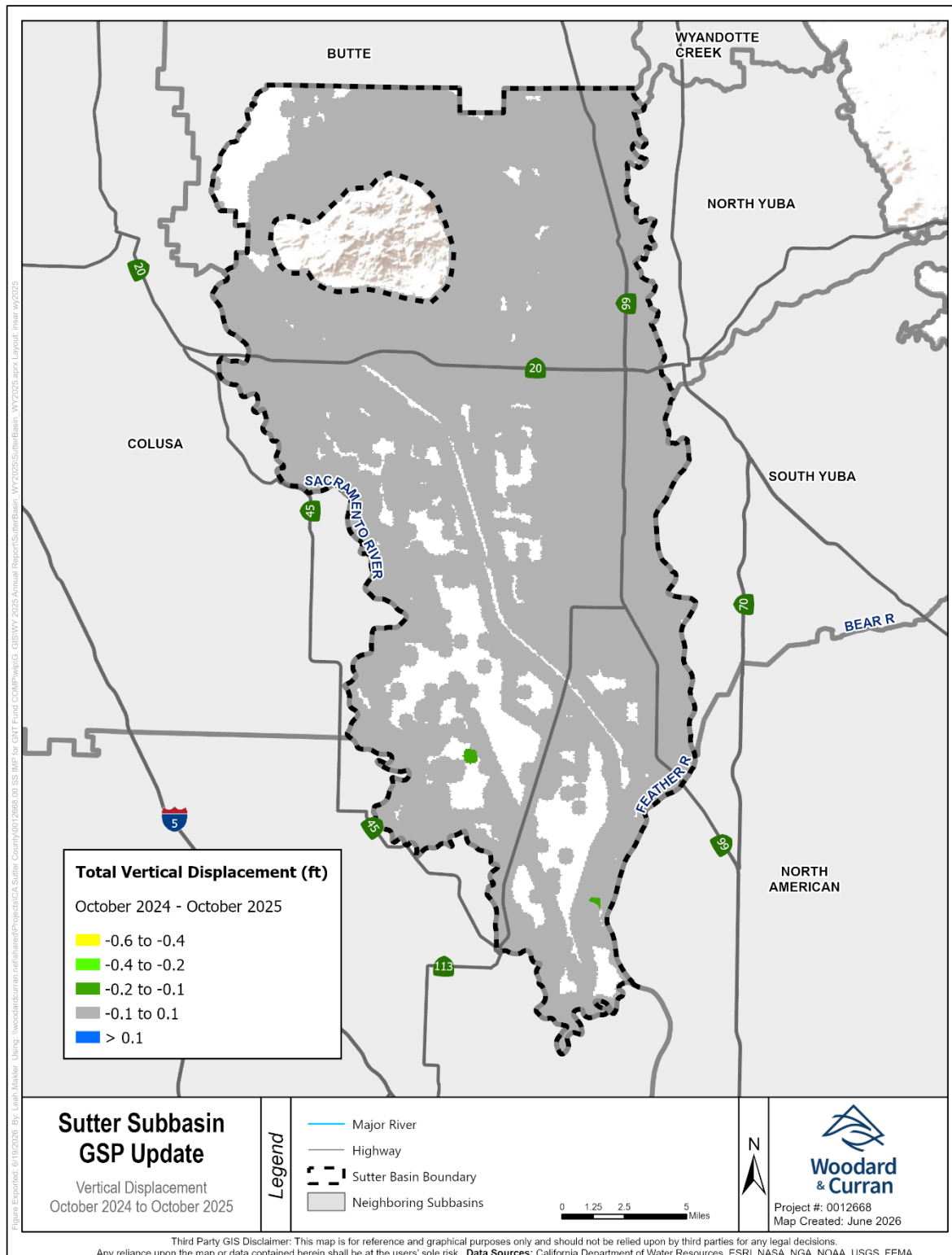


Figure 2-19. Subsidence in Sutter Subbasin, JPL InSAR Imagery (October 2024 to October 2025)

2.4 Existing and Planned Conjunctive Use Programs

Several agencies within the Subbasin conduct short-term groundwater transfer programs as part of conjunctive use of groundwater in the Subbasin. These agencies are Sutter Extension Water District, Butte Water District, and Garden Highway Mutual Water Company, Tule Basin Farms, Tudor Mutual Water Company, Sutter Mutual Water Company, Pelger Mutual Water Company, Pelger Road 1700, Henle Family, LP, and Windswept Land & Livestock. Groundwater substitution transfers (GWS) are completed by these agencies not using their full allotment of surface water. These agencies transfer a portion of their allotment to agencies south of the Sacramento-San Joaquin Delta and pump groundwater in-lieu of using their surface water.

These agencies began water transfers in 2009 and the volume of water transferred between 2009 and 2025 is presented in **Table 2-4**. No GWS transfers occurred in the Sutter Subbasin in WYs 2011, 2012, 2016, 2017, 2019, 2023, 2024, or 2025.

In 2010, Yuba City conducted an aquifer storage and recovery (ASR) feasibility assessment (Carollo Engineers et al., November 2010). In 2015, the City completed construction of three groundwater monitoring wells at the water treatment plant site as recommended by the feasibility assessment. Utilizing these wells, the City has characterized the hydrogeology, groundwater flow gradients, and groundwater quality of the aquifer zones surrounding the site. The City also conducted groundwater monitoring to establish baseline conditions prior to implementing an ASR project.

In March 2022, DWR authorized \$6.3 million in grant funding toward the development of the City's ASR project. In October 2025, the City was able to complete Phase 1 of the project, which involved drilling a new well. The well will be equipped with injection and extraction capabilities following Phase 2 of the project, which commenced in January 2026.

