Contra Costa County
Drought Resilience Plan

FOR DOMESTIC WELL, LOCAL SMALL, AND STATE SMALL WATER SYSTEM COMMUNITIES

Public Draft - February 2026

Prepared for:
Contra Costa County
Department of Conservation and Development

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CONSERVATION & DEVELOPMENT

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This plan was developed by Contra Costa County staff in coordination with Stantec. Additional support was provided by the Contra Costa County Drought and Water Shortage Task Force and the California Department of Water Resources Water Justice Office.

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Abbreviations and Acronyms

°F	degrees Fahrenheit
AB	Assembly Bill
AGSP	Alternative Groundwater Sustainability Plan
Bay Area	San Francisco Bay Area
CCWD	Contra Costa Water District
CDAG	County Drought Advisory Group
Central San	Central Contra Costa Sanitary District
Charter	Task Force Charter
County	Contra Costa County
CVP	Central Valley Project
CWC	California Water Code
CWP	County Watershed Program
DCD	Department of Conservation and Development
Delta	Sacramento-San Joaquin Delta
DRP	Drought Resilience Plan
DWD	Diablo Water District
DWR	California Department of Water Resources
DWWM	Domestic Water Well Mitigation
EBMUD	East Bay Municipal Utility District
EHD	Environmental Health Division
EIDWD	Emergency and Interim Drinking Water Distribution
FEMA	Federal Emergency Management Agency
GSA	groundwater sustainability agency
GSP	groundwater sustainability plan
Guidebook	County Drought Resilience Guidebook
GWMP	Groundwater Management Plan
HSC	California Health and Safety Code
HUC	Hydrologic Unit Code
ISD	Ironhouse Sanitary District
LSS	local small water system
LTMSA	long-term mitigation strategies and action
NPDES	National Pollutant Discharge Elimination System
OES	Office of Emergency Services
OSWCR	Online System of Well Completion Reports
PCT	project coordination team

PLSS	Public Land Survey Section
risk assessment	drought and water shortage risk assessment
SB	Senate Bill
SGMA	Sustainable Groundwater Management Act
SSWS	State small water system
State	State of California
State Water Board	State Water Resources Control Board
STRA	short-term response action
Task Force	Contra Costa County Drought and Water Shortage Task Force
WSCP	Water Shortage Contingency Plan
WSVE	Water Shortage Vulnerability Explorer
WY	water year
Zone 7 Water Agency	Alameda County Flood Control and Water Conservation District

1.0 Introduction

The Contra Costa County (County) Drought Resilience Plan (DRP) documents how the County, its Drought and Water Shortage Task Force (Task Force) members, and other entities with water supply and drought management responsibilities will address water supply vulnerabilities for three types of systems in the county: domestic wells, as defined in California Health and Safety Code (HSC) Section 116681(i) and California Water Code (CWC) Section 10609.51(d); state small water systems (SSWS), as defined in HSC Section 116275(n) and CWC Section 10609.51(l); and local small water systems (LSS) (see Section 1.2). The intent is to help small water suppliers and rural communities prepare for and respond to droughts and water shortages, regardless of the source of their water supply. The County DRP was prepared pursuant to Senate Bill (SB) 552: Drought Planning for Small Water Suppliers, State Small Water Systems, and Domestic Well Communities (Hertzberg; see Section 1.2 for additional detail). This County DRP was developed by the County, with technical support provided by the California Department of Water Resources (DWR) Drought Resilience Planning Assistance Program.

1.1 Document Organization

Organization of this document draws from the DWR's *County Drought Resilience Guidebook* (March 2023; Guidebook). The Guidebook is a resource for counties to develop a County DRP specifically for domestic wells and SSWSs. Consistent with the Guidebook, the County DRP is organized into six chapters, as follows:

- **Chapter 1: Introduction** provides an overview of the legislation relating to SB 552 and the development of the County DRP. Also included is background on County demographics, geography, and an overview of domestic wells, LSSs, and SSWSs within the County's jurisdiction.
- **Chapter 2: County Drought and Water Shortage Task Force** provides an overview of the Task Force, including its development, membership, roles, purpose, and meeting frequency.
- **Chapter 3: Drought and Water Shortage Risk Assessment** characterizes the vulnerability of domestic wells, LSSs, and SSWSs within the County to drought and water shortage. This chapter also presents the approach and data used to assess vulnerability. It highlights areas within the county that have a higher risk of drought and water shortage where domestic wells, LSSs, and SSWSs are present. Additionally, it identifies data gaps to help inform potential long-term strategies.
- **Chapter 4: Short-Term Response Actions** details the proposed short-term response actions (STRA) for emergency and interim drought solutions, including specific actions, local response triggers, and public engagement.
- **Chapter 5: Long-Term Mitigation Strategies and Actions** details the proposed long-term mitigation strategies and actions (LTMSA) for improving the water supply resilience of domestic wells, LSSs, and SSWSs.
- **Chapter 6: Implementation Considerations** presents a roadmap for implementing STRA and LTMSA consistent with the mission and authority of involved agencies. This includes identifying agencies and entities responsible for implementation, the status of implementation, funding needs and capacity, authorization for implementation, and the anticipated schedule. This

section also summarizes the level of multi-agency collaboration identified by agencies to support implementation.

- **Chapter 7: References** provides a list of references used in this plan.

1.2 Legislative Requirements

Signed into law September 2021 by Governor Gavin Newsom, SB 552 (Hertzberg)[1] obligated the State of California (State) and local governments to share the responsibility in preparing for and responding to conditions where water supply for a domestic well or SSWS is not available, known as a water shortage event. These water shortage events are primary related to drought but could be also caused by events such as water quality issues, natural hazards, or infrastructure failures. The new law and requirements are expected to improve the ability of Californians to manage future droughts and help prevent catastrophic impacts on drinking water for communities vulnerable to the effects of climate change. The law outlines the new requirements for small water suppliers, county governments, DWR, and the State Water Resources Control Board (State Water Board) to implement more proactive drought planning to be better prepared for future water shortage events or dry years.

SB 552 also implements legislation on Water Conservation and Drought Planning (SB 606 [Hertzberg] and Assembly Bill (AB) 1668 [Friedman], as amended; collectively referred to as "2018 Legislation") passed by the State Legislature. The 2018 Legislation contains new laws that provide a framework for urban water use efficiency; directives for eliminating water waste; additional requirements for strengthening local drought resilience for urban areas, vulnerable small water suppliers, and rural communities; and recommendations for improving agricultural water use efficiency and drought planning.

Water users protected under SB 552 include:

- **Small Water Supplier:** A community water system serving 15 to 2,999 service connections, inclusive, and that provides less than 3,000 acre-feet of water annually (CWC Section 10609.51(k)).
- **Community Water System:** A public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 yearlong residents of the area served by the system, as defined in HSC Section 116275(i) and Section 10609.51(a).
- **State Small Water System:** A system for the provision of piped water to the public for human consumption that serves at least 5, but not more than 14, service connections and does not

[1] In 2018, DWR convened a County Drought Advisory Group (CDAG) to assist in a vulnerability assessment and to develop recommended actions for improving drought planning for small water suppliers and rural communities. The CDAG consisted of representatives from counties and other local agencies, small water systems, tribes, academics, non-profit organizations, and other interested parties. The CDAG's recommendations were provided to the Legislature in March 2021 and served as the basis for SB 552. DWR has also established a standing drought and water shortage interagency task force, in coordination with the State Water Board and other relevant state agencies, to facilitate proactive state planning and coordination for pre-drought planning, emergency response, and post-drought management, consistent with SB 552. The interagency task force, called the Drought Resilience Interagency and Partners Collaborative, serves as a public forum with State and non-State agency members to advance drought strategies and continue building resilience to the increasingly arid conditions California faces. More information is available at: https://water.ca.gov/drip.

regularly serve drinking water to more than an average of 25 individuals daily for more than 60 days out of the year, as defined in HSC Section 116275(n) and CWC Section 10609.51(l).

- **Domestic Well:** A groundwater well used to supply water for the domestic needs of an individual residence or a water system that is not a public water system and that has no more than four service connections, as defined in HSC Section 116681(i) and CWC Section 10609.51(d).
- **Nontransient Noncommunity Water System:** A public water system that is not a community water system and that regularly serves at least 25 of the same persons over six months per year, as defined in HSC Section 116275(k) and Section 10609.51(f).

Contra Costa County Ordinance Code §414-- 4.221 defines an LSS as a utility system that furnishes water for domestic purposes to from two through one hundred ninety-nine service connections. Because SSWS is defined to serve at least 5 connections, the County created the LSS classification, which serves drinking water to between 2 and 4 service connections. (Contra Costa Health 2024). These LSS are regulated consistently with SSWS.

For the water users protected under SB 552, the Contra Costa County DRP addresses water shortage vulnerabilities for domestic wells, SSWSs, and LSSs. The remaining systems are not applicable to the County's DRP under SB 552 and not included. See CWC Section 10609.60 and 10609.61 for a description of requirements to address water shortage vulnerabilities in the remaining systems.

1.2.1 County Agency Requirements

This plan fulfills County requirements for preparation of a plan that includes potential drought and water shortage risk and proposed interim and long-term solutions for domestic well, LSS, and SSWS systems within the County's jurisdiction (CWC Section 10609.70). While measures to protect small water suppliers and nontransient noncommunity water systems are not within the scope of this document, this plan considers integration opportunities consistent with the intent of SB 552. Applicable County requirements are:

- Establish a standing County Task Force (CWC Section 10609.70(a))
- Develop a plan that considers, at a minimum, each of the following (CWC Section 10609.70(b)):
    1) Consolidations for existing water systems and domestic wells
    2) Domestic well drinking water mitigation programs
    3) Provision of emergency and interim drinking water solutions
    4) Analysis of necessary steps to implement the plan
    5) Analysis of local, state, and federal funding sources available to implement the plan

1.2.2 State Agency Involvement and Implementation

SB 552 defined a series of requirements for the State Water Board and DWR. These include:

State Water Resources Control Board (CWC Section10609.70(c)):

> *The state board shall work with counties, groundwater sustainability agencies, technical assistance providers, nonprofit organizations, community-based organizations, and the*

public to address state small water system and domestic well community drought and emergency water shortage resiliency needs, including both of the following:

(1) Proactive communication to domestic well communities before a drought occurs, such as information on local bottled water and water tank providers.

(2) Funding for installation of basic drought and emergency water shortage resiliency infrastructure, such as well monitoring devices.

California Department of Water Resources (CWC Section 10609.80(a)):

The department shall take both of the following actions to support implementation of the recommendations of its County Drought Advisory Group:

(1) Maintain, in partnership with the state board and other relevant state agencies, the risk vulnerability tool[2] developed as part of the County Drought Advisory Group process and continue to refine existing data and gather new data for the tool, including, but not limited to, data on all of the following:

(A) Small water suppliers and nontransient noncommunity water systems serving a school.

(B) State small water systems and rural communities.

(C) Domestic wells and other self-supplied residents.

(2) Update the risk vulnerability tool for small water suppliers and rural communities periodically, by doing all of the following:

(A) Revise the indicators and construction of the scoring as more data becomes readily available.

(B) Make existing and new data publicly available on the California Open Data internet web portal.

(C) In consultation with other relevant state agencies, identify deficits in data quality and availability and develop recommendations to address these gaps.

