2. Plan Area

This GSP covers the Enterprise Subbasin, a subbasin of the Redding Area Groundwater Basin (RAGB), as shown on Figure 2-1. This subbasin is under the jurisdiction of the EAGSA. The Enterprise Subbasin lies in southwestern Shasta County and includes the northern end of the Sacramento River Valley. The subbasin covers an area of 61,300 acres, or 96 square miles (DWR, 2004).

The Sacramento River drains the subbasin, flowing southward down the Sacramento River Valley. COR and the towns of Bella Vista and Palo Cedro overlie the Enterprise Subbasin. U.S. Interstate 5 runs north-south through the western portion of the subbasin. State Highways 44 and 299 cross the subbasin running east-west, and State Highway 273 crosses a northwestern portion of the subbasin running north-south. Larger streams and major roads are also shown on Figure 2-1.

2.1 Adjudicated Areas, Other GSAs, and Alternatives

An adjudicated basin is one in which, through legal action, the basin has certain requirements placed on it by the court, and those requirements are normally administered by a watermaster who is appointed by the court. The Enterprise Subbasin is not adjudicated.

The EAGSA overlies the entirety of the subbasin, and is the only GSA overlying it. No alternative plans were submitted within the subbasin.

2.2 Jurisdictional Areas

In accordance with SGMA Regulations § 354.8 (a)(3), the following subsections describe the federal, State, and local agencies with water management authority in the Enterprise Subbasin. There are no tribal lands in the subbasin (BIA, 2020).

2.2.1 Federal Jurisdiction

Areas under federal jurisdiction are shown on Figure 2-2. The U.S. Natural Resources Conservation Service (NRCS) manages the Shaw Conservation Easement and Wetlands Reserve Program 6691049600FNT. The U.S. Bureau of Land Management (BLM) also manages a section of the southern portion of the subbasin between Stillwater Creek and lower Cow Creek.

2.2.2 State Jurisdiction

Areas under state jurisdiction are also shown on Figure 2-2. The California Department of Fish and Wildlife owns four conservation easements in the subbasin, including Old Oregon Trail and Clover Creek Easements.

2.2.3 County Jurisdiction

The entire subbasin lies within Shasta County and is subject to the land and water management authorities granted to counties. Additionally, Shasta County Water Agency (SCWA) is a wholesale water supplier, and Shasta County Department of Public Works manages one small water and sewer district within the Enterprise Subbasin, County Service Area (CSA) #8 Palo Cedro, shown on Figure 2-3.

2.2.4 City and Local Jurisdiction

This section describes cities and agencies with water management responsibilities within the Enterprise Subbasin. The jurisdictional boundaries of these areas are shown on Figure 2-3. The COR Water and

Wastewater Utilities provide water and sewer collection services within its jurisdictional area. ACID and BVWD provide water services within their jurisdictional boundaries.

2.3 Land Use

Shasta County and COR maintain public Geographic Information System (GIS) zoning databases, which store land use zoning designations throughout the unincorporated portions of the County and the City, respectively. These databases were used to develop land use maps for the Enterprise Subbasin, shown on Figure 2-4 and summarized by major category in Table 2-1 (COR, 2020a; Shasta County, 2020). The zoning codes included in the GIS dataset were cross-referenced with those listed in COR and Shasta County General Ordinances (Municode, 2020a, 2020b) and were generalized into the categories shown on Figure 2-4 and listed in Table 2-1. The data presented represent the use for which a given area is zoned and might not be consistent with actual land use. However, the data presented effectively depict general land use patterns.

Table 2-1. Enterprise Subbasin Land Zoning Summary

Category	Area in Enterprise Subbasin (acres)	Percentage of Enterprise Subbasin Area (%)
Agriculture	9,469	15
Commercial	2,804	5
Industrial	2,561	4
Public/Institutional	2,291	4
Habitat Protection/Open Space	5,065	8
Urban Residential	12,680	21
Rural Residential	20,887	34
Unclassified	5,521	9
Total	**61,278**	

The most significant land use type in the subbasin is residential, over 50 percent of the subbasin, which is dominated by rural residences. Agriculture is also significant at around 15 percent. Based on the 2016 agricultural land use mapping, approximately 75 percent of the irrigated agriculture (approximately 3,000 acres) in the subbasin was pasture, 20 percent was grain and hay crops, and 5 percent was orchards and miscellaneous truck crops (CNRA, 2020a).

2.3.1 Water Source Types

According to the SGMA regulations (§ 351. Definitions), “water source type represents the source from which water is derived to meet the applied beneficial uses, including groundwater, recycled water, reused water, and surface water sources identified as Central Valley Project (CVP), the State Water Project, the Colorado River Project, local supplies, and local imported supplies.” The Enterprise Subbasin has two water source types: surface water and groundwater. Surface water diverted from the Sacramento River under CVP contracts with Bureau of Reclamation (Reclamation) is the primary water source for all water use sectors in the subbasin. The CSA #8 - Palo Cedro is the only district in the subbasin that depends solely on groundwater (Figure 2-5). Throughout the subbasin, groundwater is primarily used for rural residential areas, small community systems, and small commercial operations, such as golf courses and schools. However, during times of drought, water districts in the subbasin become more reliant on groundwater, and as a result, it is used more broadly. The jurisdictional areas shown on Figure 2-5 were sourced directly from the entities (ACID, 2015; BVWD, 2019; COR, 2019a; and Shasta County, 2019a).

Locations served by the COR Water Utility receive a combination of surface water and groundwater. Surface water is diverted from either the penstocks dropping from Whiskeytown Reservoir to Spring Creek or from the Sacramento River at Pump Station 1. The surface water supply is governed under two separate contracts with Reclamation and ACID (COR, 2015). Groundwater is used to augment the COR surface water supply and is sourced from the Cascade and Enterprise well fields, consisting of 5 and 12 groundwater wells respectively. Between 2000 and 2018, surface water represented approximately 65 percent of the COR water supply (an annual average of approximately 18,100 acre-feet [AF]), whereas approximately 35 percent of the COR water supply was sourced from groundwater (an annual average of approximately 10,100 AF) (COR, 2019a). The total COR water supply, as well as the water supplies of ACID, BVWD, and CSA #8 – Palo Cedro discussed below, are not distributed solely to areas overlying the Enterprise Subbasin, rather to the jurisdictional areas presented on Figure 2-5. BVWD supplies CVP water under a contract with Reclamation and a long-term transfer agreement with ACID (BVWD, 2015). BVWD also maintains five groundwater wells that are used to augment surface water supplies. On average, approximately 94 percent of the BVWD annual supply between 2000 and 2018 was sourced from surface water (an annual average of approximately 12,600 AF), while approximately 6 percent (an annual average of approximately 670 AF) was supplied by groundwater (BVWD, 2019). As previously discussed, CSA #8 - Palo Cedro relies on one groundwater well to service its customers (pumping approximately 100 AF on average between 2000 and 2018; Shasta County, 2019a). ACID is contracted with Reclamation to receive a maximum of 125,000 AF of surface water diverted from the Sacramento River. The ACID base supply is 121,000 AF with an additional 4,000 AF of the CVP supply available for transfers to other districts. ACID owns two groundwater production wells (located in the Anderson Subbasin) that are used to supplement surface water supply during years when water transfers occur. Transfers of up to 3,500 to 3,700 AF occurred in 2013, 2014, and 2015. During these years, groundwater was pumped in lieu of diverting an equivalent volume of surface water.

2.3.2 Water Use Sectors

As defined in § 351 (Definitions) of the SGMA regulations, "'water use sector' refers to categories of water demand based on the general land uses to which the water is applied, including urban, industrial, agricultural, managed wetlands, managed recharge, and native vegetation." Water use sector data presented in this section represent water deliveries averaged over the period 2000–2018. Data used in the water sector analyses were provided by the purveyors (BVWD, 2019; COR, 2019a, and Shasta County, 2019a). Discussions of COR deliveries represent the entire service area, rather than deliveries only to areas overlying the Enterprise Subbasin. Further evaluation of current and projected water use by sector will be provided in Chapter 4, Water Budgets. Water use sectors include the following:

- **Urban**. Urban water use is assigned to non-agricultural water uses in the cities and census-designated places (i.e., towns). For the purposes of this analysis, domestic use outside of towns is considered urban use in the rural residential category. COR Water Utility averages 24,000 AF of urban water use annually (single-family, multiple-family, and commercial/institutional uses), 95 percent of its total deliveries. BVWD averages approximately 6,800 AF of urban water use annually (residential, rural, and commercial/industrial/institutional), 56 percent of its total deliveries. Because the CSA #8 - Palo Cedro services mostly businesses and residences, 100 percent of its deliveries are considered urban, averaging 100 AF annually.
- **Industrial**. There is limited industrial use in the subbasin. COR Water Utility averages 500 AF of industrial water use annually, 2 percent of its total deliveries.
- **Agricultural**. Water delivery for agricultural water use is much greater in the eastern and southwestern portions of the subbasin, serviced by ACID and BVWD, than in the western portion, serviced by the COR Water Utility. COR Water Utility averages 36 AF of agricultural water delivery annually (irrigation), which is less than 1 percent of its total deliveries. BVWD averages approximately 5,400 AF of agricultural water delivery annually, which is 44 percent of its total deliveries. ACID supplies water solely for agricultural use, representing 100 percent of the district's deliveries.
- **Managed wetlands**. DWR land use records indicate that there are no managed wetlands in the subbasin (CNRA, 2020a).

- **Managed recharge**. There is no managed recharge in the subbasin. Although the temporary clean-water holding reservoirs and wastewater ponds are unlined, recharge from these sources is considered to be negligible and has not been quantified.
- **Native vegetation**. Most of the subbasin comprises commercial, industrial, agricultural, or residential land uses, while only approximately 8 percent is identified as "Habitat Protection/Open Space." Consumptive use by native vegetation will be refined through numerical modeling being conducted as part of this GSP.

2.4 Existing Well Types, Numbers, and Density

Well density data were obtained from the database of wells that DWR specifically developed for use in GSPs (CNRA, 2020b). The well completion dataset represents counts of logs filed with DWR. Upon review of the database, it became apparent that some of the logs must have been input to the DWR database more than once, resulting in an over-estimate of well density. Furthermore, some of the wells included in the DWR database might have been abandoned or otherwise destroyed; therefore, the counts described herein might not be reflective of existing infrastructure. However, the DWR database is considered the best available well log information repository.

DWR's Well Completion Report Map Application classifies wells as domestic, production, and public (municipal). Figures 2-6, 2-7, and 2-8 show the density of domestic, public, and production wells, respectively, in the subbasin. Well counts in the subbasin are summarized in Table 2-2. Over 90 percent of the wells in the DWR dataset are domestic wells. Many of the domestic wells identified by DWR may be classified as de minimis extractors, defined as pumping less than 2 AF per year (AF/yr) for domestic purposes. Production wells account for most of the remaining wells (5 percent). The majority of wells classified as production wells are assumed to be used for agricultural irrigation, with some production wells used for industrial purposes. Approximately 2 percent of wells in the subbasin are classified as public supply wells. As previously discussed, public (municipal) wells are pumped intermittently to augment surface-water supplies.

Table 2-2. Enterprise Subbasin Well Density

Category	Number of Wells	Percentage of Total
Domestic	2,926	93
Public Supply	61	2
Production	168	5
Total	**3,155**	

2.5 Existing Groundwater-level Monitoring Programs

2.5.1 California Statewide Groundwater Elevation Monitoring Program

The California Statewide Groundwater Elevation Monitoring Program (CASGEM) was instituted as a result of the passing of SB x7-6 in 2009. CASGEM is overseen by DWR. CASGEM is intended to facilitate collaboration between state and local entities in support of the collective goal of more sustainably managing groundwater resources, as required under SGMA (DWR, 2019a). CASGEM requires the collection and analysis of groundwater data across the state and requires the collected information be made publicly available. Monitoring and reporting is conducted by local monitoring parties under groundwater monitoring and management programs, as well as DWR. There are two locations with five CASGEM wells in the Enterprise Subbasin; they are shown on Figure 2-9. Shasta County is the CASGEM monitoring entity for the Enterprise Subbasin. Shasta County gauges the Columbia well, whereas DWR gauges the remaining four CASGEM wells (a quadruple completion well cluster).