Table 2-4. Groundwater Substitution Transfers in Sutter Subbasin in Acre-Feet per Year, 2009 through 2025

Water Year	Sutter Extension Water District	Butte Water District	Garden Highway Mutual Water Company	Tule Basin Farms	Tudor Mutual Water Company	Sutter Mutual Water Company	Pelger Mutual Water Company	Pelger Road 1700	Henle Family, LP	Windswept Land and Livestock	Total Water Transfers
2009	3,103	4,102	2,730	3,417	-	-	1,640	-	-	-	14,992
2010	2,870	3,847	4,082	3,520	-	-	-	-	-	-	14,319
2011	-	-	-	-	-	-	-	-	-	-	0
2012	-	-	-	-	-	-	-	-	-	-	0
2013	2,863	3,839	3,855	2,802	-	-	1,730	-	-	-	15,089
2014	4,106	5,350	3,791	-	-	-	3,975	-	-	-	17,222
2015	1,738	-	-	-	-	-	3,992	1,803	-	-	7,533
2016	-	-	-	-	-	-	-	-	-	-	0
2017	-	-	-	-	-	-	-	-	-	-	0
2018	3,611	4,324	4,807	3,050	-	-	-	-	-	-	15,792
2019	-	-	-	-	-	-	-	-	-	-	0
2020	2,653	2,655	5,546	2,830	-	5,322	1,599	1,977	220	655	23,457
2021	3,491	3,825	1,817	-	-	16,239	3,750	2,391	501	1,433	33,447
2022	3,279	4,113	2,756	-	250	-	-	-	-	-	10,398
2023	-	-	-	-	-	-	-	-	-	-	0
2024	-	-	-	-	-	-	-	-	-	-	0
2025	-	-	-	-	-	-	-	-	-	-	0
Total	27,714	32,055	29,384	15,619	250	21,561	16,686	6,171	721	2,088	152,249

Sources: GEI, 2016; California Water Boards, 2016; California Water Boards, 2018; California Water Boards, 2020; California Water Boards, 2021; California Water Boards, 2022

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2.5 Plan Elements from California Water Code Section 10727.4

2.5.1 Control of Saline Water Intrusion

The Sutter Subbasin does not experience saline water intrusion; therefore, this element is not applicable. See **Section 6.4.3** for an explanation of why the saline water intrusion sustainability indicator does not apply to the Sutter Subbasin.

2.5.2 Wellhead Protection Areas and Recharge Areas

Wellhead Protection Areas, as defined under the Federal Wellhead Protection Program (§1428 of the State Drinking Water Act Amendments of 1986), are the surface and subsurface areas surrounding a water well or well field supply for a public water system through which contaminants are reasonably likely to move toward and reach such water or well field. The SWRCB-DDW's Drinking Water Source Assessment and Protection program (DWSAP) serves as the State's Wellhead Protection Program. There are no existing local wellhead protection programs in the Sutter Subbasin; therefore, agencies within the Subbasin adhere to federal, state, and county regulations governing wellhead protection.

Groundwater recharge areas are discussed in **Section 5.1.7**.

2.5.3 Mitigation of Contaminated Groundwater

Details on migration of contaminated groundwater are discussed in **Section 5.2.5.1**.

2.5.4 Well Abandonment and Well Destruction Programs

A summary of well abandonment and destruction programs within the Sutter Subbasin are detailed in **Section 2.3.2**.

2.5.5 Activities Implementing, Opportunities for, and Removing Impediments to Conjunctive Use or Underground Storage

Details regarding existing and planned conjunctive use programs are discussed in **Section 2.4** and opportunities for and removing impediments to conjunctive use or underground storage are discussed in **Section 7.1**.

2.5.6 Measures Addressing Groundwater Contamination Cleanup, Groundwater Recharge, In-Lieu Use, Diversions to Storage, Conservation, Water Recycling, Conveyance, and Extraction Projects

Details on projects that may include, but are not limited to, addressing groundwater contamination cleanup, groundwater recharge, in-lieu use, diversion to storage, conservation, water recycling, conveyance, and extraction are discussed in **Section 7.1**.

2.5.7 Efficient Water Management Practices, as defined in Section 10902, for the Delivery of Water and Water Conservation Methods to Improve the Efficiency of Water Use

Details on efficient water management practices are discussed in **Section 2.3.1**.

2.5.8 Efforts to Develop Relationships with State and Federal Regulatory Agencies

The GSAs will continue to coordinate with DWR on groundwater level and groundwater quality monitoring and with DWR and USBR on subsidence monitoring. The GSAs will coordinate with entities implementing the ILRP and CV-SALTS to discuss water quality information and needs. The GSAs will continue to coordinate with CV-RWQCB and Sutter County regarding groundwater contaminant plumes. Environmental organizations and California Department of Fish and Wildlife (CDFW) will be engaged to discuss opportunities to improve the understanding of groundwater dependent ecosystems (GDEs) and potential depletions of interconnected surface water.

2.5.9 Processes to Review Land Use Plans and Efforts to Coordinate with Land Use Planning Agencies to Assess Activities that Potentially Create Risk to Groundwater Quality and Quantity

Entities with land use authority in the Sutter Subbasin include Sutter County and the cities of Live Oak and Yuba City. These same entities are also individual GSAs participating in the development and implementation of this GSP. As such, land use planning is integrally combined with groundwater management through the implementation of this GSP.

2.5.10 Impacts on Groundwater Dependent Ecosystems

Impacts on groundwater dependent ecosystems have not been assessed at this time due to a lack of available information and relative data necessary to analyze impacts to GDEs, as well as location, timing, and quantity of interconnected surface waters. For the best available information about the identification of GDEs in the Sutter Subbasin, refer to **Section 5.2.8**.

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