(b) (1) The department, in collaboration with the state board and relevant state agencies, shall establish a standing interagency drought and water shortage task force to facilitate proactive state planning and coordination, both for predrought planning and post-drought emergency response, to develop strategies to enhance collaboration between various fields, and to consider all types of water users.

(2) The interagency drought and water shortage task force shall include representatives from local governments, community-based organizations, nonprofit technical assistance providers, the public, and experts in land use planning, water resiliency, and water infrastructure.

[2] Water Shortage Vulnerability Scoring and Tool

1.3 Purpose of Contra Costa County Drought Resilience Plan

The County DRP documents how the County, Task Force members, and other entities with water supply and drought management responsibilities intend to address water supply vulnerabilities of water users protected under SB 552 in the County. It is also intended to help small water suppliers and rural communities prepare for and respond to droughts and water shortages. This document describes the water shortage vulnerabilities present in the County, the responses to identified vulnerabilities, and the policy, financial, and regulatory considerations necessary for the implementation of the County DRP. Implementation of the County DRP is led by the Contra Costa County Department of Conservation and Development in close coordination with other departments, including the Contra Costa County Sheriff's Office of Emergency Services, Contra Costa County Department of Public Works, Contra Costa County Department of Agriculture/Weights and Measures, and the Contra Costa County Department of Health's Division of Environmental Health.

The County DRP was developed by the County with technical support provided by DWR's Drought Resilience Planning Assistance Program and conforms to the legislative requirements of SB 552.

1.4 Contra Costa County Overview

Contra Costa County is in Northern California and is both one of the nine San Francisco Bay Area (Bay Area) counties and one of the five Sacramento-San Joaquin Delta (Delta) counties. There are 19 cities in the county and 1.17 million residents (USCB 2020). The Delta, the largest freshwater tidal estuary of its kind on the west coast of the Americas, flows along the County's northern shoreline, approximately 90 miles, to the San Francisco Bay. Counties bordering Contra Costa are, clockwise, Solano, Sacramento, San Joaquin, Alameda, San Francisco, Marin, and Sonoma. Figure 1-1 shows the location of Contra Costa County and its neighboring counties.

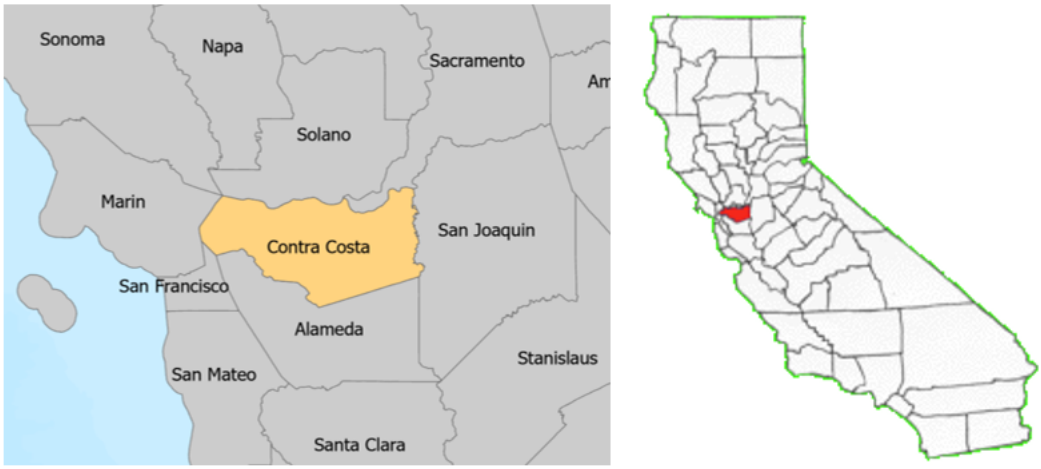


Figure 1-1. Map of Location of Contra Costa County and its Neighboring Counties

1.4.1 Demographics

Selected demographics of the county are summarized below per the 2020 Census and 2023 American Community Survey (USCB 2020) and the Contra Costa County 2045 General Plan (Contra Costa County 2045 General Plan 2024).

- **Population:** The county has a population of 1.17 million people. Approximately 85 percent of this population live within city limits and 15 percent in unincorporated areas (Contra Costa County 2045 General Plan 2024).
- **Age:** The county has a median age of 40.9. Around 22 percent of the population are under 18 years old and 18 percent are 65 years and over (USCB 2020).
- **Ethnicity:** Overall, approximately 40 percent of Contra Costa County residents are non-Hispanic White, 9.5 percent are Black or African American, 27 percent are Hispanic or Latino, 20 percent are Asian, and 3.5 percent are Native American, Pacific Islander, or other races. The racial and ethnic makeup of communities also varies across the county, ranging from North Richmond, where 95 percent of residents are people of color, to Diablo, where 5 percent of residents are people of color (Contra Costa County 2045 General Plan 2024).
- **Household Income:** The median household income for a family of four in Contra Costa County is almost $154,000. Median household incomes vary significantly across communities. The median household income for a family of four in North Richmond is under $60,000, while median incomes for a family of four in Alamo and Diablo are over $250,000 (Contra Costa County 2045 General Plan 2024).
- **Education:** The county has a higher-than-average percentage of residents with a bachelor's degree or higher, with 46.2 percent compared to 37.5 percent for California overall (USCB 2020).
- **Poverty Level:** About 8.3 percent of the population for whom poverty status is determined in the county live below the poverty line, a number lower than the national average of 12.0 percent (USCB 2020). The largest demographic living in poverty are females ages 25 to 34, followed by females ages 35 to 44 and females ages 55 to 64. The most common racial or ethnic group living below the poverty line in the county is Hispanic, followed by White and Other (Data USA 2022). In addition, there are many impacted communities[3] that rely on groundwater as a sole source of supply.

1.4.2 Geography

Contra Costa County is located in the East Bay of the San Francisco Bay Area. The County's physical geography is dominated by the bayside alluvial plain, the Oakland Hills–Berkeley Hills, several inland valleys, and Mount Diablo. The Diablo Range, with Mount Diablo as its prominent peak, dominates the central landscape. The county's geography supports a mix of suburban cities, agricultural areas, and natural Federal, State, and regional parks.

1.4.2.1 Hydrology

This County DRP applies the U.S. Geological Survey's Hydrologic Unit Codes (HUC) system. This system was developed to classify and manage watersheds across the United States, with the hierarchy indicated

[3] Impacted Community are defined as an area, typically low-income, that is disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation. This is the term Contra Costa County uses in place of "disadvantaged communities," as named in Senate Bill (SB) 1000. SB 1000 defines disadvantaged communities per Health and Safety Code Section 39711, specifying CalEnviroScreen as the primary screening method for identifying these communities. In Contra Costa County's General Plan, census tracts with a cumulative CalEnviroScreen score of 72 or higher were identified as Impacted Communities (Contra Costa County 2045 General Plan 2024).

by the number of digits in the code. This system organizes watersheds into six levels of classification within six two-digit fields, each representing a different scale of hydrologic units. The fourth level of classification – referred to as HUC 8 – has been applied to this County DRP for planning purposes. There are four HUC-8 hydrologic subregions, as shown in Figure 1-2. Three of these HUC-8 subregions are tributaries to the San Francisco Bay Basin: the Suisan Bay, San Francisco Bay, and the San Pablo Bay. The San Joaquin Delta subregion is a tributary to the San Joaquin Basin (USGS 2024).

All creeks and rivers in the county drain to the San Francisco Bay or the Delta. Contra Costa County includes the headwaters of creeks that drain through other counties before reaching the San Francisco Bay. Marsh Creek, with a length of approximately 35 miles, is the longest creek entirely within the county that drains into the Delta. Walnut Creek is another major river that flows through the central part of the county, eventually draining into Suisun Bay.

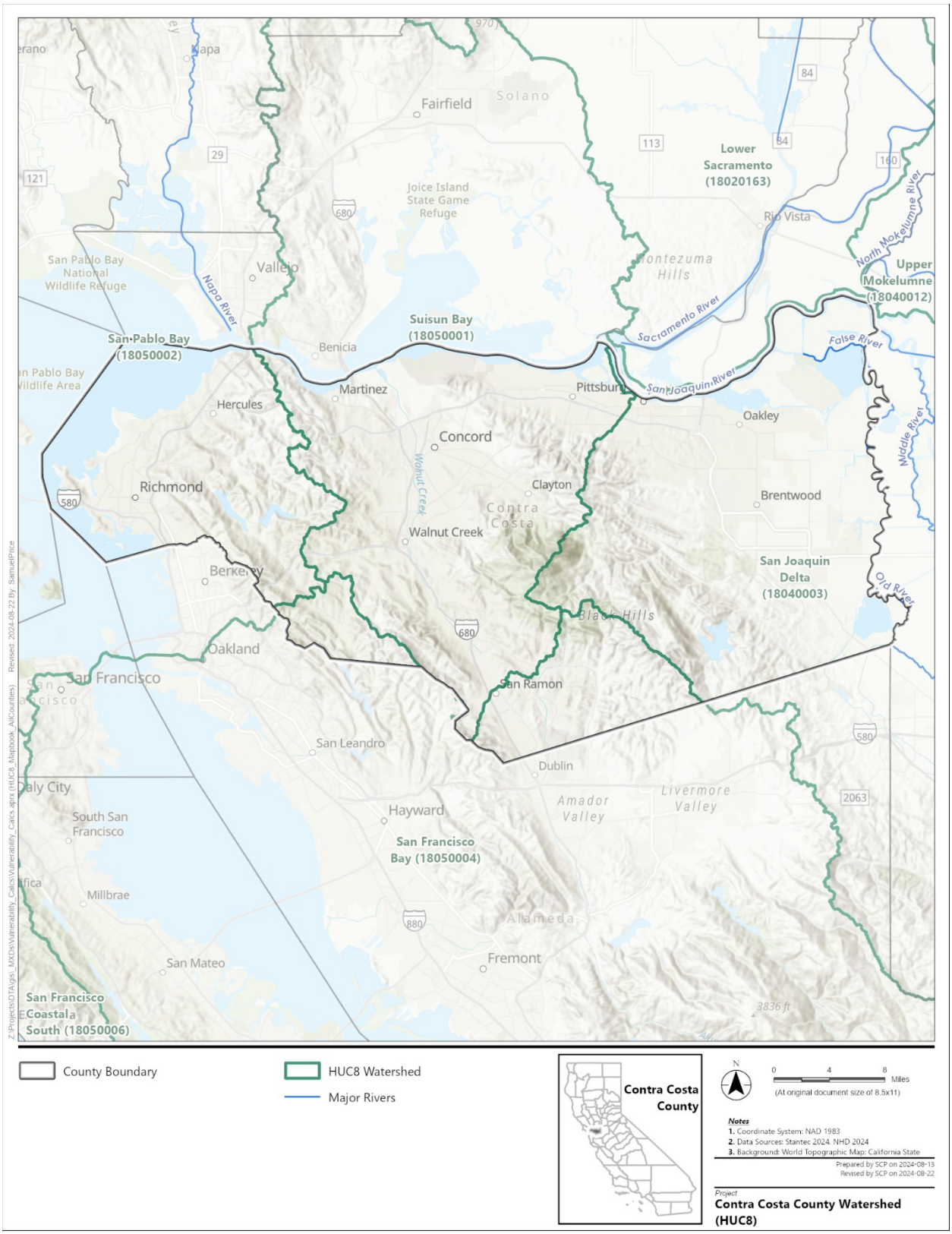


Figure 1-2. Hydrologic Subregions within Contra Costa County

1.4.2.2 Precipitation

Precipitation within the County depends on various factors, including season, location, and topography. Generally, West County receives more precipitation than East County.