2.5.2 California Department of Water Resources Periodic Groundwater Elevation Monitoring

The DWR periodically collects groundwater elevation data from a network of 20 wells within the Enterprise Subbasin (including CASGEM wells 31N04W29R003M through 31N04W29R005M), as shown on Figure 2-9. The period of record varies by well location as does the monitoring frequency. Wells have typically been accessed biannually; however, some well locations have been accessed as frequently as monthly (DWR, 2019b).

2.5.3 U.S. Geological Survey Groundwater Elevation Monitoring

As shown on Figure 2-9, the U.S. Geological Survey (USGS) has periodically gauged seven wells within the Enterprise Subbasin (USGS, 2019a). Each well location has only been monitored once between 2017 and 2019.

2.6 Groundwater Extraction Monitoring Programs

Purveyors in California that supply drinking water to residents (public water systems) are required to submit annual reports regarding water supply and delivery volumes to the State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW) (Large Water System or Small Water System Reports). The DDW defines a public water system as “a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.”[1] Groundwater-related information reported to the DDW includes the number and location of groundwater production wells and the volume of groundwater pumped from each well per month. COR, BVWD, and CSA #8 - Palo Cedro monitor groundwater production from their wellfields for internal use as well as for reporting purposes.

2.7 Groundwater Quality Monitoring Programs

2.7.1 State Water Resources Control Board Division of Drinking Water

The DDW maintains groundwater quality data records for both active and inactive public drinking water wells (systems with at least 15 connections or serving at least 25 people per day) (SWRCB, 2019a). Groundwater quality data reported by purveyors and maintained by DDW generally reflects untreated groundwater and might not be representative of drinking water supplied to customers. The DDW groundwater quality monitoring program in Enterprise Subbasin includes 62 groundwater wells sampled between 1951 and 2019; however, the period of record and sampling frequency varies by well. Figure 2-10 presents the location of wells sampled between 2000 and 2019 (56 wells).

2.7.2 California Department of Water Resources

As part of DWR’s Groundwater Ambient Monitoring and Assessment Program (GAMA), the department periodically samples wells to evaluate groundwater quality relative to a basin or subbasin’s beneficial uses (SWRCB, 2019a). Figure 2-10 presents the location of the five wells sampled by DWR between 2000 and 2019.

2.7.3 U.S. Geological Survey

USGS has periodically collected groundwater quality data under the GAMA program (SWRCB, 2019a). Figure 2-10 presents the location of 19 wells sampled between 2000 and 2019.

[1] State Water Resources Control Board, Division of Drinking Water Public Water System Legal Definitions, https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/publicwatersystems.html

2.7.4 Environmental Compliance Monitoring

As discussed further in Chapter 3, there are multiple sites at which groundwater quality monitoring is conducted as part of investigation or compliance monitoring programs through the Regional Water Quality Control Board (RWQCB) and/or California Department of Toxic Substances Control (DTSC). Figure 2-10 presents the location of 140 wells sampled between 2000 and 2019 for environmental compliance purposes (SWRCB, 2019a).

2.7.5 Other Groundwater Quality Monitoring

In addition to the aforementioned groundwater quality monitoring programs, municipal and community water purveyors collect water quality samples on a routine basis for compliance monitoring and reporting. Below are summaries of water purveyors and their monitoring programs.

The BVWD, CSA #8 - Palo Cedro, and COR Public Works Department provide an annual Consumer Confidence Report to their customers (BVWD, 2020; COR, 2020b, Shasta County, 2019b). Consumer Confidence Reports are designed to provide customers with summary information on the purveyor's water supply sources, the levels of any detected contaminants, and compliance with drinking water regulations.

2.8 Surface Water Monitoring Programs

2.8.1 U.S. Geological Survey Stream Gauges

USGS currently operates one streamflow gauge in Cow Creek near Millville (USGS Site #11374000) within the Enterprise Subbasin (Figure 2-11; USGS, 2019a).

2.8.2 Sacramento Watershed Coordinated Monitoring Program

The Sacramento Watershed Coordinated Monitoring Program (SWCMP) is a coordinated effort between DWR and Central Valley RWQCB to monitor ambient surface water quality at locations on the Sacramento River and at the lower reaches of tributaries to the Sacramento River (SRWP, 2020). The locations extend from north of Lake Shasta to as far south as Verona, California, and include one location in the southern portion of the Enterprise Subbasin: Cow Creek near the town of Millville. The program was initiated in November 2008 and has since engaged in quarterly sampling for several chemical, physical, and biological parameters and annual monitoring of water column and sediment toxicity.

2.9 Incorporating Existing Monitoring Programs into the GSP

Incorporation of existing monitoring programs into the GSP is discussed in Chapter 5, Sustainable Management Criteria.

2.10 Limits to Operational Flexibility

The existing monitoring programs are not anticipated to limit the operational flexibility of this GSP.

2.11 Existing Management Plans

2.11.1 Northern Sacramento Valley Integrated Regional Water Management Plan

The Sacramento Valley Integrated Regional Water Management Plan (IRWMP) was published in December 2006 as part of the regional planning process consistent with DWR's Bulletin 160 (California Water Plan), the SWRCB's Strategic Plan, its Watershed Management Initiative, and the basin planning process, and other authorities, such as the Groundwater Management Act of 1992 (AB 3030) and SB 1938 (NCWA, 2006).

In 2014, six counties in the northern Sacramento Valley (i.e., Butte, Colusa, Glenn, Shasta, Sutter, and Tehama) published the Northern Sacramento Valley (NSV) IRWMP (Butte County et al., 2014). The IRWMP is intended to provide a framework and forum to guide the development of water resources policies, programs, and projects with the overarching statement of intent, which reads as follows:

> *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 of the Northern Sacramento Valley.*

To meet this intent, the NSV IWRMP identifies the following six goals:

- Water supply reliability
- Flood protection and planning
- Water quality protection and enhancement
- Watershed protection and management
- Integrated regional water management (IRWM) sustainability
- Public education and information dissemination

Between four and twelve objectives are associated with each goal. These objectives are ranked as foundational (essential for determining baseline conditions), critical (directly addresses public health and safety), high (addresses economic health), and medium (addresses environmental concerns). The NSV IRWMP further provides a description of the plan development, potential project ranking and selection processes as well as future project solicitation procedures (updated in 2016 to include open solicitation of potential projects at any time), resources management strategies considered during potential project selection, and an overview of plan implementation strategy. The appendices to the NSV IRWMP include lists of both the ranking of the over 100 potential projects submitted for consideration (currently housed in an online project database) and unranked projects to track ("*included in the IRWMP to acknowledge projects that may be on the horizon for future consideration but which are not yet developed enough to be ranked according to the criteria of the prioritization process"*).

In March 2020, the NSV Board approved updates to the NSV IRWMP.[2] These updates, included as Appendix N to the NSV IRWMP. Updates to the plan are intended to bring the NSV IRWMP into compliance with California Proposition 1 (Water Bond). This includes amendments to the following:

- Chapter 1: Governance and Region Description
  - If the IRWM region has areas of nitrate, arsenic, perchlorate, or hexavalent chromium contamination, the plan must include a description of location, extent, and impacts of the contamination; actions undertaken to address the contamination; and a description of any additional actions needed to address the contamination.
  - Describe likely climate change impacts on their region as determined from the vulnerability assessment.
- Chapter 2: Goals and Objectives
  - Address adapting to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.
  - Consider the effects of sea level rise (SLR) on water supply conditions and identify suitable adaptation measures.

[2] https://nsvwaterplan.org/category/nsv-irwmp-news/

- Chapter 3: Plan Development Process, Schedule, and Phasing
  - Contain a public process that provides outreach and opportunity to participate in the IRWMP; and specifically, coordination with Native American Tribes is to be conducted on a government-to-government basis.
  - Identify process to involve and facilitate stakeholders during development and implementation of IRWMP regardless of ability to pay; include description of any barriers to involvement.
- Chapter 4: Resource Management Strategies
  - Consider all 32 California Water Plan (CWP) resource management strategy criteria listed in the CWP Update 2013. Identify resource management strategies incorporated in the IRWMP.
  - Consideration of climate change effects on the IRWMP region must be factored into the resource management strategies. Identify and implement, using vulnerability assessments and tools such as those provided in the Climate Change Handbook, resource management strategies, and adaptation strategies that address region-specific climate change impacts.
- Chapter 5: Project Selection Process and Procedure
  - Review factors must also include a set of eight climate change and greenhouse gas emissions considerations.
  - Discuss how the plan relates to these other planning documents and programs. Water Code § 10562 (b)(7) requires the development of a stormwater resource plan and compliance with these provisions to receive grants for stormwater and dry weather runoff capture projects. Upon development of the stormwater resource plan, the Regional Water Management Group shall incorporate it into IRWMP. The IRWMP should discuss the processes to incorporate such plans.
  - Demonstrate information sharing and collaboration with regional land use planning to manage multiple water demands throughout the state, adapt water management systems to climate change, and potentially offset climate change impacts to water supply in California.
- Chapter 6: Implementation Strategy
  - Ensure efficient use of available data, access to data, and ensure the data generated by IRWMP implementation activities can be integrated into existing State databases.
- General Amendments Addressing Climate Change
  - Areas of the state that receive water imported from the Sacramento-San Joaquin River Delta, the area within the Delta, and areas served by coastal aquifers must also consider the effects of SLR on water supply conditions and identify suitable adaptation measures.
  - Contain a plan, program, or methodology for further data gathering and analysis of prioritized vulnerabilities.
  - Address adapting to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.

2.11.2 Redding Basin Water Resources Management

Phase 1 of the Redding Basin Water Resources Management Plan, also referred to as the Shasta County Water Resources Master Plan, was completed in 1997 as a first step toward ensuring the water supply needs of RAGB would be met as population expanded. This study was funded by the Redding Area Water Council (RAWC), a group of water purveyors, industries, and private interests in an effort to identify current and long-term water supply needs. Although RAGB is bisected by the Sacramento River and has abundant natural water supply, water purveyors have been challenged by severe cutbacks on their annual contracted surface water supply. Accounting for increasing demand, driven primarily by increasing population, it became clear that water purveyors would have to begin using the RAGB to ensure an ample

water supply. This master plan provided a regional planning framework, quantifying projected water demand through the year 2030 and identifying objectives for subsequent phases.

Phase 2, completed in 2003, consisted of three documents: Phase 2A, Phase 2B, and Phase 2C (CH2M HILL, 1997; 1999; 2003). Phase 2A identified the main problems facing water purveyors and users, and set relevant goals to develop a comprehensive groundwater management plan. Three main purposes for the plan were as follows:

- Avoid or minimize conditions that adversely affect groundwater availability and quality within the basin
- Develop a monitoring and data collection program to help protect local beneficial use of groundwater resources
- Implement the elements of the groundwater management plan by achieving basinwide consensus

Phase 2B, initiated in March 1999, sought to implement the now-developed Water Resources Management Plan by investigating a variety of actions aimed at increasing the reliability of water supply. To help achieve this end, Phase 2B included development of an integrated water resources model for the basin and engaged in extensive public outreach in the cities of Redding, Anderson, and Shasta Lake. Phase 2C outlined and evaluated several water resources management alternatives, developed from actions identified in Phase 2B. Two committees, the Policy Advisory Committee and the Technical Advisory Committee, reviewed draft work products and planning assumptions, and made appropriate adjustments to develop three conceptual alternatives. These alternatives included varying degrees of reliance of surface water and groundwater as well as other management actions.

Phase 3, completed in 2007, consists of an Environmental Impact Report, seeking to investigate long-term implementation of each alternative (CH2M HILL, 2007). Each alternative was evaluated, and a recommendation was made to accept the alternative that maximized operational flexibility, making use of both surface-water and groundwater supplies.