Most of the precipitation occurs between December and March, with almost no precipitation occurring during the summer. The monitoring station at Concord Buchanan Field (Station ID: USW00023254) reported an annual average precipitation of approximately 14.9 inches from January 1, 2001, to January 1, 2021 (USFG 2024). However, this precipitation can be highly variable year-to-year and vary spatially. For example, the annual precipitation in Ygnacio Valley Fire Station, on the south side of Concord, was 29.26 inches in water year (WY) 2023, 15.33 inches in WY 2022, 6.03 inches in WY 2021, 9.86 inches in WY 2020, and 21.27 inches in WY 2019 (CDEC 2024).

1.4.2.3 Topography

The County is located at the northern end of the Diablo Range of Central California. It is bounded on the north by Carquinez Strait, through which flows 27 percent of California's surface water runoff (Helley and Graymer 1997). San Francisco Bay forms the western boundary, the San Joaquin Valley borders it on the east, and the Livermore Valley forms the southern boundary. Much of the County is foothills or mountainous with steep rugged topography, with the rest consisting of valleys (such as the San Ramon and Clayton valleys), coastal plains along the edges of San Francisco Bay, and wetlands near the Delta.

Mount Diablo, in the center of the county, is one of the highest peaks in the Bay Area, with an elevation of 3,849 feet (Helley and Graymer 1997). Mount Diablo extends to the Altamont Pass area and the remainder of the Diablo Range in Alameda County. Topography within the County is shown in Figure 1-3.

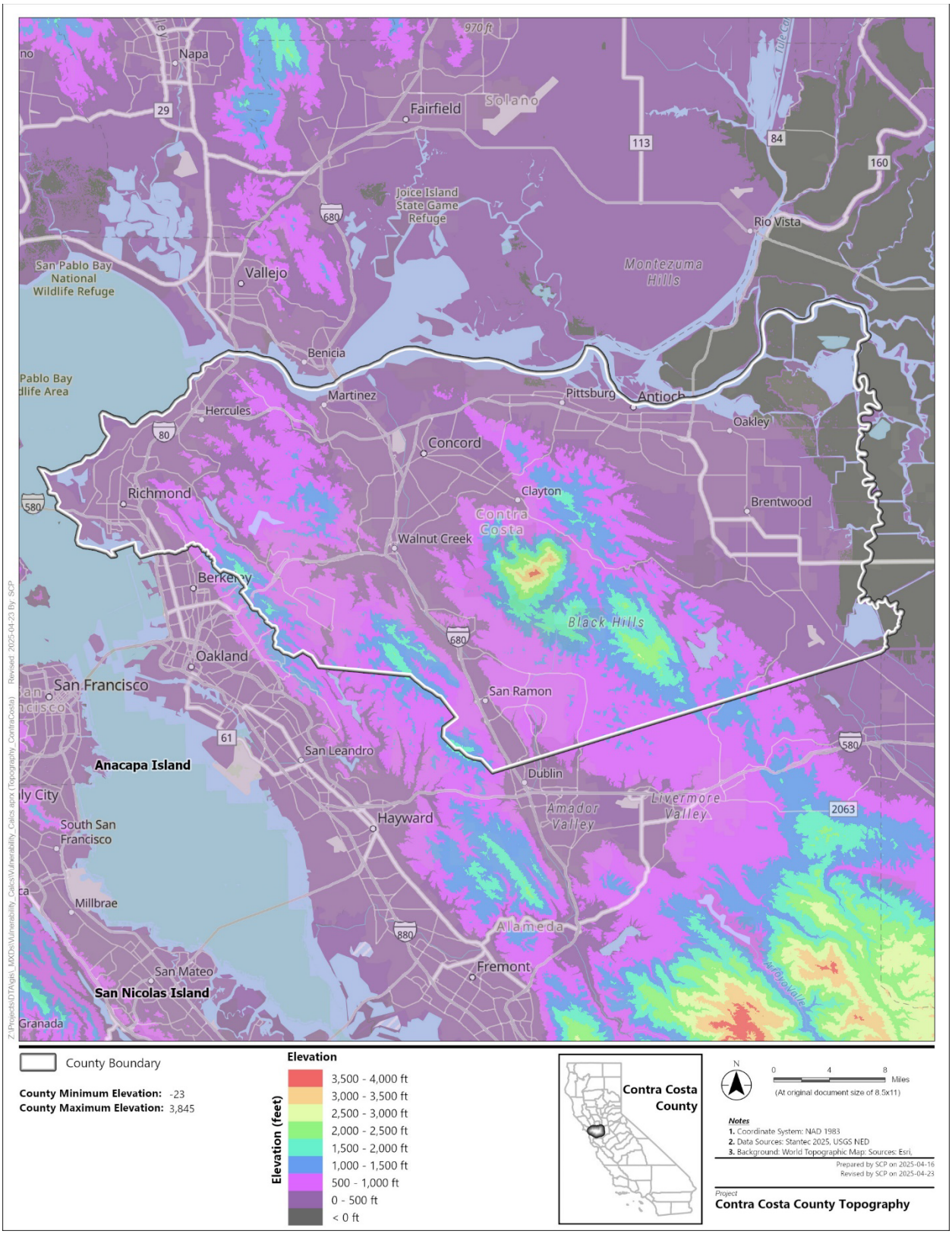
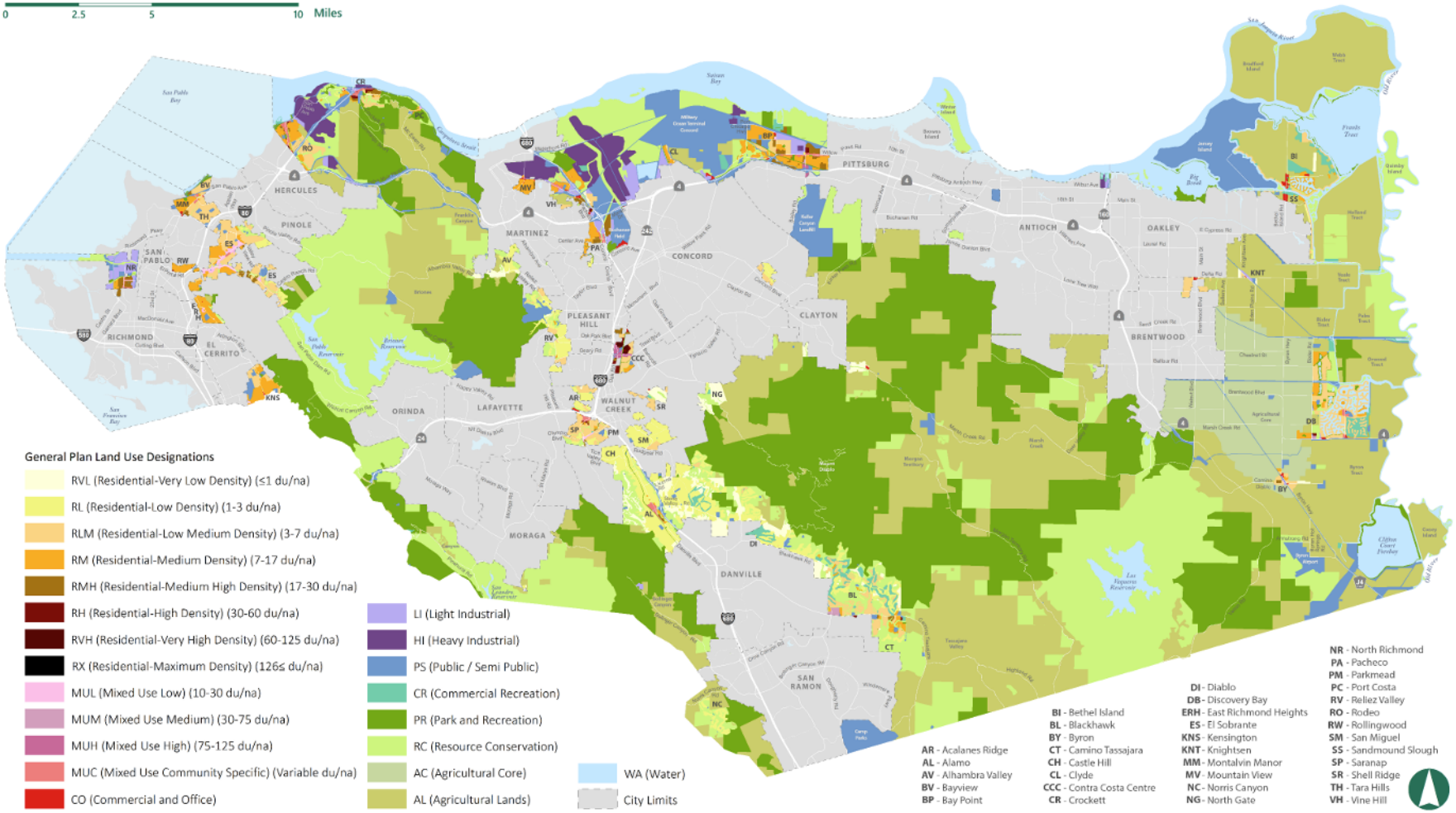


Figure 1-3. Topography of Contra Costa County

1.4.2.4 Land Use

Although located in the San Francisco Bay Area – one of America's most populated metropolitan areas with around 4.6 million people – approximately 60 percent of the County is unincorporated and devoted to agriculture, parks, and other forms of open space. Communities in west and central County include a full range of urban and suburban uses. While agriculture and open space are the dominant land use in the eastern portion of the County, the region includes a handful of distinct, unincorporated residential communities supported by limited commercial, industrial, and public uses. County land use is shown in Figure 1-4, which shows designations for each parcel of land in the unincorporated county for a type of land use. Although a parcel's designation usually reflects a planned continued land use type, the Contra Costa County 2045 General Plan supports changes to certain land consistent with a vision for the community's future.



Source: Contra Costa County 2045 General Plan

Figure 1-4. Land Use Within Contra Costa County

1.4.2.5 Geology

Contra Costa County is in a region of high seismicity. Several significant (i.e., stronger than magnitude 5.0) earthquakes have impacted the county, including the 1906 San Francisco earthquake (magnitude 7.8), 1989 Loma Prieta earthquake (magnitude 6.9), and 2014 South Napa earthquake (magnitude 6.0). There are five major active faults running through the county, including the Calaveras (North Central) Fault, Concord-Green Valley Fault, Greenville Fault, Hayward Fault, and Mount Diablo Fault. Movement on any of these faults or other fault lines in the region could cause earthquakes and fault rupture. The Hayward Fault is particularly concerning, as it runs beneath densely populated sections of Contra Costa and Alameda Counties. A significant earthquake on the Hayward Fault is predicted to result in catastrophic damage to buildings and infrastructure and substantial loss of life. Earthquakes have secondary effects as well, including liquefaction, which occurs when sandy or silty soil materials become saturated during ground shaking, losing strength and causing the ground to liquefy. This can rupture pipelines, buckle roads and railroad tracks, and damage or destroy building foundations. Areas along the Bay shoreline and in the Delta are most susceptible. Earthquakes can also cause tsunamis and seiche.

Other geologic hazards are landslides and erosion, which can occur gradually and continuously or very suddenly, often with disastrous results. In Contra Costa County, landslides are usually triggered by heavy rain, so the potential for landslides largely coincides with severe storms that saturate steep, loose soils. Earthquakes can also trigger landslides, with upland areas in Contra Costa County being highly susceptible (Contra Costa County 2045 General Plan 2024).

1.4.3 Water Supply, Use, and Management

County water supplies for domestic, commercial, municipal, industrial, agricultural, and environmental uses are described below.

1.4.3.1 Water Supplies

The County has a diverse set of water supplies, including surface water and groundwater wells, and implements water conservation measures to ensure the community has adequate water, even after a period of dry years (Contra Costa County 2045 General Plan 2024).

There are nine water providers in the county: the Byron Bethany Irrigation District, Castle Rock County Water District, Contra Costa County Service Area M-28, Contra Costa Water District (CCWD), Diablo Water District (DWD), Discovery Bay Community Services District, East Bay Municipal Utility District (EBMUD), East Contra Costa Irrigation District, and the Golden State Water Company (Contra Costa County 2045 General Plan 2024).

EBMUD and CCWD are the County's primary water suppliers. As the County's population continues to grow, so will the demand for water. EBMUD and CCWD both consider their water supplies adequate to meet projected water needs through the year 2045 (Contra Costa County 2045 General Plan 2024). Other water providers purchase water from CCWD, source water from the Delta or other surface supplies using their own water rights, or pump groundwater (Contra Costa County 2045 General Plan 2024). Table 1-1 provides water supplier details at a glance for each of the County's water providers.

Table 1-1. Overview of Water Providers in Contra Costa County

Water Provider	Approximate Service Population	Retail/ Wholesale	Types of Uses/ Customer Types	Approximate Acreage (acres)	Supply Sources
Byron-Bethany Irrigation District (BBID)[1]	16,000	Retail	Agricultural, Industrial, Municipal	10,000	Central Valley Project (CVP), Old River
Castle Rock County Water District[2]	54 customers	Retail	Commercial, Landscape irrigation	150	CCWD Sourced
Contra Costa County Service Area M-28 (County CSA M-28)[3]	275	Retail	Residential	23	Groundwater
Contra Costa Water District (CCWD)[4]	500,000	Retail and Wholesale	Agricultural, Industrial, Landscape irrigation, Urban	140,000	Central Valley Project (CVP), Recycled Water
Diablo Water District (DWD)[5]	45,000	Retail	Commercial, Industrial, Landscape irrigation, Residential	13,250	CCWD Sourced Groundwater
Discovery Bay Community Services District[6]	17,000	Retail	Commercial, Industrial, Landscape irrigation, Residential	4,000	Groundwater
East Bay Municipal Utility District (EBMUD)[7]	1,400,000	Retail	Commercial, Industrial, Institutional, Irrigation, Residential	212,480	Mokelumne River Watershed, Recycled Water
East Contra Costa Irrigation District (ECCID)[8]	75,500	Retail	Agricultural, Landscape Irrigation, Recreational	25,600	Old River
Golden State Water Company[9]	4,900	Retail	Commercial, Residential	2,100	Groundwater and CCWD Sourced

Sources:
[1] BBID 2025
[2] Castle Rock County Water District 2024, Contra Costa LAFCO 2019
[3] Contra Costa LAFCO 2014
[4] CCWD 2020a
[5] Contra Costa LAFCO 2007, DWD 2021a
[6] Contra Costa LAFCO 2006, DWR 2024a, Town of Discovery Bay 2024
[7] EBMUD 2024a
[8] Contra Costa LAFCO 2007
[9] Golden State Water Company 2021, Golden State Water Company 2024

1.4.3.2 Water Uses

County water uses for municipal, agricultural, and industrial purposes are outlined below.

Municipal

Municipal purposes are the largest water use within the CCWD and EBMUD service areas, accounting for approximately 35 percent to 40 percent of the County's water demand, with domestic needs and landscaping being major users (EBMUD 2020a; CCWD 2020a). Approximately 72% of EBMUD's water demand are for municipal and irrigation purposes.

Agriculture

Agricultural areas use approximately 45 percent to 50 percent of the water in the County, consuming 120,000 feet annually (DWR 2021). An acre foot of water is a unit of volume equal to the volume of a sheet of water one acre in area and one foot in depth. Irrigated crops like corn, tomatoes, cherries, grapes, and alfalfa are crucial to the local economy (Contra Costa County 2022).

Industrial

Large industrial water use represents approximately 33 percent of total water use within CCWD (CCWD 2020a). EBMUD reports approximately 20 percent of water use within its service boundary is for commercial and industrial purposes (EBMUD 2020a). On average, industrial water use consumes 15 percent to 20 percent of water in the County.

1.4.3.3 Water Management Actions

This section describes existing water management actions in the County. These actions aim to promote water conservation, protect water resources, improve water quality, and address challenges, such as drought.

Clean Water Program

The Contra Costa Clean Water Program aims to protect the creeks and rivers of County watersheds and San Francisco Bay/Sacramento-San Joaquin Delta waters by promoting public awareness of stormwater pollution prevention and supporting innovative approaches to meet State and Federal stormwater regulations (CCCWP 2024).

Watershed Program

The County Watershed Program (CWP) administers the Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit for unincorporated county. CWP works with many County departments to meet the requirements. The NPDES program is mandated by the Federal *Clean Water Act* and administered in California by the State Water Board and the Regional Water Quality Control Boards on behalf of the United States Environmental Protection Agency (CWP 2024).

Water Conservation Programs

CCWD has implemented a comprehensive water conservation program for more than 30 years, with programs offered to customers in both CCWD's retail and wholesale service areas. CCWD's water conservation program fulfills CCWD's mission by reducing long-term water demand in an environmentally responsible and cost-effective manner. The program has evolved over time to sunset programs that are no longer necessary, and to add new programs as opportunities arise. The water use efficiency program has evolved to include lawn-to-garden rebates, smart irrigation timer rebates, commercial irrigation equipment rebates, landscape and irrigation webinars and education, garden

tours, and other features. The water use efficiency program is an integral part of CCWD's long-term water supply, with goals that include meeting California water efficiency and Central Valley Project (CVP) Water Supply Contract requirements, providing valuable customer service, and reducing customer demands to delay the need for new sources of water supply (CCWD 2020a).

EBMUD is implementing a variety of strategies to help achieve sustained water savings across customer categories and throughout its service area. Some of these strategies utilize technology to help customers make informed decisions about water use, while others provide education and outreach, targeted to specific groups, to help effectuate behavior changes. EBMUD uses rebates and incentives to encourage customers to make water-saving changes to their properties. EBMUD also leads and participates in research studies to help develop and understand new water efficiency technologies. Lastly, EBMUD invests in supply-side water loss control measures to help conserve water and reduce losses in the distribution system (EBMUD 2020a).

The County's 2045 General Plan supports countywide resource conservation and sustainability practices through policies:

Policies:

- *COS[4]-P2.10: Coordinate with Byron-Bethany Irrigation District and East Contra Costa Irrigation District to facilitate water conservation, efficient use of agricultural irrigation water, and implementation of emerging water reuse technologies and practices.*
- *COS-P7.1 Partner with water and wastewater service providers, GSAs, irrigation districts, and private well owners to increase participation in water conservation programs countywide.*

Groundwater Management

The County fully or partially overlies eight alluvial groundwater basins. Early management of some of these basins was conducted via AB 3030, legislation passed in 1992 as the Groundwater Management Act (Water Code §10750 et seq. Part 2.75). A region that developed a Groundwater Management Plan (GWMP) pursuant to AB 3030 was Diablo Water District Groundwater Management Plan (LSCE 2007). These GWMPs were superseded via passage of the Sustainable Groundwater Management Act (SGMA) of 2015, see sections 1.4.4 and 1.4.5 for more details on the groundwater management actions implemented within the County.

Recycled Water Initiatives

Central Contra Costa Sanitary District (Central San) has been producing recycled water since the 1970s. Central San continues to collaborate with local water purveyors to identify cost-effective landscape irrigation and industrial recycled water projects. Recycling water results in less water diverted from the Delta. Recycled water is a valuable source, especially during drought years when water for landscape irrigation is less available because of water rationing (Central San 2024).

Launched in 2000, the Delta Diablo Recycled Water Program provides recycled water services for industrial and landscape customers within the DWD's service area. The program focuses on water

[4] Conservation, Open Space, and Working Lands Element

resources management and provides reliable, long-term, sustainable, and drought-tolerant supplies that protect the Delta System (Delta Diablo 2025).

Ironhouse Sanitary District (ISD) provides Oakley and Bethel Island residents free access to recycled water for irrigation of plants, trees and gardens since 2015. The district's Recycled Water Fill Station is located near ISD's Oakley headquarters and is intended to save potable water and help residents save money while keeping lawns, trees and plants greens (ISD 2025).

Water Shortage Contingency Plans

CCWD's Water Shortage Contingency Plan (WSCP) is developed as a component of UWMP updates. The WSCP outlines actions CCWD would take for managing water during water supply shortage conditions. These actions were developed based on CCWD's previous experience with short-term demand management, including the recent droughts, and in consideration of long-term conservation goals. The WSCP includes six stages of water shortage levels linked to the availability of CCWD supplies. The total water shortage level for each stage ranges from less than 10 percent at Stage 1 to greater than 50 percent at Stage 6 (CCWD 2020a).

EBMUD has developed a WSCP that provides a framework to help address water shortages that may occur. EBMUD's WSCP considers a range of possible future scenarios that examine both supply and demand of water resources. Considering scenarios in long-term planning helps ensure a robust water supply portfolio, combined with a comprehensive Drought Management Program, enabling EBMUD to provide reliable water service in all year types.

Drought Management Activities

The Contra Costa County 2045 General Plan includes county drought policies and actions (Contra Costa County 2045 General Plan 2024):

Policy:

- *PFS[5]-P4.4: Partner with water service providers to ensure continuity of service and provide financial relief to Impacted Communities if prices rise during drought conditions.*

Actions:

- *PFS-A4.1 Establish a standing drought and water shortage task force to facilitate drought and water shortage preparedness for State small water systems and domestic wells within the County's jurisdiction.*
- *PFS-A4.2 Develop a plan to address potential drought and water shortage risk, including interim and long-term solutions for State small water systems and domestic wells.*

Delta Water Platform

The Delta provides a portion of the water supply for 30 million people and over 6 million acres of agriculture. However, the Delta's health has declined in recent decades due to wetland loss, diversions of water for export to other regions, increased salinity from diversions and drought, pollution from

[5] Public Facilities and Services Element

urban run-off and agricultural pesticide use, and invasive species, which threaten health, safety, and welfare. Without continued improvements to the ecosystem through conservation and restoration efforts and sustainable land use practices, the Delta is at risk of further decline. Understanding this need, the County adopted its Delta Water Platform in 2014 to guide decisions, actions, and advocacy in a way that supports the Delta's health and sustainability (Contra Costa County 2045 General Plan 2024).

Water Supply Planning Documents

Various water providers in Contra Costa County have developed comprehensive long-term water supply and drought management plans to ensure water reliability and sustainability. Table 1-2 provides an overview of the developed documents for each agency.