2.11.3 Anderson-Cottonwood Irrigation District Groundwater Management Plan

The ACID Groundwater Management Plan (GMP), released in 2006, describes the ACID system, including information on water supply sources, historical and projected water use through 2030, water quality, and water shortage contingency measures (ACID, 2006). As previously described, ACID relies primarily on surface water from the CVP and augments their surface water supply with groundwater from their two production wells (although the district wells were installed subsequent to the GMP). The ACID GMP describes that it is a priority for ACID to increase water supply reliability, in part by expanding groundwater use to decrease reliance on CVP water.

ACID established a pre-1914 water right for diversions from Sacramento River and its tributaries, and in 1967, entered into a contracted agreement with Reclamation that quantified their entitlement as a “Base Supply” of 165,000 AF and 10,000 AF of “Project Water” for a total contracted entitlement of 175,000 AF. As of 2006, this contract was renegotiated to a total of 125,000 AF, 121,000 AF of Base Supply and 4,000 AF of Project Water. ACID has two diversion points on the Sacramento River. The main supply is diverted from the Sacramento River at Caldwell Park in COR, and a supplemental supply is diverted from the Churn Creek Lateral Pump Station on the south edge of Redding.

ACID’s service area encompasses approximately 32,000 acres and directly serves approximately 7,000 acres. This includes areas within the Enterprise, Anderson, and Bowman Subbasins of the RAGB. Approximately 90 percent of the water supplied by ACID is used to irrigate pasture, with the remaining 10 percent supplied to orchards and food crops. No potable water is supplied by ACID.

2.12 Urban and Federal Water Management Plans

2.12.1 City of Redding Urban Water Management Plan

This report was produced in accordance with the Urban Water Management Planning (UWMP) Act of 1983 and released in 2015 (COR, 2015). The UWMP describes the COR water system, including information on water supply sources, historical and projected use through 2035, water quality, and water shortage contingency measures. COR water supplies described in the plan are as follows:

- Surface water from the Sacramento River – 21,000 AF/yr
- Surface water from Whiskeytown Lake – 6,140 AF/yr
- Groundwater Pumped from the RAGB – 11,000–13,400 AF/yr
- Transfers of up to 4,000 AF/yr from ACID as a supplemental water supply, if needed

Furthermore, the COR UWMP describes demand management measures to meet the conservation requirements established by the Water Conservation Act of 2009 SBX7-7, a 20 percent reduction in water use by 2020. Forecasts indicated that the City's diverse water supply would be more than sufficient, even during multiple dry year events. Furthermore, the City's water consumption was on a declining trend coming into 2015, helping the City to achieve 20 percent reduction in usage. The City included a Water Use Reduction Plan that sought to combat overuse through education, outreach, aggressive leak detection, and infrastructure updates. It is anticipated that an update to this plan will be released in 2020.

2.12.2 City of Redding Federal Water Management Plan

The COR Federal Water Management Plan includes a description of the COR Water Utility, including population, land use and water supply infrastructure, an inventory of water resources, best management practices for agricultural and urban contractors, and water inventory tables (COR, 2016).

2.12.3 Bella Vista Water District Urban Water Management Plan

The BVWD UWMP was produced in accordance with the Urban Water Management Planning Act of 1983 and released in 2015 (BVWD, 2015). This UWMP describes the BVWD water system, including information on water supply sources, historical and projected water use through 2040, water quality, and water shortage contingency measures. As previously described, BVWD relies primarily on surface water from the CVP and supplemental water supply from ACID. BVWD augments their surface water supply with groundwater from their five production wells. The BVWD UWMP describes that it is a priority for BVWD to expand groundwater use to decrease reliance on CVP water. This UWMP also addresses requirements of the Water Conservation Act of 2009 SBX7-7, a 20 percent reduction in water use by 2020.

2.12.4 Bella Vista Water District Federal Water Management Plan

The BVWD Federal Water Management Plan provides a description of BVWD including population, land use and water supply infrastructure, an inventory of water resources, best management practices for agricultural and urban contractors, and water inventory tables (BVWD, 2012).

2.13 Existing Groundwater Regulatory Programs

2.13.1 Groundwater Export Permitting

Section 18.08 of the *Codification of the General Ordinances of Shasta County, California* (Municode, 2020) specifies that:

> *It is unlawful to extract groundwater underlying lands in Shasta County for export of that groundwater, either directly or indirectly, without first obtaining a permit as provided in this chapter. For purposes of this section, the extraction of groundwater to replace a surface water supply which has been, is being,*

or will be exported for commercial purposes shall be considered an extraction of groundwater that is subject to this chapter.

The general ordinances further describe exclusions to the permit process (such as to prevent flooding) and the procedures for filing and processing a groundwater export permit (such as conducting environmental review required under the California Environmental Quality Act). The ordinance states that:

The permit may only be granted if there is a majority of the total membership of the commission present at the required public meeting and a majority of the total membership of the commission finds that the proposed groundwater extraction will not have significant detrimental impacts on the affected groundwater basin by determining that:

A. The proposed extraction will not cause or increase an overdraft of the groundwater underlying the county;

B. The proposed extraction will not adversely affect the long-term ability for storage or transmission of groundwater within the aquifer;

C. The proposed extraction will not exceed the annual yield of the groundwater underlying the county and will not otherwise operate to the injury of the reasonable and beneficial uses of overlying groundwater users;

D. The proposed extraction will not result in an injury to a water replenishment, storage or restoration project operating in accordance with statutory authorization;

E. The proposed extraction is in compliance with Water Code Section 1220; and

F. The proposed extraction will not be otherwise detrimental to the health, safety and welfare of property owners overlying or in the vicinity of the proposed extraction site(s).

2.13.2 Title 22 Drinking Water Program

As described in Section 2.7, the DDW regulates public water systems in California to ensure the delivery of safe drinking water to the public. Public water systems are those that provide potable water that has at least 15 service connections or regularly serves at least 25 individuals daily at least 60 days out of the year. Private domestic wells, wells associated with drinking water systems with less than 15 residential service connections, industrial, and irrigation wells are not regulated by the DDW.

The DDW enforces the monitoring requirements established in Title 22 of the CCR for public water system wells. In addition, Title 22 specifies the maximum contaminant levels (MCLs) for various waterborne contaminants.

2.13.3 Clean Water Act

The Federal Water Pollution Control Act was initially adopted in 1948. Modifications to portions of the Act in 1972, 1977, and 2002 became known as the Clean Water Act (CWA) (33 United States Code 1251 to 1376). The CWA establishes the basis for regulating discharges of pollutants into surface waters of the United States and regulating water quality standards for stated beneficial uses. Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the CWA, water quality standards consist of two elements: (1) designated beneficial uses of the water body in question and (2) criteria that protect the designated uses. Section 304(a) requires the U.S. Environmental Protection Agency (EPA) to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use.

EPA is generally directly responsible for implementing CWA provisions, although the CWA also authorizes states to implement portions of CWA through a delegation process. Through an agreement between EPA and the State of California, SWRCB has been designated, along with the nine RWQCBs, to develop and enforce water quality objectives and implementation plans in California to identify beneficial uses and water quality criteria to protect those beneficial uses.

2.13.4 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) established surface water and groundwater quality regulations that set limits on water quality constituents for the purpose of protecting beneficial uses[3] and provided the authority for SWRCB to protect the state's surface water and groundwater. The nine RWQCBs were established to oversee and implement specific water quality activities in their geographic jurisdictions. The Porter-Cologne Act requires the RWQCBs to establish water quality objectives while acknowledging that water quality may change without unreasonably affecting beneficial uses. Therefore, water quality objectives are references, as opposed to rules, for meeting federal and state requirements for water quality control.

The Porter-Cologne Act also requires that each RWQCB develop basin plans that establish and periodically review the beneficial uses and water quality objectives for surface water and groundwater bodies within its jurisdiction. Water quality objectives provide specific water quality guidelines to protect groundwater and surface water to maintain designated beneficial uses. SWRCB, through the RWQCBs, is the permitting authority in California to administer NPDES and waste discharge requirements for regulation of waste discharges.

Article 4 of the Porter-Cologne Act (specifically § 13160. Federal Water Pollution Control Act) states that "*The state board is designated as the state water pollution control agency for all purposes stated in the Federal Water Pollution Control Act and any other federal act, heretofore or hereafter enacted*…." Although EPA has delegated implementation of portions of the CWA to the SWRCB, those portions of State or regional Water Quality Control Plans or amendments to the plans that are consistent with and under the jurisdiction of the CWA require approval by both SWRCB and EPA.

2.14 Conjunctive Use Programs

The term conjunctive use "*refers to the coordinated and planned use and management of both surface water and groundwater resources to maximize the availability and reliability of water supplies in a region to meet various management objectives*" (DWR, 2016). COR and BVWD use a combination of both surface water diverted from the Sacramento River and groundwater pumped by City or district wells to meet water demands within their administrative areas. Furthermore, ACID has periodically participated in water transfer programs, in which groundwater is pumped from district-owned wells (located in the Anderson Subbasin) in-lieu of diverting an agreed-upon volume of surface water from the Sacramento River. ACID's water transfer program has been exercised in 2013, 2014, and 2015, with an additional program planned for 2020.

2.15 Land Use Plans

Shasta County has jurisdiction over land use planning for unincorporated portions of the Enterprise Subbasin, and COR has jurisdiction over land use planning within City limits. Implementation of the Enterprise Subbasin GSP may be affected by the policies and regulations outlined in the Shasta County General Plan, as well as the General Plan for COR, given that the long-term land use planning decisions that would affect the Enterprise Subbasin are under the jurisdiction of the County and COR.

[3] "Beneficial uses" of the waters of the state that may be protected against quality degradation include, but are not limited to, domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

This section describes how implementation of the Shasta County and COR general plans may change water demand in the subbasin and the GSP's ability to achieve sustainability. Due to the presence of Shasta Lake, Whiskeytown Lake, and the Sacramento River in the area, water resources in the RAGB are usually abundant; but the County and incorporated cities recognize that this will not necessarily protect residents from shortages during drought periods or in the event of significant growth. As a result, both general plans have shown dedication to preserving water resources and increasing the sustainability of water systems.

2.15.1 Shasta County General Plan

The current Shasta County General Plan was adopted by the Board of Supervisors in 2004, apart from a Housing Element amendment added in 2018 (Shasta County, 2004). This document outlines a set of objectives, formulated through a broad-based citizen participation effort, that provide the basis for policies within the County. These objectives focus on five major ideas: accommodating growth as a means of preserving quality of life; the relationship between geographic distribution, growth, and public services; recognition of the plan as a decision-making tool that requires periodic revisions; growth accommodation across a variety of living environments; and an interjurisdictional approach to planning issues.

The Shasta County General Plan recognizes that the preservation of natural resources in the County is essential to maintaining the quality of life of its residents; thus, the General Plan encourages growth only in places well suited for development and supply infrastructure. This aids Shasta County in ensuring water is available to its residents. The General Plan explains that water management is made more complicated by the complex state-legal system, which establishes water rights in the Central Valley. The General Plan also cites population growth within Shasta County and overdraft of other California groundwater basins as reasons to conserve water resources. The goals of the Shasta County General plan, therefore, are consistent with the goals of this GSP.

2.15.2 City of Redding General Plan

The COR General Plan, adopted in 2000, outlines a vision for Redding's future and provides principles and policies to guide development through 2020 (COR, 2000). The development of the Redding General Plan was a collaborative effort involving the community and the City Planning Commission. The plan recognizes the importance of natural resources to the community and seeks to balance protection and responsible management policies, echoing the objectives of the Shasta County General Plan. Among these objectives are commitments to prevent the discharge of contaminated water into the environment, to prevent excessive pumping and water consumption, and to encourage opportunities for groundwater recharge. A new General Plan or an updated version is anticipated in 2020, but this document is not yet available.

2.15.3 Well Permitting

A valid permit must be obtained from the Shasta County Environmental Health Division to drill, destroy, deepen or recondition a water well in the Enterprise Subbasin. Work shall be performed by a C-57 licensed driller or contractor. Drillers are held to California Water Well Standards set forth by DWR.

2.15.4 Land Use Plans Outside of the Basin

Land use plans outside of the Enterprise Subbasin are not expected to affect implementation of this GSP.

2.15.5 Effects of Land Use Plan Implementation on Water Demand

The GSA does not have authority over land use planning. However, the GSA will coordinate with Shasta County and COR on general plans and land use planning/zoning as needed when implementing the GSP.