Table 1-2. Long-term Water Supply or Drought Management Planning Documents for Each Water Providers in Contra Costa County

Water Provider	Long-term Water Supply or Drought Management Planning Document
Byron-Bethany Irrigation District (BBID)	2020 Agricultural Water Management Plan[1] (BBID 2020)
Castle Rock County Water District	none
Contra Costa County County Service Area M-28 (County CSA M-28)	none
Contra Costa Water District (CCWD)	Water Management Plan (CCWD 2017) Urban Water Management Plan (CCWD 2020a) Treated Water Master Plan (CCWD 2015) 2025 Future Water Supply Study (CCWD 2025) East Contra Costa County Integrated Regional Water Management Plan[2] (ECCWMA 2019)
Diablo Water District (DWD)	Water Shortage Contingency Plan (DWD 2021b) East Contra Costa County Integrated Regional Water Management Plan[2] (ECCWMA 2019) East Contra Costa Subbasin GSP (East Contra Costa GSP 2021) 2025 Future Water Supply Study (CCWD 2025) Recycled Water Feasibility Study (DWD & ISD 2021) Urban Water Management Plan (DWD 2021a)
Discovery Bay Community Services District	Urban Water Management Plan (Town of Discovery Bay 2020) Water Master Plan (Town of Discovery Bay 2012)
East Bay Municipal Utility District (EBMUD)	Urban Water Management Plan (EBMUD 2020a) Water Shortage Contingency Plan (EBMUD 2020b) Water Supply Management Program (WSMP) 2040 Plan (EBMUD 2012) Recycled Water Strategic Plan Update (EBMUD 2024b) Mokelumne/Amador/Calaveras Integrated Regional Water Management Plan Update 2018 (EBMUD 2013)
East Contra Costa Irrigation District (ECCID)	East Contra Costa County Integrated Regional Water Management Plan[2] (ECCWMA 2019)

Water Provider	Long-term Water Supply or Drought Management Planning Document
Golden State Water Company	Urban Water Management Plan (Golden State Water Company 2021)

Notes:
[1] 2025 Agricultural Water Management Plans are due April 2026
[2] A collaborative effort of eight Bay Area water agencies centered on improving water supply reliability.

1.4.4 Groundwater Detail

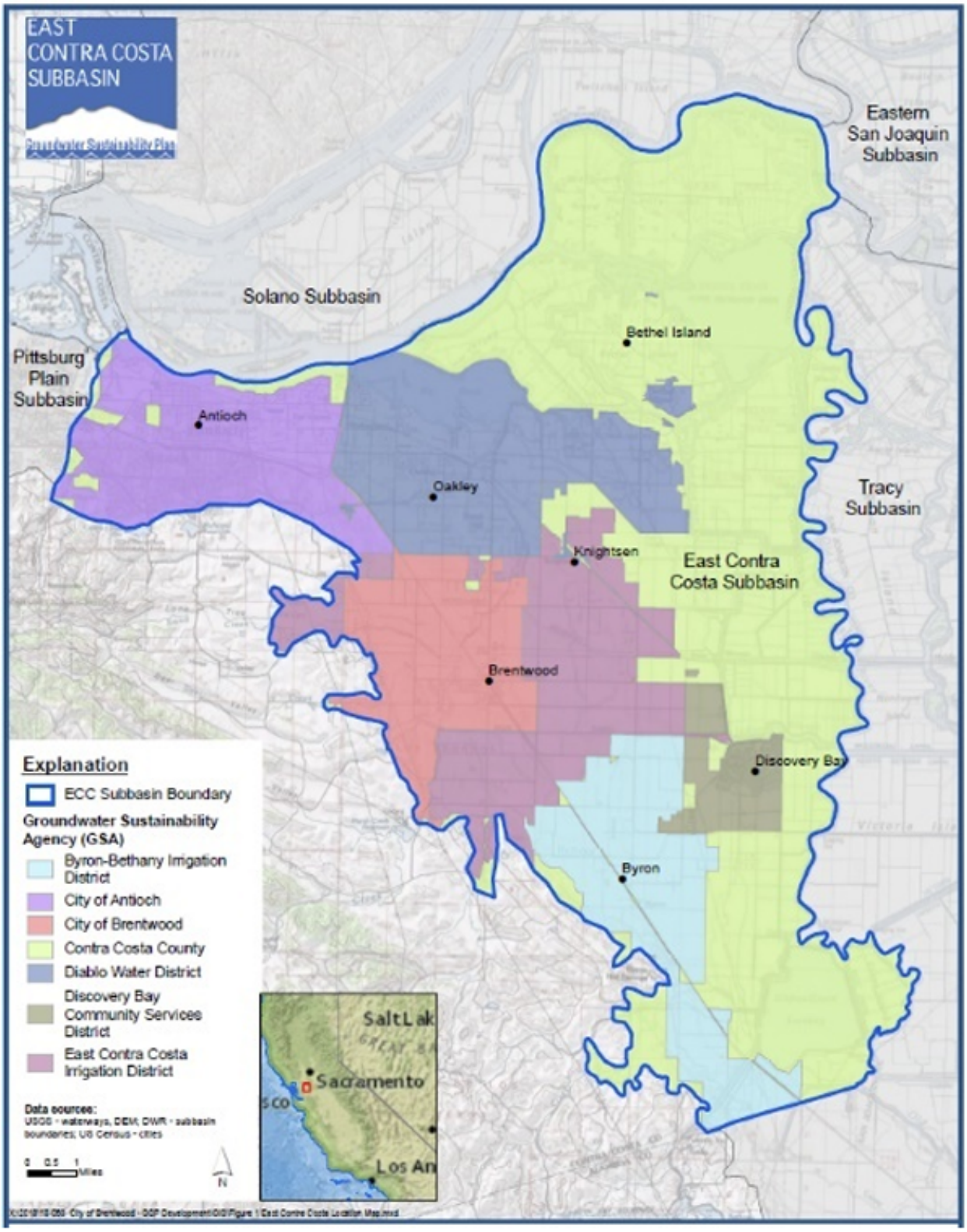
The county contains eight Bulletin 118 Subbasins (also referred to as groundwater basins). This includes the full coverage of Pittsburg Plain (DWR Basin Number 2-004), Clayton Valley (DWR Basin Number 2-005), Ygnacio Valley (DWR Basin Number 2-006), San Ramon Valley (DWR Basin Number 2-007), Arroyo Del Hambre Valley (DWR Basin Number 2-031), and East Contra Costa (part of the San Joaquin Valley, DWR Basin Number 5-022.19), and the partial coverage of the East Bay Plain (part of the Santa Clara Valley, DWR Basin Number 2-009.04) and Livermore Valley (DWR Basin Number 2-010). These basins were prioritized via DWR's Basin Prioritization process, a technical evaluation that applies eight components as identified in CWC Section 10933(b) for California's 515 groundwater basins. These classifications determine which provisions of the California Statewide Groundwater Elevation Monitoring and SGMA. The East Contra Costa, East Bay Plain, and Livermore Valley were classified as medium-priority subbasins, and the Pittsburg Plain, Clayton Valley, Ygnacio Valley, San Ramon Valley, and Arroyo Del Hambre Valley were classified as very-low-priority subbasins. The remainder of the county lies in a fractured rock area (DWR 2024a).

Passed in 2014, SGMA represents a statewide framework to protect groundwater resources over the long term. SGMA led local public agencies[6] to form groundwater sustainability agencies (GSA) in high- and medium-priority basins and develop groundwater sustainability plans (GSP) to avoid undesirable results and mitigate overdraft within 20 years. Within the County, the East Contra Costa, East Bay Plain, and Livermore Valley were subject to SGMA. EBMUD and the City of Hayward manage the East Bay Plain Subbasin (East Bay Plain Basin) and prepared its GSP (East Bay Plain GSP), which was adopted in 2022 (East Bay Plain GSP 2022). Alameda County Flood Control and Water Conservation District (Zone 7 Water Agency) serves as the GSA for the entire Livermore Valley Groundwater Basin (Livermore Valley Basin). Zone 7 Water Agency has been managing groundwater since the early 1960s and had an existing plan in place in advance of state requirements, and also submitted an alternative groundwater sustainability plan (AGSP). The AGSP was initially approved in 2019 (Zone 7 Water Agency 2024).

Seven GSAs and CCWD were involved with the development and implementation of the East Contra Costa Subbasin (East Contra Costa Basin) GSP. The East Contra Costa Basin boundary and GSA areas are shown in Figure 1-5. The East Contra Costa Basin shows no signs of overdraft and was assigned a medium-priority ranking. Although the East Contra Costa Basin has not been overdrafted, its ranking was based on the importance groundwater serves as a source of supply for varied uses, including domestic, agricultural, and environmental. Domestic users include individual residences, small water systems, and municipalities.

[6] CWC Section 10721(n)

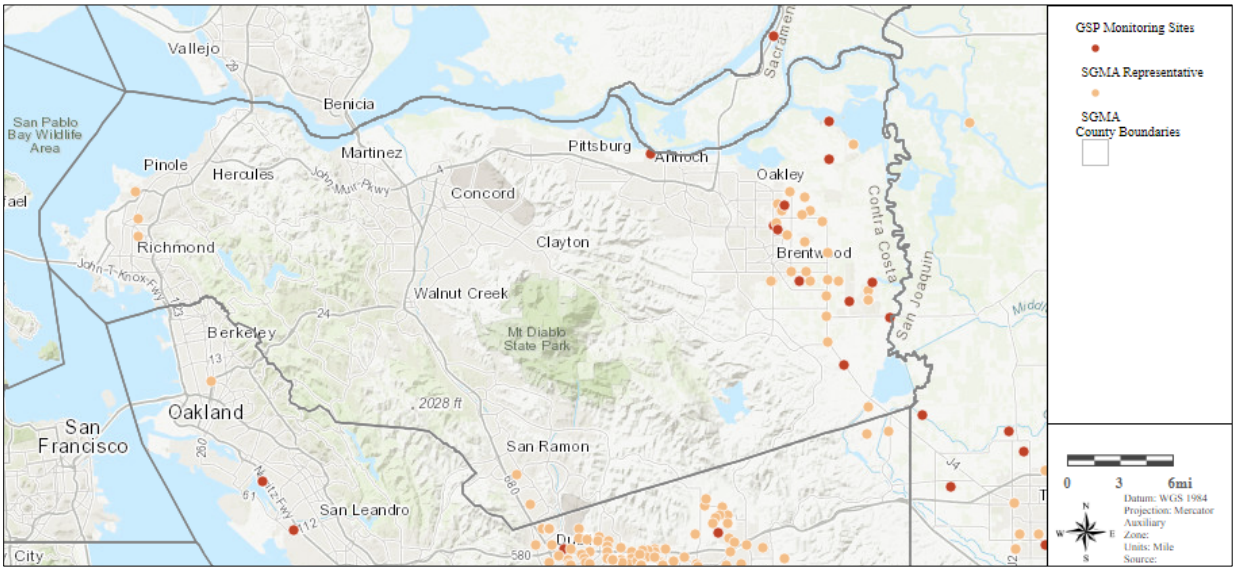
Groundwater conditions in the East Contra Costa Basin are favorable and reflect stability over the past 30 years or more. Using various analogies, the East Contra Costa Basin can be described as generally full through various water-year types, including drought. The favorable conditions are in part due to surface water availability, which represents the largest source of supply for municipal and agricultural uses in the East Contra Costa Basin. Using the best available data and a robust water budget model, the East Contra Costa Basin is projected to be sustainable under various future scenarios, including those incorporating climate change and sea level rise (East Contra Costa GSP 2021).



Source: East Contra Costa GSP 2021

Figure 1-5. East Contra Costa Subbasin (East Contra Costa Basin) Groundwater Sustainability Agencies

There are approximately 50 GSP monitoring wells within the county, with nearly all in the East Contra Costa Basin, as shown in Figure 1-6.



Source: SGMA Data Viewer. Accessed October 2024.

Figure 1-6. Groundwater Sustainability Agency Monitoring Wells in Contra Costa County

1.4.5 Water Systems within Contra Costa County's Jurisdiction

CWC Section 10609.70 requires the County DRP to include domestic wells and SSWSs. The County has also included LSS within the County DRP. Table 1-3 summarizes how many domestic wells, LSSs, and SSWSs are in the Bulletin 118 basins[7] and fractured rock areas. Figure 1-7 shows the location of domestic wells, LSSs, and SSWSs within the County. In addition, the table and figure show domestic wells outside the County boundary but still within groundwater basins that are partially within the County.

[7] https://water.ca.gov/programs/groundwater-management/bulletin-118

Table 1-3. Summary of Groundwater Basins, Domestic Wells, and State Small Water Systems in Contra Costa County

Bulletin 118 Basin ID	Groundwater Basin Name	Coverage	Groundwater Sustainability Plan (GSP)	Participating Agencies	SGMA Priority	Domestic Wells Drilled After 1977[1]	Domestic Wells Drilled Before 1977[1]	Domestic Wells in Basin but Outside County	State Small Water Systems	Local Small Water Systems
2-004	Pittsburg Plain	Full	none	none	Very Low	15	2	0	0	1
2-005	Clayton Valley	Full	none	none	Very Low	28	6	0	0	0
2-006	Ygnacio Valley	Full	none	none	Very Low	37	10	0	2	1
2-007	San Ramon Valley	Full	none	none	Very Low	21	4	0	0	0
2-009.04	Santa Clara Valley - East Bay Plain	Partial	East Bay Plain GSP (East Bay Plain GSP 2022)	East Bay Municipal Utility District City of Hayward	Medium	4	3	97	0	0
2-010	Livermore Valley	Partial	Livermore Valley Alternative GSP (Zone 7 Water Agency 2024)	Zone 7 Water Agency	Medium	1	3	560	0	0
2-031	Arroyo Del Hambre Valley	Full	none	none	Very Low	0	0	0	0	0
5-022.19	San Joaquin Valley - East Contra Costa	Full	East Contra Costa Subbasin GSP (East Contra Costa GSP 2021)	Byron-Bethany Irrigation District City of Antioch City of Brentwood Contra Costa County Diablo Water District Discovery Bay Community Services District East Contra Costa Irrigation District	Medium	1,518	41	0	10	15

Bulletin 118 Basin ID	Groundwater Basin Name	Coverage	Groundwater Sustainability Plan (GSP)	Participating Agencies	SGMA Priority	Domestic Wells Drilled After 1977[1]	Domestic Wells Drilled Before 1977[1]	Domestic Wells in Basin but Outside County	State Small Water Systems	Local Small Water Systems
N/A	Fractured Rock Aquifer Wells	N/A	N/A	N/A	N/A	1,018	25	N/A	4	3
Total						2,642	94	657	16	20

Note:

[1] Information presented in this table and Figure 1-7 are based on well completion reports. Geographic information on well completion reports may be inaccurate and/or place the well not at the actual well location. As a result, the number of domestic wells may be overestimated, and the placement of wells may not reflect actual locations.

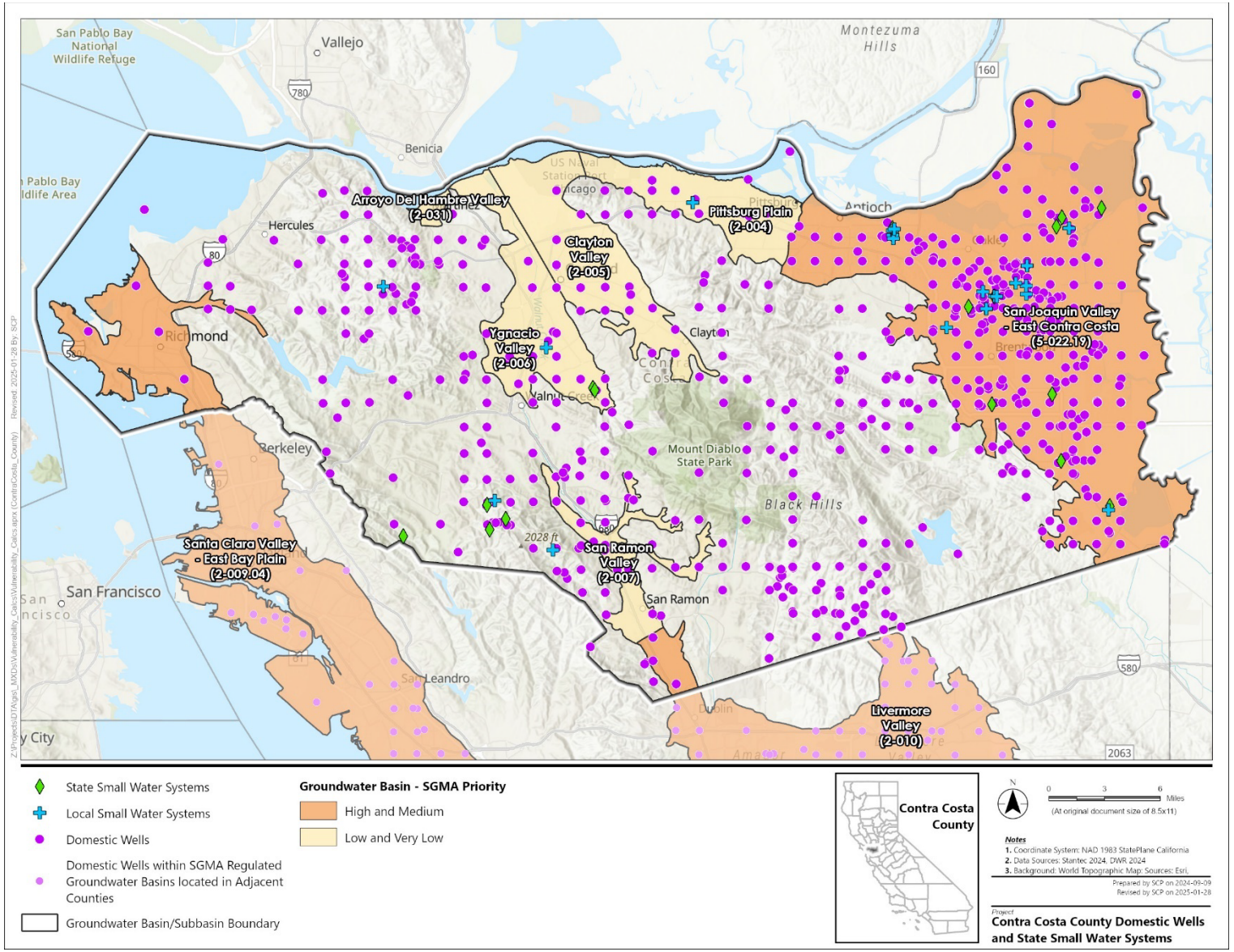


Figure 1-7. Locations of Domestic Wells, Local Small Water Systems, and State Small Water Systems in Contra Costa County

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2.0 County Drought and Water Shortage Task Force Charter

The County has developed the Task Force Charter (Charter) to establish and maintain a Task Force in accordance with SB 552 and the best practices outlined in the Guidebook.[8]

2.1 Purpose and Goals

The purpose of the Charter is to:

- Facilitate drought and water shortage preparedness and collaborate in development of County DRP.
- Provide level of function and participation included in SB 552 and demonstrate its continuation in perpetuity.
- Have regularly scheduled meetings during non-emergency periods, and more frequent meetings during drought and water shortage emergencies.

The Task Force seeks to achieve the following goals:

- Share findings and recommendations with communities and provide briefings to the County Board of Supervisors.
- Identify data gaps and necessary actions for improved drought and water shortage planning.
- Facilitating proactive planning and coordination to reduce risk of water shortage (GSP implementation, SB 552 compliance, human right to water, etc.)
- Share and pursue funding opportunities for improving water resiliency.
- Encourage and implement long-term planning that anticipates budget and policy needs.

2.2 Legislative Direction

In September 2021, SB 552 (Hertzberg) was enacted to address, among other things, water shortage risks faced by small water suppliers and domestic well users during drought and water shortage events. Under SB 552, counties are required to prepare a County DRP to achieve meaningful and long-term improvements in water resilience for domestic well and SSWS communities.

Passage of SB 552 mandates establishment of a standing Task Force to cultivate the continued practices of drought planning and improve long-term water resilience. Composition of the Task Force is guided by CWC Section 10609.70 (a)(1) and (2):

> *(a)(1) A county shall establish a standing county drought and water shortage task force to facilitate drought and water shortage preparedness for state small water systems and domestic wells within the county's jurisdiction, and shall invite representatives from the state and other local governments, including groundwater sustainability agencies, and community-based organizations, local water suppliers, and local residents, to participate in the task force.*

[8] County Drought Resilience EPlan Guidebook

> *(2) In lieu of the task force required by paragraph (1), a county may establish an alternative process that facilitates drought and water shortage preparedness for state small water systems and domestic wells within the county's jurisdiction. The alternative process shall provide opportunities for coordinating and communicating with the state and other local governments, community-based organizations, local water suppliers, and local residents on a regular basis and during drought or water shortage emergencies.*

The Task Force has been established pursuant to CWC Section 10609.70(a)(2). The composition, roles, and responsibilities defined in the Charter are intended to fulfill the County's obligations under SB 552.

2.3 Organizational Structure

The Task Force is an agency-based body focused on water shortage vulnerabilities and water supply reliability of domestic well, LSS and SSWS communities. Figure 2-1 illustrates the decision-making framework of the Task Force in relation to the County Board of Supervisors and County staff.

2.3.1 County Board of Supervisors

County Department of Conservation and Development (DCD), on behalf of the Task Force, will report to the County Board of Supervisors Transportation, Water, and Infrastructure Committee, which will provide recommendations to the County Board of Supervisors regarding County DRP implementation actions and funding decisions that require Board approval.

2.3.2 Project Coordination Team

The project coordination team (PCT) is comprised of County offices and departments responsible for preparing, revising, and implementing the County DRP. The PCT is led by the County DCD. Additional participating County departments include the County Environmental Health Division (EHD) and the Office of Emergency Services (OES).

Unless otherwise agreed upon, County DCD leads engagement efforts with the Board of Supervisors. The PCT may be supported by additional entities as needed.

Responsibilities of the PCT include:

- Leading and managing preparation and revision of the County DRP.
- Convening, collaborating, and responding to informational needs of the Task Force in relation to the preparation, revision, adoption, and implementation of the County DRP.
- Supporting the Task Force in the conduct of annual and emergency meetings.
- Coordinating revision and adoption of the County DRP by the Board of Supervisors consistent with County policies and regulations.
- Leading and coordinating implementation of the County DRP by the County and other partner agencies.
- In collaboration with the Task Force, leading communication and engagement activities with domestic well, LSS, and SSWS users and owners.
- Evaluating and accepting non-County parties as PCT members where such parties serve as implementation partners of the County DRP.