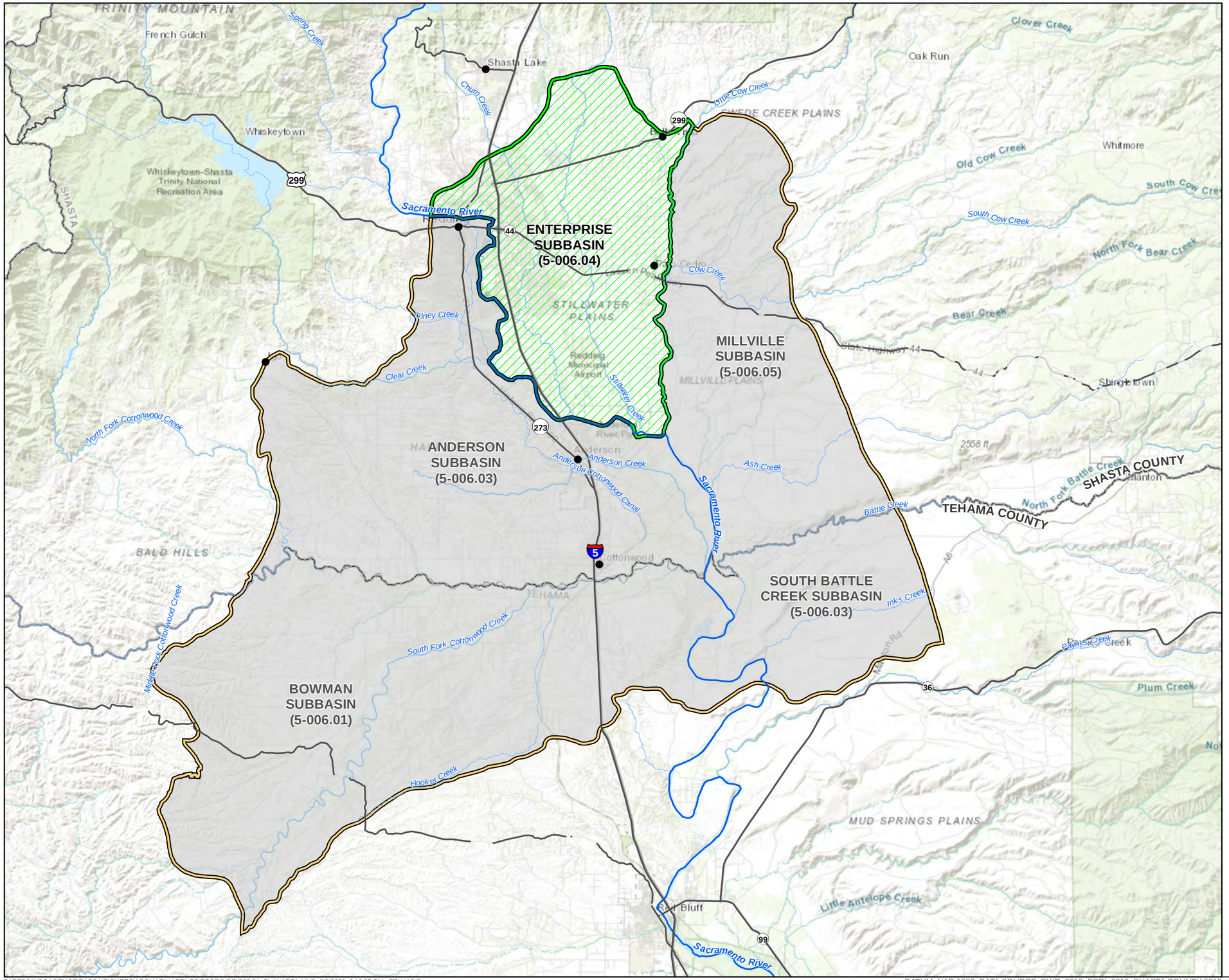
2.15.6 Effects of GSP Implementation on Water Supply Assumptions

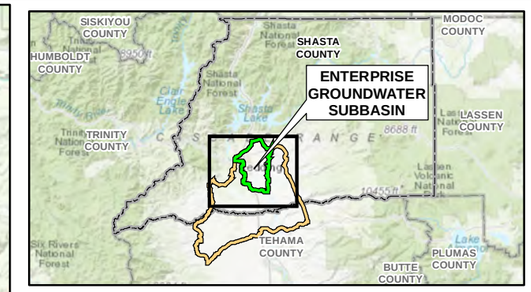
Implementation of this GSP is not anticipated to affect water supply assumptions of relevant land use plans over the planning and implementation horizon. Further information will be provided as additional components of this GSP are developed.

2.16 Additional GSP Elements (Reg. § 354.8 g)

One or more of the following subjects may be incorporated into a future version of this GSP:

- Control of saline water intrusion
- Wellhead protection
- Migration of contaminated groundwater
- Well abandonment and well destruction program
- Replenishment of groundwater extractions
- Conjunctive use and underground storage
- Well construction policies
- Groundwater contamination cleanup, recharge, diversions to storage, conservation, water recycling, conveyance, and extraction projects
- Efficient water management practices
- Relationships with state and federal regulatory agencies
- Land use plans and efforts to coordinate with land use planning agencies to assess activities that potentially create risks to groundwater quality or quantity
- Impacts on groundwater-dependent ecosystems





LEGEND

- CITY
- SACRAMENTO RIVER
- RIVER/STREAM
- COUNTY BOUNDARY LINE
- INTERSTATE/HIGHWAY
- ENTERPRISE GROUNDWATER SUBSASIN (5-006.04, PLAN AREA)
- REDDING AREA GROUNDWATER BASIN
- COUNTY BOUNDARY LINE

NOTE:

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

0 4 8 Miles

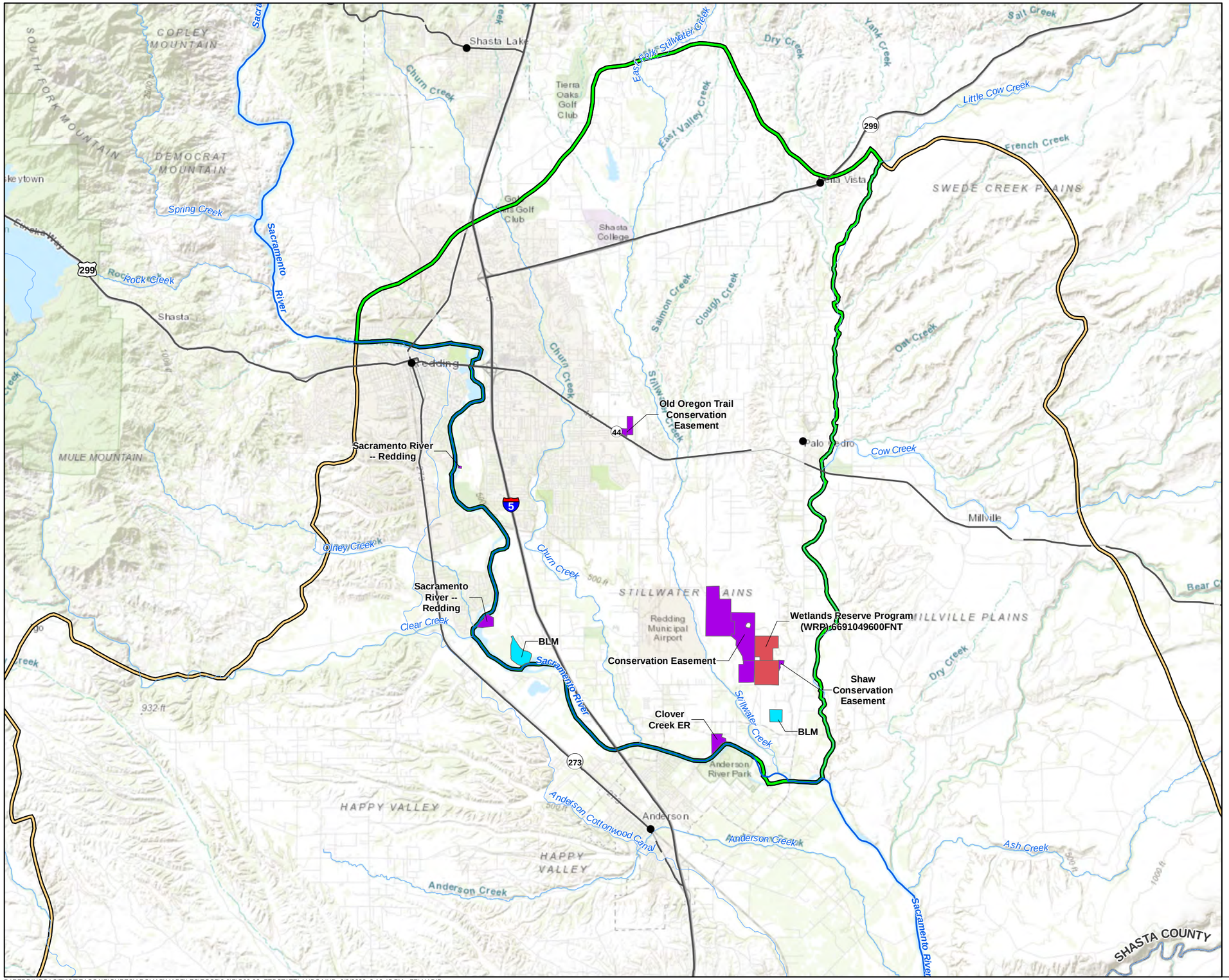
N

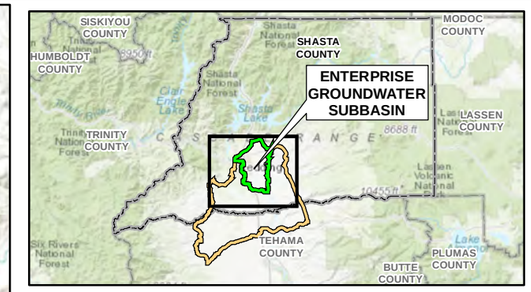
FIGURE 2-1
PLAN AREA
Enterprise Subbasin Groundwater Sustainability Plan

D:\REDDINGCACITYOF\EAGSA\FIGURES\ARCMAP\MAPFILES\EGSP\2.0\FIG02-01_PLANAREA.MXD 6/8/2020 2:12:07 PM FELHADID

DATUM: NAD 1983. DATA SOURCE: DWR, 2019; ESRI, 2019; SHASTA COUNTY 2019

JACOBS





LEGEND

- CITY
- SACRAMENTO RIVER
- RIVER/STREAM
- INTERSTATE/HIGHWAY
- COUNTY BOUNDARY LINE
- ENTERPRISE GROUNDWATER SUBSASIN (5-006.04, PLAN AREA)
- REDDING AREA GROUNDWATER BASIN

AGENCY

- CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
- US BUREAU OF LAND MANAGEMENT (BLM)
- UNITED STATES NATURAL RESOURCES CONSERVATION SERVICE

NOTES:

DATA SOURCE: HTTPS://WWW.CALANDS.ORG

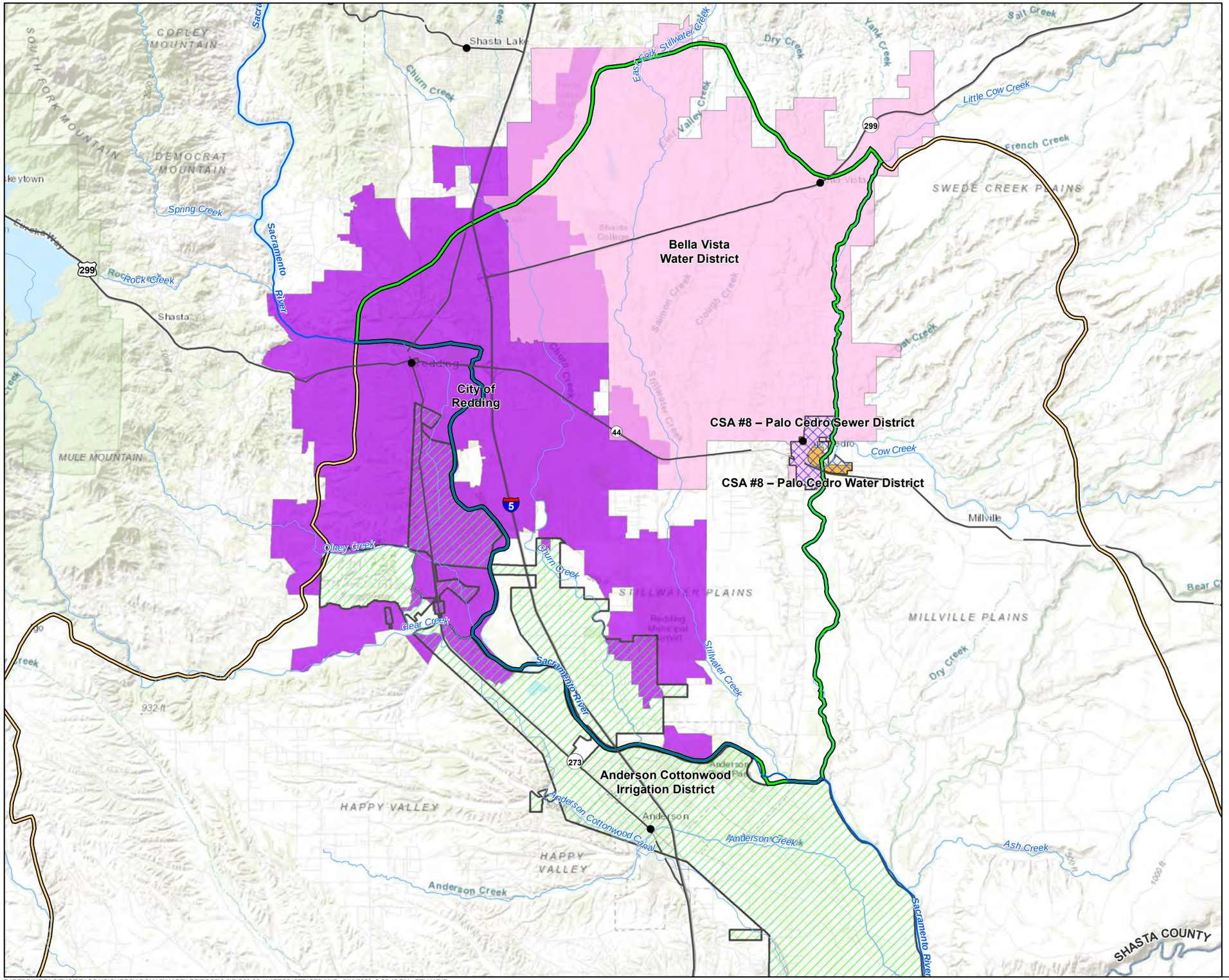
SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

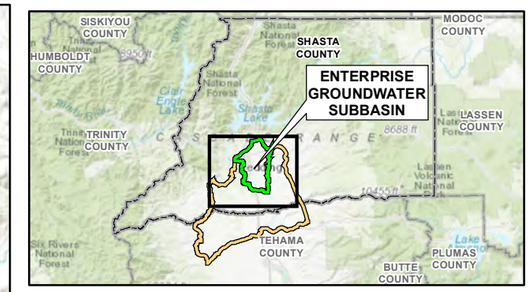
0 2 4 Miles

FIGURE 2-2
FEDERAL AND STATE GROUNDWATER JURISDICTIONAL AREAS
Enterprise Subbasin Groundwater Sustainability Plan

JACOBS

D:\REDDINGCACITYOF\EAGSA\FIGURES\ARCMAP\MAPFILES\EGSP\2.0\FIG02-02_FEDSTATELANDS.MXD 6/8/2020 2:16:45 PM FELHADID





LEGEND

- CITY
- SACRAMENTO RIVER
- RIVER/STREAM
- INTERSTATE/HIGHWAY
- COUNTY BOUNDARY LINE
- ENTERPRISE GROUNDWATER SUBSASIN (5-006.04, PLAN AREA)
- REDDING AREA GROUNDWATER BASIN

AGENCYNAME

- ANDERSON COTTONWOOD IRRIGATION DISTRICT
- BELLA VISTA WATER DISTRICT
- CITY OF REDDING
- COUNTY SERVICE AREA (CSA) #8 – PALO CEDRO WATER DISTRICT
- COUNTY SERVICE AREA (CSA) #8 – PALO CEDRO SEWER DISTRICT

NOTES:

DATA SOURCES: ACID, 2015; BVWD, 2019; COR, 2020a; SHASTA COUNTY, 2019a

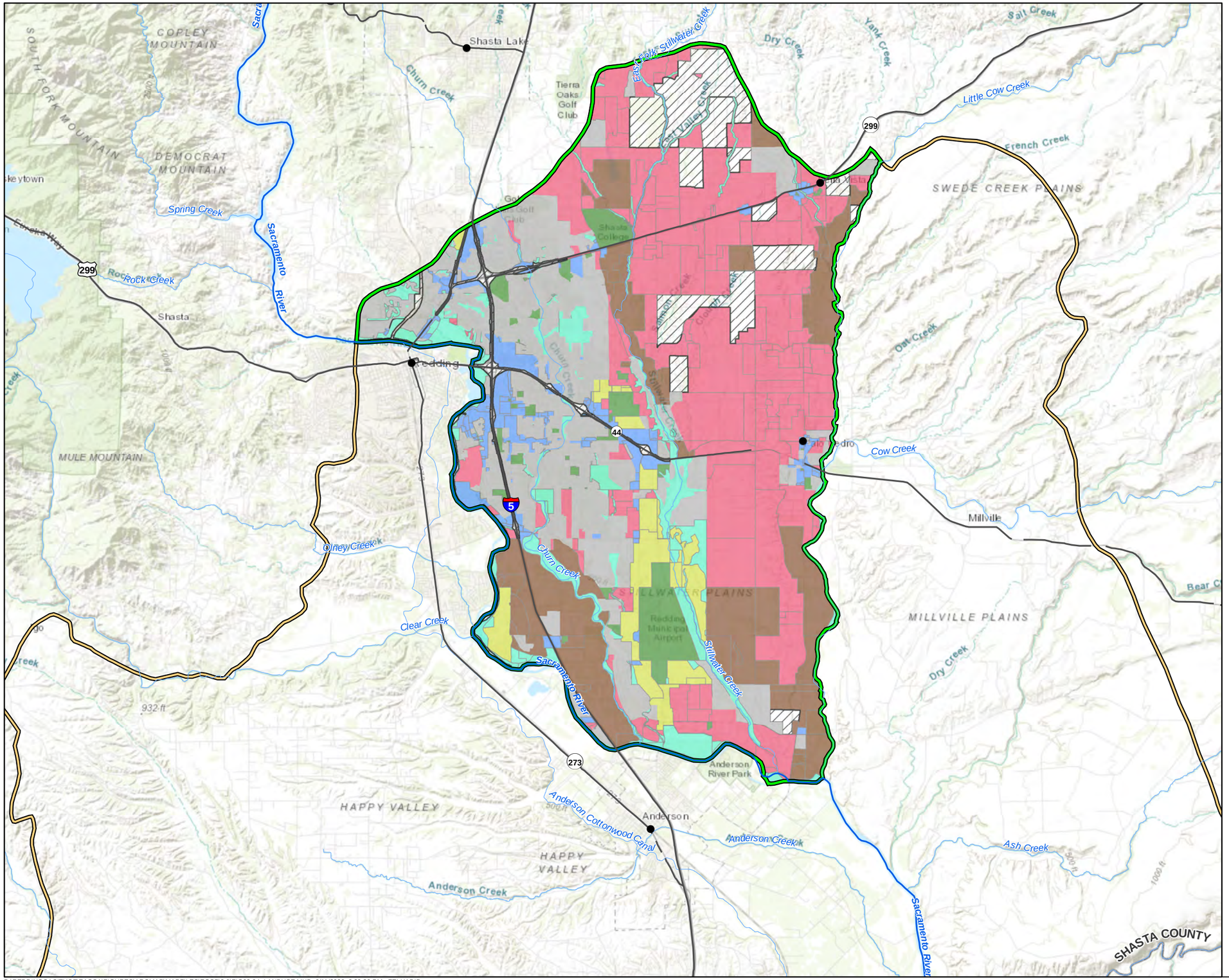
SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

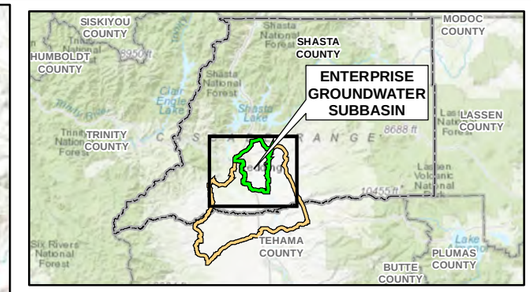
0 2 4 Miles

FIGURE 2-3
CITY, COUNTY SERVICE AREAS, AND WATER DISTRICT JURISDICTIONAL AREAS
Enterprise Subbasin Groundwater Sustainability Plan

D:\REDDINGCACITYOF\EAGSA\FIGURES\ARCMAP\MAPFILES\EGSP\2.0\FIG02-03_WATERDISTRICTS.MXD 6/11/2020 3:26:49 PM FELHADID

JACOBS





LEGEND

- CITY
- SACRAMENTO RIVER
- RIVER/STREAM
- INTERSTATE/HIGHWAY
- COUNTY BOUNDARY LINE
- ENTERPRISE GROUNDWATER SUBSASIN (5-006.04, PLAN AREA)
- REDDING AREA GROUNDWATER BASIN

LAND USE TYPE

- AGRICULTURE
- COMMERCIAL
- HABITAT PROTECTION/OPEN SPACE
- INDUSTRIAL
- PUBLIC/INSTITUTIONAL
- RESIDENTIAL (RURAL)
- RESIDENTIAL (URBAN)
- UNCLASSIFIED

NOTES:

DATA SOURCE: MODIFIED FROM SHASTA COUNTY, 2020 AND COR, 2020a

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

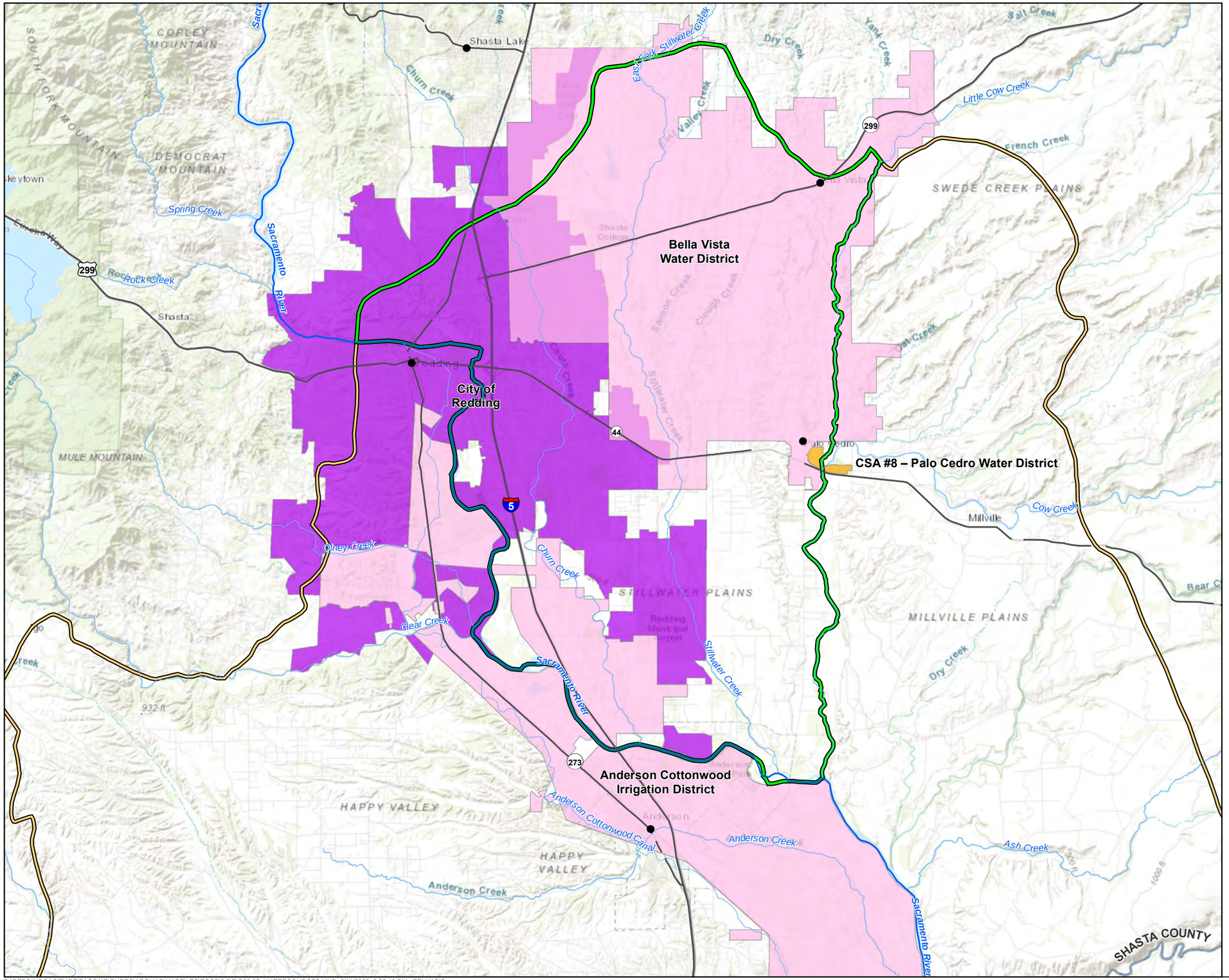
0 2 4 Miles

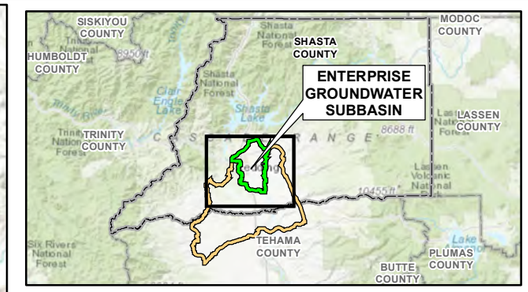
N

FIGURE 2-4
2020 LAND USE
Enterprise Subbasin Groundwater Sustainability Plan

JACOBS

D:\REDDINGCACITYOF\EAGSA\FIGURES\ARCMAP\MAPFILES\EGSP\2.0\FIG02-04_LANDUSE.MXD 6/11/2020 3:29:29 PM FELHADID





LEGEND

- CITY
- SACRAMENTO RIVER
- RIVER/STREAM
- INTERSTATE/HIGHWAY
- COUNTY BOUNDARY LINE
- ENTERPRISE GROUNDWATER SUBSASIN (5-006.04, PLAN AREA)
- REDDING AREA GROUNDWATER BASIN

WATER SOURCE (AGENCY NAME)

- PRIMARILY SURFACE WATER (BELLA VISTA WATER DISTRICT AND ANDERSON COTTONWOOD IRRIGATION DISTRICT)
- GROUNDWATER ONLY (COUNTY SERVICE AREA [CSA] #8 – PALO CEDRO)
- MIXED SURFACE WATER AND GROUNDWATER (CITY OF REDDING)

NOTES:

DATA SOURCES: ACID, 2015; BVWD, 2019; COR, 2020a; SHASTA COUNTY, 2019a

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

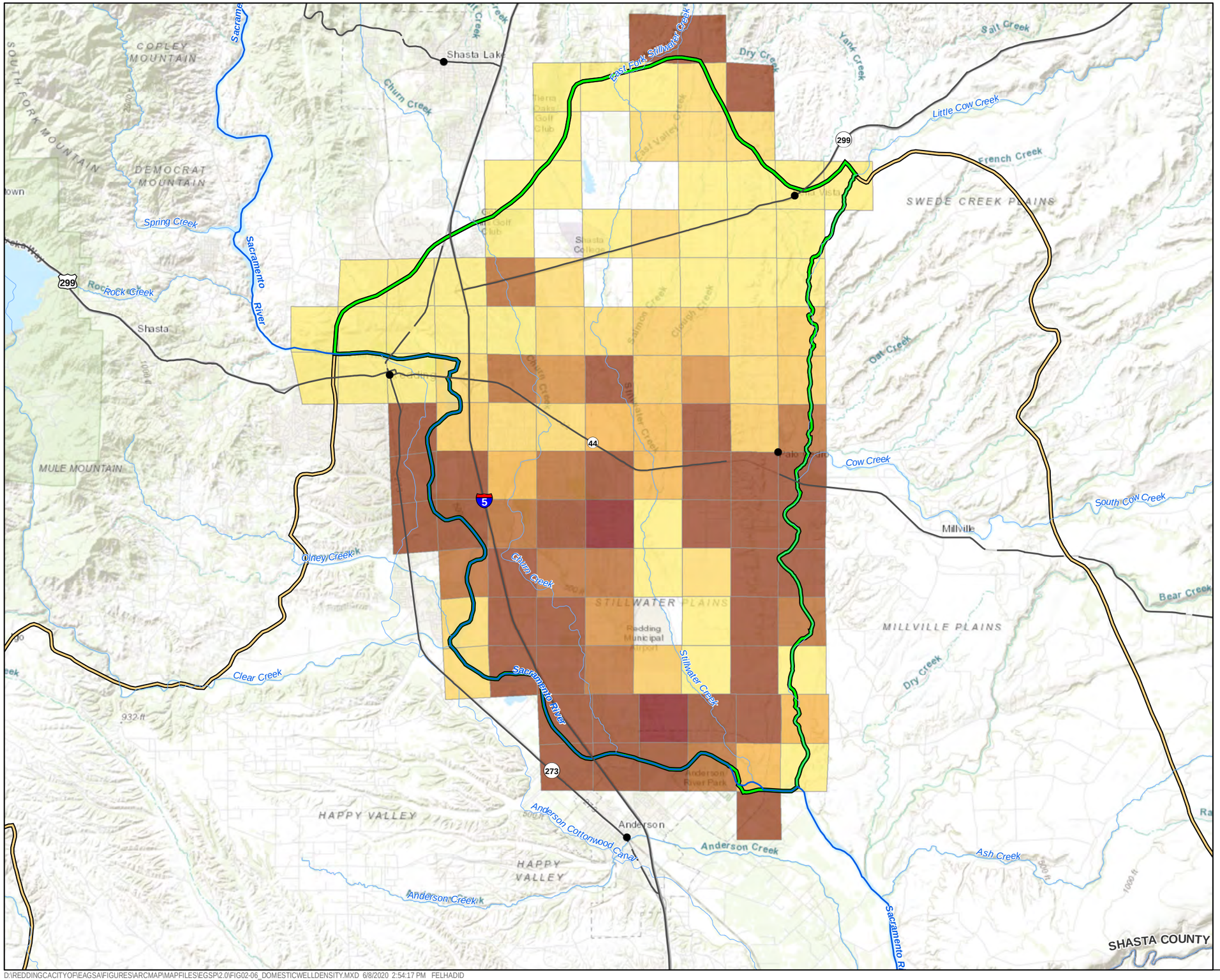
0 2 4 Miles

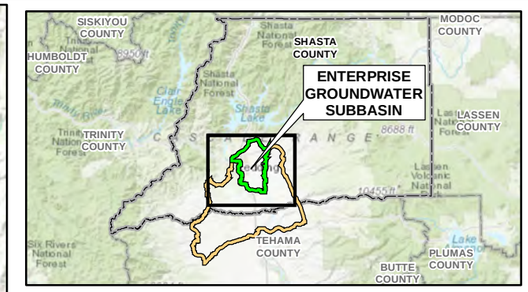
N

FIGURE 2-5
WATER SOURCES
Enterprise Subbasin Groundwater Sustainability Plan

JACOBS

D:\REDDINGCACITYOFIEAGSA\FIGURES\ARCMAP\MAPFILES\EGSP\2.0\FIG02-05_WATERSOURCES.MXD 6/11/2020 3:30:46 PM FELHADID





LEGEND

- CITY
- SACRAMENTO RIVER
- RIVER/STREAM
- INTERSTATE/HIGHWAY
- COUNTY BOUNDARY LINE
- ENTERPRISE GROUNDWATER SUBSASIN (5-006.04, PLAN AREA)
- REDDING AREA GROUNDWATER BASIN

DOMESTIC WELL COUNT

- >100
- >30 to 100
- >25 to 30
- >20 to 25
- >15 to 20
- >10 to 15
- >5 to 10
- 1 to 5

NOTES:

DATA SOURCE: CNRA, 2020b

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

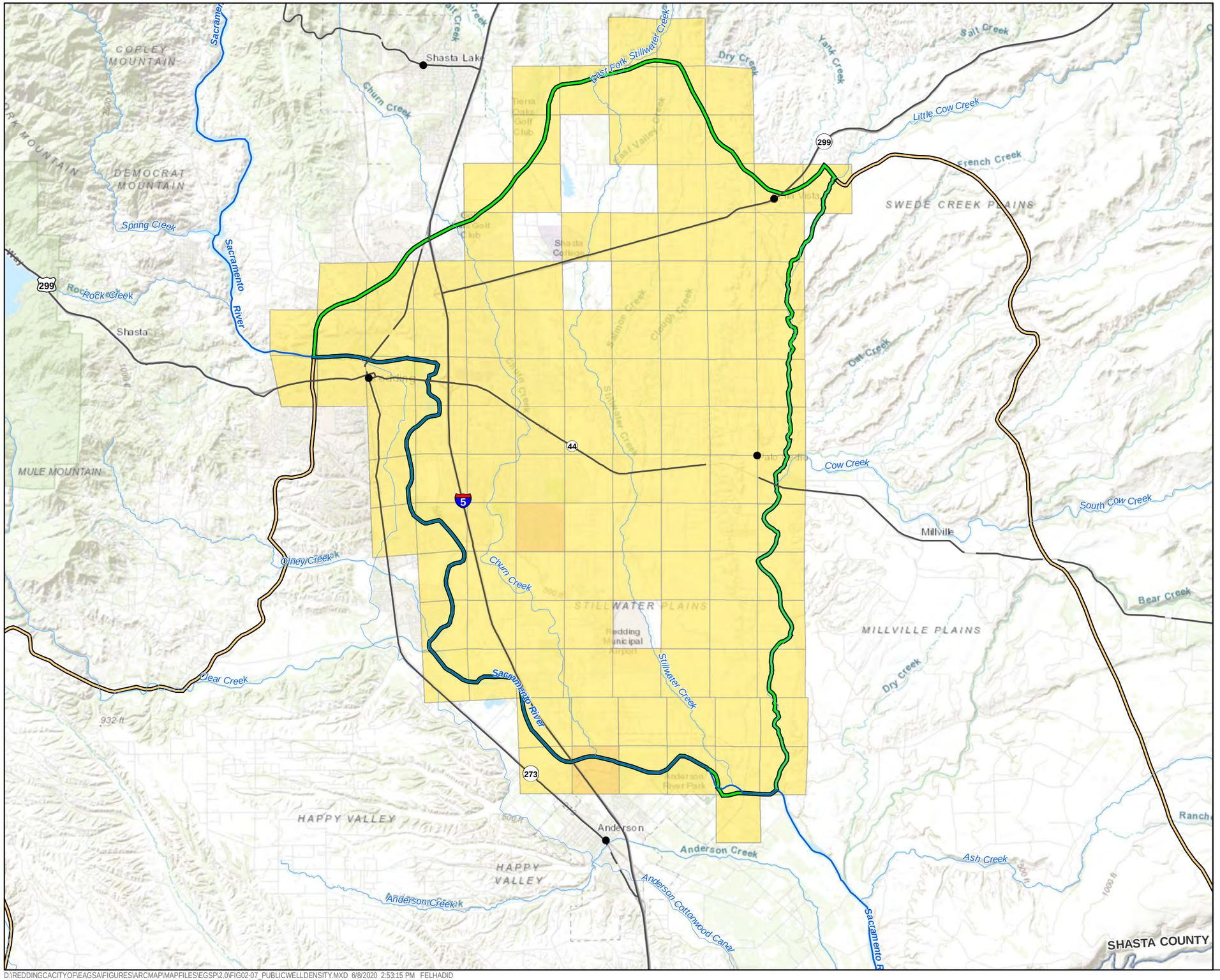
0 2 4 Miles

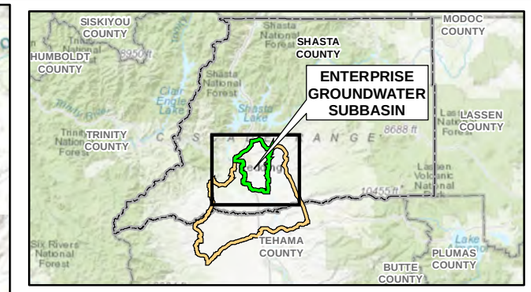
N

FIGURE 2-6
DOMESTIC WELL DENSITY
Enterprise Subbasin Groundwater Sustainability Plan