2.3.3 Drought and Water Shortage Task Force

The Task Force, shown in Figure 2-1, is a standing body established pursuant to CWC Section 10609.70(a)(2) and formed administratively by the PCT. The Task Force is an advisory and consultative entity to the Board of Supervisors and the PCT. Invited member agency's participation in the Task Force is not mandatory.

Contra Costa County Board of Supervisors

Project Coordination Team

County Department of Conservation & Development
County Division of Environmental Health
County Office of Emergency Services

Drought and Water Shortage Task Force

County Departments

- Department of Agriculture
- Department of Conservation & Development
- Division of Environmental Health
- Office of Emergency Services
- Public Works Department

State Agencies

- California Department of Water Resources
- Delta Stewardship Council
- State Water Resources Control Board

Local Water Suppliers and Irrigation Districts

- Byron-Bethany Irrigation District*
- Contra Costa Water District
- Diablo Water District*
- East Bay Municipal Utility District*
- East Contra Costa Irrigation District*
- Zone 7 Water Agency

Municipalities

- City of Antioch*
- City of Brentwood*
- Town of Discovery Bay*

**Groundwater Sustainability Agency*

Figure 2-1. Structure of Parties Involved in Contra Costa County Drought and Water Shortage Task Force

2.4 Communication and Engagement

To facilitate communication and collaboration both on a regular basis and during droughts or water shortage emergencies, County DCD, with the support of County OES and County EHD, will implement a series of communication and engagement activities. These activities provide opportunities for broad

community awareness among County DRP interested parties and serve to support the County in fulfilling the requirements of CWC Section 10609.70(a)(2). The communities and engagement activities to be completed by County staff are:

- Website: The County DCD has established a page/section to support distribution and dissemination of information associated with the County DRP. The page includes general information that includes:
  - Background on SB 552 and related links such as:
    - DWR Direct Technical Assistance Program
    - DWR Water Shortage Vulnerability Explorer Tool
  - Meeting materials and summaries, information materials, and draft documents.
  - Contact information of the County's project manager (email)
- Notifications: County DRP updates will be posted on the County DCD webpage and through Supervisor newsletters, County social media, press releases (topic-dependent), and mailers as coordinated by the County Communications Officer.
- Communications and Engagement Activities List: The Task Force will provide periodic updates to the Contra Costa County Board of Supervisors and its Transportation, Water, and Infrastructure Committee to provide milestone updates and an opportunity for public engagement.

3.0 Drought and Water Shortage Risk Assessment

A drought and water shortage risk assessment (risk assessment) was prepared in development of the County DRP as directed in CWC Section 10609.70(b). This risk assessment evaluated how potential physical hazards intersect with the County's domestic well, LSS, and SSWS assets and other community assets, such as private surface water intakes for domestic use. This intersection was used to characterize the vulnerability of domestic wells, LSSs, and SSWSs to water supply shortage. The outcomes from the risk assessment helped inform response plans with STRA to employ when a water supply shortage occurs and LTMSA that reduce the vulnerability to water shortages. This chapter presents the risk assessment results for Contra Costa County.

The risk assessment presented in this County DRP does not replace the regulatory requirements of the Federal Emergency Management Agency (FEMA). The County DRP could make the County eligible for FEMA's Pre-Disaster Mitigation and Hazard Mitigation Grant programs. However, if a jurisdiction is also seeking approval of the drought and/or water shortage risk assessment within the Local Hazard Mitigation Plan, it should follow the requirements outlined in the FEMA *Local Mitigation Planning Handbook* (FEMA 2023).

3.1 Terminology

The County DRP adapted the following definitions from the FEMA *Local Mitigation Planning Handbook* (FEMA 2023) within the context of drought and water shortage planning:

- **Community assets:** The people, structures, facilities, and systems that have value to the community. The minimum assets considered as part of the SB 552 plan include domestic wells, LSSs, SSWSs, and populations relying on those water supplies.
- **Hazard:** A source of harm or difficulty created by a meteorological, environmental, geological, hydrological, or other event condition. In the context of SB 552, hazards are the natural, human-made, and social processes that can lead to water shortages in the County.
- **Impact:** The consequences or effects of a hazard related to drought and water shortages on the community and its assets.
- **Risk:** The potential for damage, loss, or other impacts (e.g., water shortage) created by the interaction of natural hazards with community assets and their physical and social vulnerabilities.
- **Risk Assessment:** Product or process that collects information and assigns values to risks for the purpose of informing priorities, developing or comparing courses of action, and informing decision-making.
- **Vulnerability:** Characteristics of community assets or populations that make them susceptible to damage from a given hazard. It includes both physical vulnerability and social vulnerability.

3.2 Risk Assessment Methodology

The nature and severity of hazards that can cause water shortages vary at regional and local scales due to differences in conditions, such as precipitation patterns, groundwater levels, topography, geology, infrastructure, and regulatory frameworks. Communities lacking access to reliable water sources are

most vulnerable to water shortage caused by such hazards. To address this, a risk assessment was completed that considered physical and social hazard indicators. The results and findings of the risk assessment were used by the County and Task Force to develop short-term actions and long-term strategies to address water shortages (see Sections 3.6 and 3.7).

The risk assessment was completed following the steps outlined below.

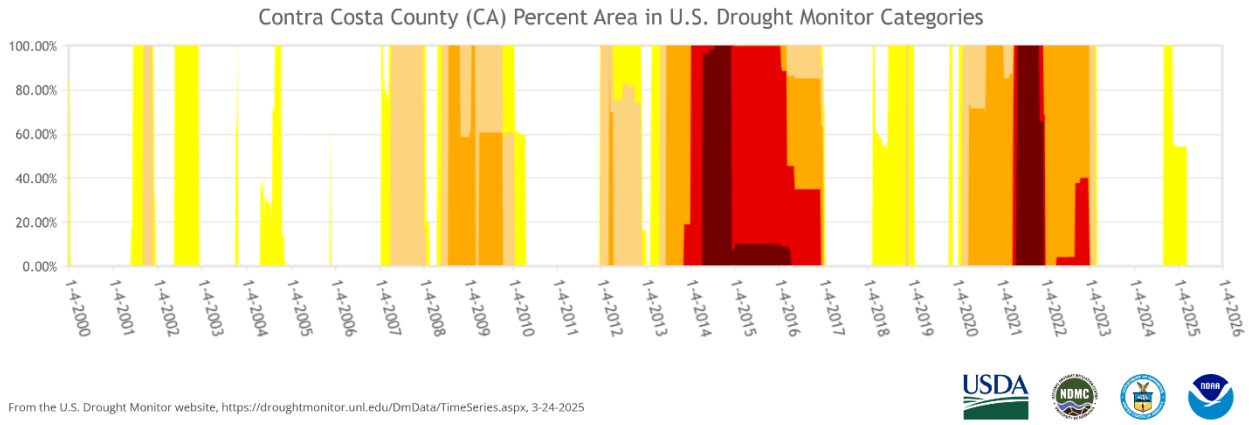
1. **Describe Major Hazards in the County:** Hazards that would impact water reliability were identified and are discussed in Section 3.3.
2. **Identify Well Locations:** Domestic wells, LSSs, and SSWSs were identified using the methods discussed in Section 3.4.
3. **Identify Physical and Social Vulnerabilities**: The DWR Water Shortage Vulnerability Explorer (WSVE) Tool is designed to assist counties with exploring drought risks and vulnerabilities for domestic wells, LSSs, and SSWSs. There are two major categories of vulnerability assessment: physical vulnerability and social vulnerability. A set of indicators for physical and social vulnerabilities was developed through a stakeholder participation process per the requirements of AB 1668 to identify LSS and SSWS and rural communities in the State at risk of drought and water shortages. During this process, physical and social vulnerability indicators were formulated considering geology, land use, climate, infrastructure, population demographics, and other factors. The WSVE Tool was used to identify the priority indicators driving physical vulnerability as discussed in Section 3.5.
4. **Complete Risk Assessment using DWR Water Shortage Vulnerability Explorer:** The WSVE Tool was used to (a) identify areas within the county where domestic wells, LSSs, and SSWSs are vulnerable to water supply shortages, and (b) characterize the hazards driving vulnerability. The risk assessment was reviewed and edited by the County and Task Force. Additional details on the WSVE Tool and how it was applied in the risk assessment are included below.

3.3 Hazards in Contra Costa County

This section summarizes the recent drought patterns, projected climate change, current water quality, and groundwater hazards in the County. Section 3.6 provides more detail on the vulnerabilities related to these hazards.

3.3.1 Drought

Since 2000, the County has experienced what the U.S. Drought Monitor categorizes as “Exceptional Drought,” as shown in Figure 3-1. During this period the County experienced severe to exceptional drought 8 years of the last 25 years and abnormally dry to moderate drought 7 years of the last 25 years, and was drought free 10 years. As shown in Figure 3-1, the patterns highlight the County’s vulnerability to drought, where there is increasing frequency, severity, and duration of droughts. Future droughts may be different than observed droughts and could be longer in duration and/or more severe. While the County is currently not in a drought, there are examples of drought rapidly onsetting, as seen in 2013 to 2014.



Source: https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx, Accessed: 03/2025

Figure 3-1. Occurrence of Drought in Contra Costa County

3.3.2 Climate Change

According to California's Fourth Climate Change Assessment, completed in 2018, climate change has increased both average temperatures and the frequency and intensity of heat waves or extreme heat events. While global temperature increases are between 1.8 degrees Fahrenheit (°F) to 3.6°F, local observed increases that affect communities and ecosystems are far more variable and often of greater magnitude (CNRA 2018).

Annual average maximum temperatures in the San Francisco Bay Area remained within the relatively narrow range of 67.5°F to 71.9°F over the period of 1950 to 2005, with an overall average maximum temperature of 69.5°F. The estimated upward trend of 1.7°F in the San Francisco Bay Area over the period of 1950 to 2005 is consistent with the observed global mean temperature change attributable to anthropogenic influences over a similar timeframe (Bindoff et al. 2013). The assessment predicted that by mid-century (2040 to 2069), the projected mean annual maximum temperature for the San Francisco Bay Area, across multiple climate models, exceeds the maximum historical annual mean regardless of which emissions trajectory is chosen. Thus, even with significant efforts to mitigate climate change, the San Francisco Bay Area will likely see annual mean warming on the order of approximately 3.3°F by mid-century. Under the high-emissions scenario, this increment increases to 4.4°F warming by mid-century. The difference between emissions scenarios becomes more apparent by the end of century (2070 to 2100), when the multi-model average shows warming on the order of 4.2°F to 7.2°F for different scenarios (CNRA 2018).

Droughts in California are triggered by a lack of large winter storms, and water shortages are further exacerbated by high temperatures, which increase the evaporative losses from soils, rivers, canals, and reservoirs. In addition, California relies heavily on the Sierra Nevada snowpack as a natural, slowly released reservoir that supports the State's major surface water systems; when snowpack levels are significantly below average, reservoir storage declines more rapidly, intensifying both the onset and severity of drought. Drought conditions, particularly when persisting for several years, can cause mental and physical stress in people, reduce the number of workable farm-labor days, and lead to deteriorated air and water quality (Greene 2018; Barreau et al. 2017).

Historical data show daily precipitation extremes have intensified in most areas of the country, including California. As the atmosphere continues to warm, extreme precipitation events could become more frequent, as storms can hold about three to four percent more water for each degree Fahrenheit of warming. Climate model simulations that consider such effects suggest this trend will continue. Simulations of future climate indicate only modest changes in annual precipitation accumulation, with some shifts in the seasonality of precipitation that may be relevant for water management: less precipitation during November through January and possibly more during February through May.