JACOBS

D:\REDDINGCACITYOF\EAGSA\FIGURES\ARCMAP\MAPFILES\EGSP\2.0\FIG02-06_DOMESTICWELLDENSITY.MXD 6/8/2020 2:54:17 PM FELHADID





LEGEND

- CITY
- SACRAMENTO RIVER
- RIVER/STREAM
- INTERSTATE/HIGHWAY
- COUNTY BOUNDARY LINE
- ENTERPRISE GROUNDWATER SUBSASIN (5-006.04, PLAN AREA)
- REDDING AREA GROUNDWATER BASIN

PUBLIC WELL COUNT

- >100
- >30 to 100
- >25 to 30
- >20 to 25
- >15 to 20
- >10 to 15
- >5 to 10
- 1 to 5

NOTES:

DATA SOURCE: CNRA, 2020b

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

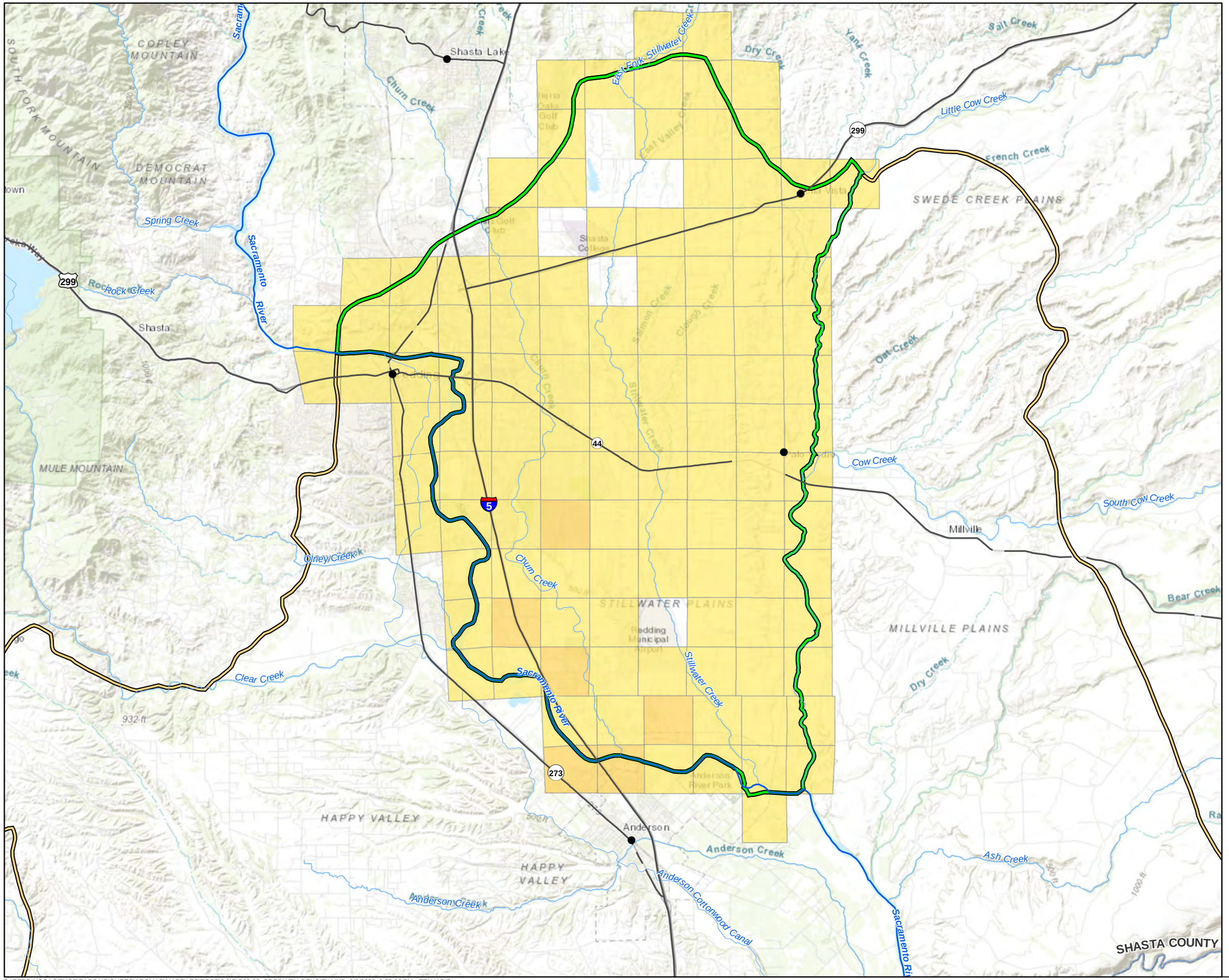
0 2 4 Miles

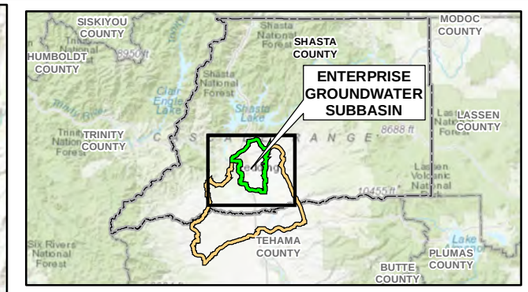
N

FIGURE 2-7
PUBLIC WELL DENSITY
Enterprise Subbasin Groundwater Sustainability Plan

JACOBS

D:\REDDINGCACITYOF\EAGSA\FIGURES\ARCMAP\MAPFILES\EGSP\2.0\FIG02-07_PUBLICWELLDENSITY.MXD 6/8/2020 2:53:15 PM FELHADID





LEGEND

- CITY
- SACRAMENTO RIVER
- RIVER/STREAM
- INTERSTATE/HIGHWAY
- COUNTY BOUNDARY LINE
- ENTERPRISE GROUNDWATER SUBSASIN (5-006.04, PLAN AREA)
- REDDING AREA GROUNDWATER BASIN

PRODUCTION WELL COUNT

- >100
- >30 to 100
- >25 to 30
- >20 to 25
- >15 to 20
- >10 to 15
- >5 to 10
- 1 to 5

NOTES:

DATA SOURCE: CNRA, 2020b

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

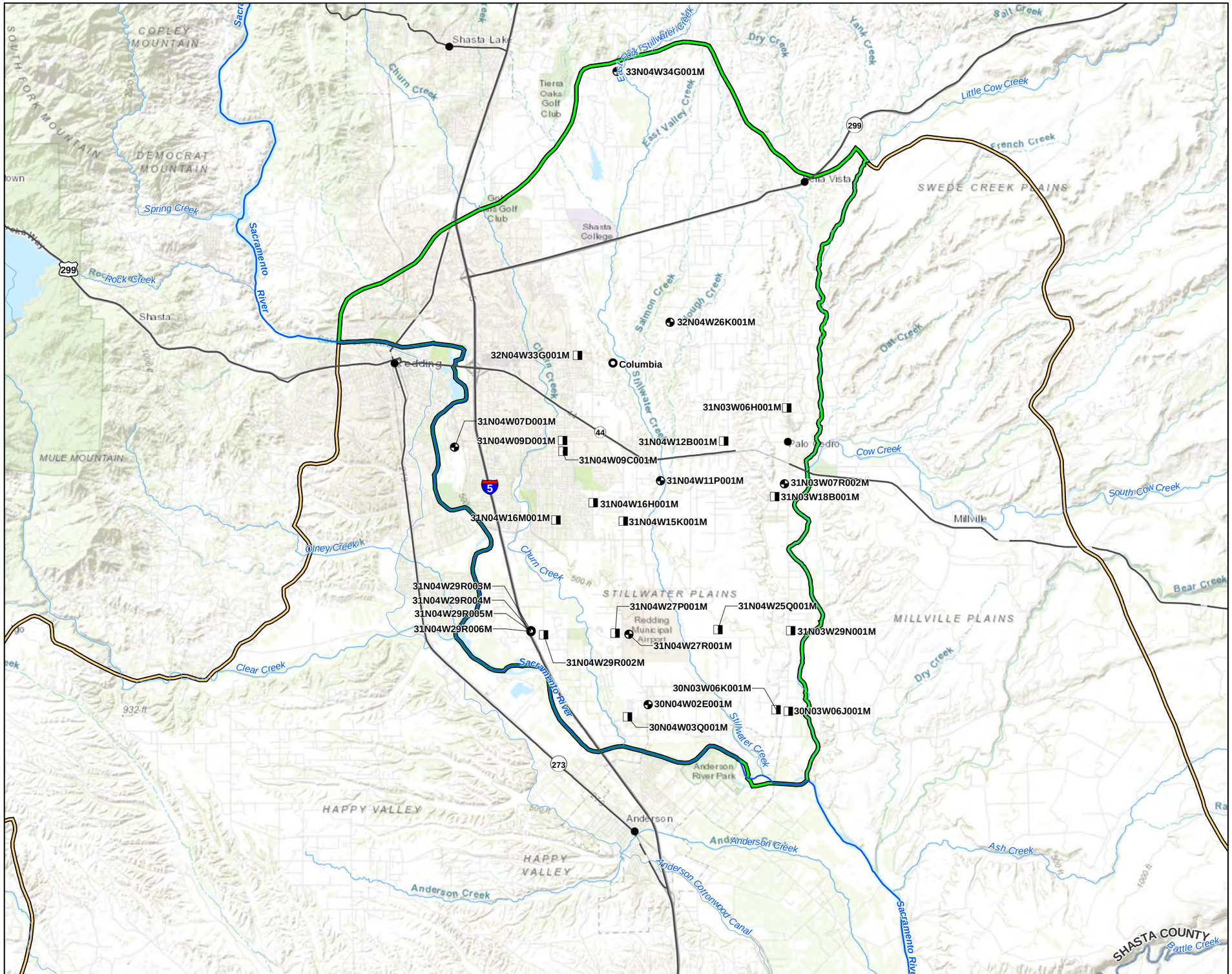
0 2 4 Miles

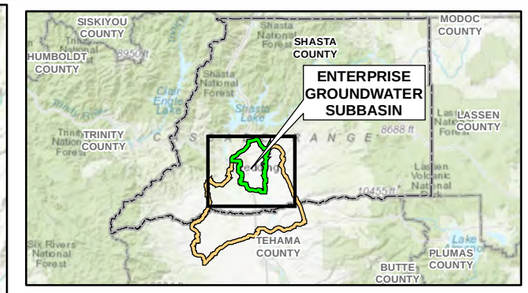
N

FIGURE 2-8
PRODUCTION WELL DENSITY
Enterprise Subbasin Groundwater Sustainability Plan

JACOBS

D:\REDDINGCACITYOF\EAGSA\FIGURES\ARCMAP\MAPFILES\EGSP\2.0\FIG02-08_PRODWELLDENSITY.MXD 6/8/2020 2:55:26 PM FELHADID





LEGEND

PROGRAM (SAMPLING FREQUENCY)

- DWR WELL (PERIODIC)
- CASGEM (PERIODIC)
- USGS WELL (PERIODIC)
- CITY
- SACRAMENTO RIVER
- RIVER/STREAM
- INTERSTATE/HIGHWAY
- COUNTY BOUNDARY LINE
- ENTERPRISE GROUNDWATER SUBSASIN (5-006.04, PLAN AREA)
- REDDING AREA GROUNDWATER BASIN

NOTES:

DATA SOURCES: DWR, 2019a; DWR, 2019b; USGS, 2019a

CASGEM = CALIFORNIA STATEWIDE GROUNDWATER ELEVATION MONITORING PROGRAM

DWR = DEPARTMENT OF WATER RESOURCES

USGS = UNITED STATES GEOLOGICAL SURVEY

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

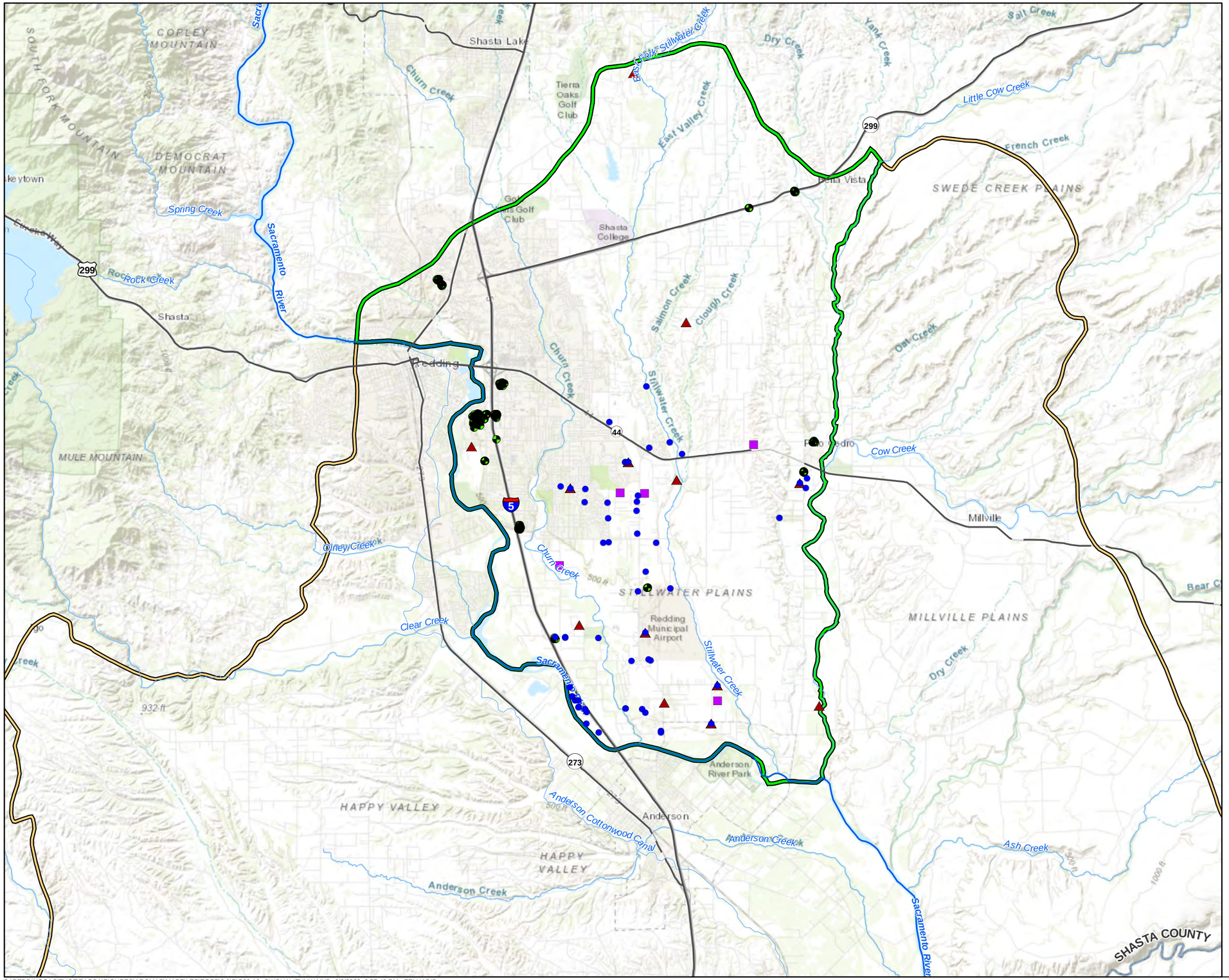
0 2 4 Miles

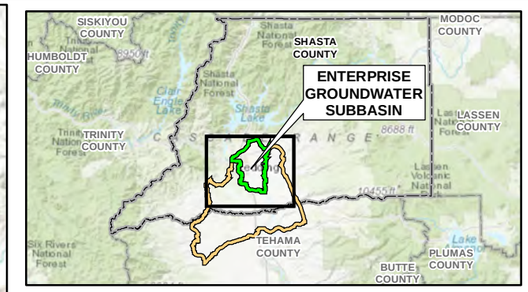
N

FIGURE 2-9
ENTERPRISE SUBBASIN GROUNDWATER LEVEL MONITORING NETWORK
Enterprise Subbasin Groundwater Sustainability Plan

JACOBS

D:\REDDINGCACITYOF\EAGSA\FIGURES\ARCMAP\MAPFILES\EGSP\2.0\FIG02-09_GWMONNETWORK.MXD 6/8/2020 2:56:33 PM FELHADID





LEGEND

GROUNDWATER QUALITY NETWORK SOURCE

- SWRCB – DDW
- GAMA – DWR
- GAMA – USGS
- REGULATED SITE ENVIRONMENTAL MONITORING
- SACRAMENTO RIVER
- RIVER/STREAM
- INTERSTATE/HIGHWAY
- COUNTY BOUNDARY LINE
- ENTERPRISE GROUNDWATER SUBSASIN (5-006.04, PLAN AREA)
- REDDING AREA GROUNDWATER BASIN

NOTES:

LOCATIONS SAMPLED BETWEEN 2000 AND 2019.

DATA SOURCE: SWRCB, 2019a

DDW = DIVISION OF DRINKING WATER

DWR = CALIFORNIA DEPARTMENT OF WATER RESOURCES

GAMA = GROUNDWATER AMBIENT MONITORING AND ASSESSMENT PROGRAM

SWRCB = STATE WATER RESOURCES CONTROL BOARD

USGS = UNITED STATES GEOLOGICAL SURVEY

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

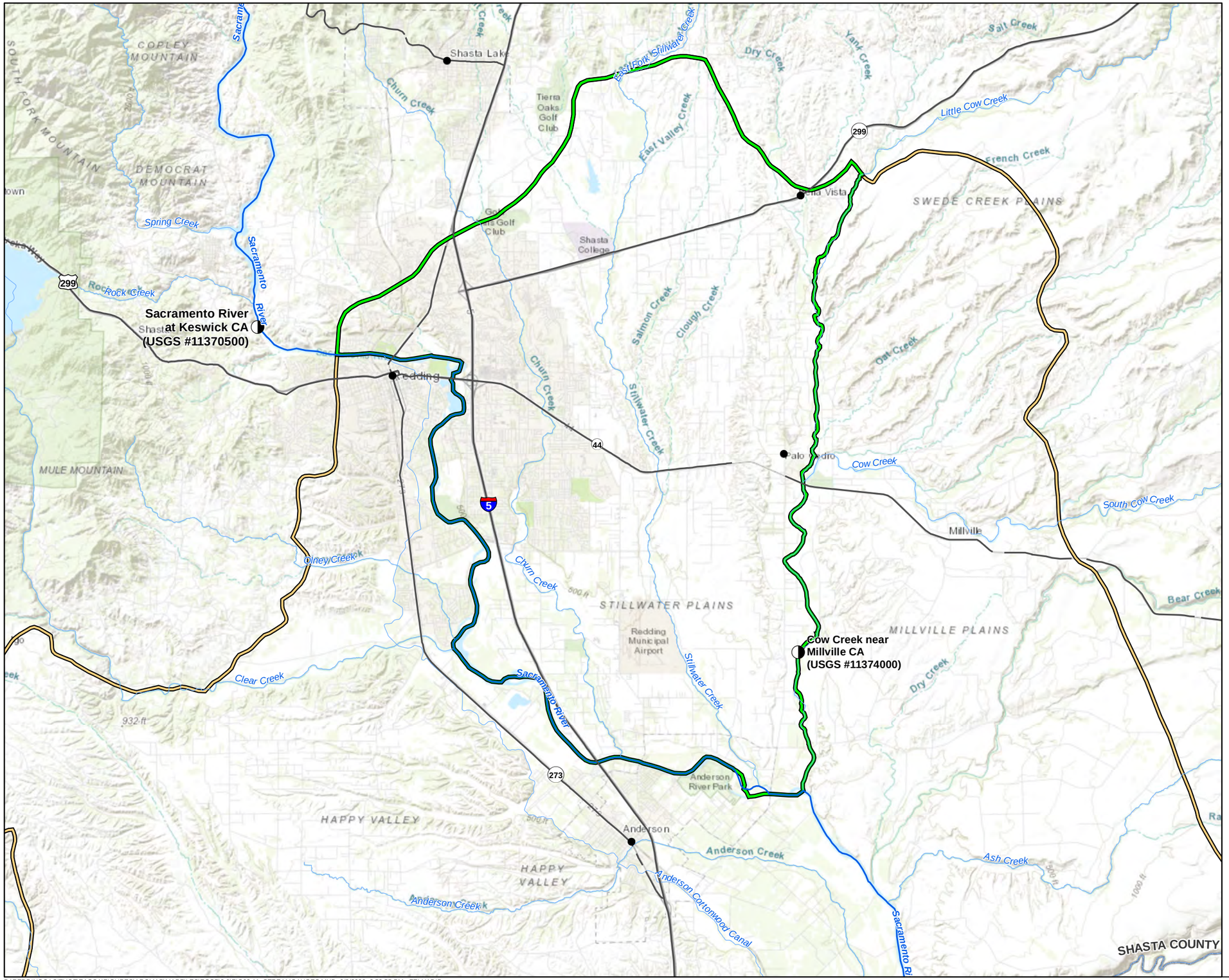
0 2 4 Miles

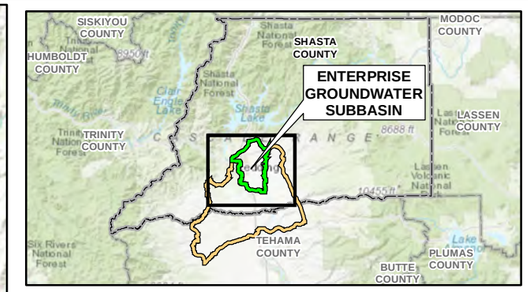
N

FIGURE 2-10
ENTERPRISE SUBBASIN GROUNDWATER QUALITY WELL NETWORK
Enterprise Subbasin Groundwater Sustainability Plan

JACOBS

D:\REDDINGCACITYOF\EAGSA\FIGURES\ARCMAP\MAPFILES\EGSP\2.0\FIG02-10_GWQUALITYNW.MXD 6/8/2020 2:57:49 PM FELHADID





LEGEND

- STREAM GAUGE LOCATION
- CITY
- SACRAMENTO RIVER
- RIVER/STREAM
- INTERSTATE/HIGHWAY
- COUNTY BOUNDARY LINE
- ENTERPRISE GROUNDWATER SUBSASIN (5-006.04, PLAN AREA)
- REDDING AREA GROUNDWATER BASIN

NOTES:

DATA SOURCE: UNITED STATES GEOLOGICAL SURVEY (USGS), 2019a

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

0 2 4 Miles

N

FIGURE 2-11
ENTERPRISE SUBBASIN STREAM GAUGE LOCATIONS
Enterprise Subbasin Groundwater Sustainability Plan

D:\REDDINGCACITYOF\EAGSA\FIGURES\ARCMAP\MAPFILES\EGSP\2.0\FIG02-11_STREAMGAUGES.MXD 6/8/2020 2:58:55 PM FELHADID

JACOBS