Anthropogenic climate change has contributed to the increase in areas burned in wildfires in the American West. Specifically, rising temperatures and increased periodic droughts increase the likelihood of wildfires. Wildfires can damage infrastructure and cause water quality issues, including those discussed in Section 3.3.3.

In 2020, the County released the Contra Costa County Vulnerability Assessment,[9] which analyzes how the changing climate can harm residents, buildings, ecosystems, natural resources, and more. Changes in precipitation patterns are expected to cause more frequent and intense droughts statewide, reducing water supplies for homes, businesses, industrial centers, and agriculture (Contra Costa County 2045 General Plan 2024).

3.3.3 Water Quality

The county faces various water quality concerns regarding its surface and groundwater resources.

Details on water quality issues are summarized below.

3.3.3.1 Surface Water

CCWD diverts water under the federal CVP contract from the Delta through intakes at Rock Slough near Oakley, Mallard Slough in Bay Point, Old River near the town of Discovery Bay, and nearby Middle River (CCWD 2020a). As such, CCWD obtains its water supply almost exclusively from the Delta, which is subject to variations in water quality caused by salinity intrusion, Delta hydrodynamics, and discharges into the Delta and its tributary streams from both point and non-point sources. Water quality in the Delta is anticipated to continue to decline as impacts from climate change take effect, including increased and longer periods of drought, degradation from discharges to the Delta, changes to operations of the State Water Project and CVP, and potential implementation of tidally influenced habitat restoration projects in the Delta (CCWD 2020a).

The increase in chloride concentrations, which CCWD uses as one measure of water quality, directly impacts the use of the Los Vaqueros project by requiring additional blending releases from the reservoir to meet CCWD's water quality objectives. CCWD typically fills Los Vaqueros Reservoir with diversions from the Delta in the late winter and spring when Delta salinity is low, while meeting customer demands with Delta diversions. When salinity in the Delta increases, typically in the late summer and fall, CCWD uses water stored in Los Vaqueros Reservoir to blend with Delta diversions to reduce the salinity of the water delivered to its customers. Increased Delta salinity both reduces the availability of low salinity water to store in Los Vaqueros Reservoir and increases the need for releases of blending water, thus decreasing the amount of water in Los Vaqueros storage available for supply reliability during times of successive years of high salinity.

[9] https://cocogis.maps.arcgis.com/apps/MapSeries/index.html?appid=869e23fd058d48dbb1e514ef15841831

EBMUD conveys water through the Mokelumne Aqueducts from Pardee Reservoir, located upstream of Camanche Dam, across the Sacramento-San Joaquin River Delta to local storage and treatment facilities in the East Bay (EBMUD 2020a); as such, EBMUD's primary water source is Sierra Nevada snowmelt. As EBMUD's primary water supply from the Mokelumne River comes from a mostly undeveloped watershed, it is minimally exposed to common sources of contaminants such as pesticides, agricultural or urban runoff, municipal sewage discharges, or industrial toxins. This results in limited treatment to meet or surpass health standards (EBMUD 2020a). Every day of the year, EBMUD's laboratory tests water samples to ensure water quality meets Federal and State standards, checking for trace organics like pesticides, metals, and microbes. These efforts ensure all customers receive high-quality drinking water that meets or surpasses all State and Federal regulatory requirements (EBMUD 2024c).

3.3.3.2 Groundwater

Groundwater is not used by CCWD to meet any demands; however, there are a number of wells throughout CCWD's service owned by industrial, public municipal, and private customers.

Groundwater quality is satisfactory for the various beneficial uses in the East Contra Costa Basin. Some parts of the basin experience naturally elevated total dissolved solids and chloride that are near or exceed the recommended maximum contaminant level, indicating a higher baseline for these constituents. Elevated nitrate concentrations occur in shallow wells near Brentwood, with concentrations exceeding the maximum contaminant level, attributable to past agricultural practices. Arsenic is generally less than the maximum contaminant level, and boron concentrations are naturally elevated in most wells. Water hardness varies and, in some cases, adds financial burdens on users needing to use water softeners. For municipalities, total dissolved solids and hardness may lead to customer dissatisfaction and limit the ability to blend groundwater with treated surface water under conjunctive use. To meet customer water hardness expectations, municipalities may be required to install water treatment systems (East Contra Costa GSP 2021).

3.4 Identifying Well Locations

Domestic Well Locations

Domestic well data has been obtained from the well completion reports submitted to the Online System for Water Completion Reports (OSWCR) (DWR 2024b). The WSVE Tool filters OSWCR for wells post-1977 and domestic use. Well completion reports comply with CWC Section 13751, which requires anyone who constructs, alters, or destroys a water well, cathodic protection well, groundwater monitoring well, or geothermal heat exchange well file a report of completion with the DWR within 60 days of completing work.

Local Small Systems Locations

The locations of LSSs, as defined in Section 1.2, were provided by County EHD. County EHD regulates LSS and has location information.

State Small Water Systems Locations

The approximate locations of SSWSs were retrieved from State Water Board. The State Water Board hosts a public database with locations of SSWS that is available upon request (State Water Board 2024a).

3.5 Identifying Physical and Social Vulnerabilities

DWR collaborated with the County Drought Advisory Group (CDAG) in 2018 developed the water shortage vulnerability assessment for the WSVE Tool and recommended actions for improving drought planning for small water suppliers and rural communities. CDAG consisted of representatives from counties and other local agencies, small water systems, tribes, academics, non-profit organizations, and other interested parties.

The WSVE Tool is an online geospatial application that assesses water shortage vulnerability for rural communities using physical and social indicators. The WSVE Tool does not characterize any likelihood of a hazard occurring. There are both indicators of physical vulnerability (Table 3-1) and social vulnerability (Table 3-2). These indicators were selected by DWR and CDAG to reflect the hazards that could make a domestic well, LSS, or SSWS vulnerable to water supply shortage. The dataset represents a water shortage vulnerability analysis using Public Land Survey Section (PLSS) sections (DWR 2024c). The WSVE Tool uses publicly available data, with specific data sources described in the WSVE Tool documentation (DWR 2024c).

The WSVE Tool calculates both a total physical vulnerability score and a total social vulnerability score, each combining the associated individual indicators. The process used by the WSVE Tool to calculate those total scores is summarized below.

- The total physical vulnerability score was calculated at the PLSS[10] scale by normalizing the indicator value between 0 and 1, with 1 representing the highest possible vulnerability. Normalized scores were multiplied by a weighting factor from 1 to 5 that was assigned by DWR and CDAG to capture how some indicators contribute more to water shortage vulnerability than others.
- The total social vulnerability score was calculated at the Census Block Group[11] scale by normalizing the indicator value between 0 and 1 and summing the values together without additional weighting.

DWR periodically revises the WSVE Tool to incorporate improved data and/or updated methodology. Data for the risk assessment was accessed in December 2024 and used the 2024 methodology.[12] The detailed methodology describing the WSVE Tool indicators and corresponding values, data sources, and the weighting factors is available on the California Natural Resource Agency's Open Data Portal.

Each indicator is assigned a weight based on the level of importance as it relates to water shortage vulnerability as shown in Table 3-1. The indicators that are weighted the highest, with the weight of 5, are dry domestic well susceptibility in basins (RC3a), and domestic well density in fractured rock areas (RC3c), and reported household outages (RC5a). Wildfire hazard potential (RC2b), water quality aquifer risk (RC2i), basin salt (RC2e), chronic declining water levels (RC2g), surrounding land use (RC2j), and geology (RC2c) are assigned a weight of 3 and are considered as important indicators impacting overall physical vulnerability scores. The rest of the indicators are weighted as 1 or 2 and have the least influence in the overall assessment.

[10] A Public Land Survey Section is a geographic delineation of an area equivalent to one square mile.
[11] A Census Block Group is a geographic unit with a population between 600 and 3,000 people that are a smallest geographical unit that the U.S. Census Bureau publishes data collected from a fraction of households.
[12] Water Shortage Vulnerability Scoring and Tool

Table 3-1. Water Shortage Vulnerability Explorer Indicators Used in the Development of Physical Vulnerability Score

Indicator Name[1]	Indicator Description	Weights
Climate Change		
Temperature Shift (RC1a)	Projected change in max temperatures by end of century.	1
Saline Intrusion Projected (RC1b)	Spatial extent of projected 1-meter sea level rise by 2040 into coastal aquifers consistent with the 2018 State of California sea level rise guidance.	1
Wildfire Risk (RC1c)	Projected area burned by 2035–2064.	1
Current Environmental Conditions and Events		
2024 Precipitation (RC2a)	If water year 2024 precipitation was less than 70 percent of normal.	2
Multiple Dry Years (RC2aa)	Count of dry years within the last five years (2020–2024).	2
Wildfire Hazard (RC2b)	U.S. Forest Service Wildfire Hazard Potential	3
Geology (RC2c)	Fractured rock basin within the PLSS.	3
Water Quality Aquifer Risk (RC2i)	SAFER Needs Assessment 2024 water quality composite score.	3
Subsidence (RC2d)	Amount of subsidence as measured by remote sensing.	2
Basin Salt (RC2e)	Presence of saltwater intrusion into coastal aquifer.	3
Overdrafted Basin (RC2f)	SGMA critically overdrafted groundwater basin.	2
Chronic Declining Water Levels (RC2g)	Amount of declining groundwater levels over the last 20 years (water years 2004–2024).	3
Surrounding Land Use (RC2j)	Proportion of irrigated agriculture in PLSS.	3
Infrastructure Susceptibility		
Dry Domestic Well Susceptibility in Basins (RC3a)	Dry well susceptibility.	5
Domestic Well Density in Fractured Rock Areas (RC3c)	Density of Well Completion Reports.	5
Record of Shortage		
Reported Household Outage on Domestic Well (RC5a)	Presence of one or more households with reported outages in PLSS.	5

Note:
[1] Abbreviations are included next to Indicator Name (i.e., "RC1a") for clarity to underlying methodology
Key:
PLSS = Public Land Survey Section
SAFER = Safe and Affordable Funding for Equity and Resilience Program
SGMA = Sustainable Groundwater Management Act

Table 3-2. Water Shortage Vulnerability Explorer Indicators Used in the Development of Social Vulnerability Score

Indicator Name	Indicator Description
Socioeconomic Status	
Poverty Level	Percent of persons below poverty level.
Unemployment	Percent of persons aged 16 years of age or older that are unemployed.
Per Capita Income	Per capita income.
Language and Education	
Education Attainment	Percent of persons without a high school diploma.
English Language Proficiency	Percent of persons who speak little to no English.
Demographics	
Elderly Population	Percent of persons 65 years of age or older.
Non-Adult Population	Percent of persons 17 years of age or younger.
Minority Population	Percent of persons in a minority population.
Disability	Percent of persons 5 years of age or older with a disability.
Single-Parent Households	Percent of single-parent households.
Housing and Transportation	
Multi-Unit-Housed Population	Percent of persons living in a multi-unit structure.
Mobile Home-Housed Population	Percent of persons living in a mobile home.
Crowded Conditions	Percent of persons living in conditions with more than one person per room.
No Vehicle Access	Percent of households with no vehicle available.
Race and Ethnicity	
Persons of Color	Percent of persons that identify with a race other than White or identify ethnically as Hispanic or Latino.

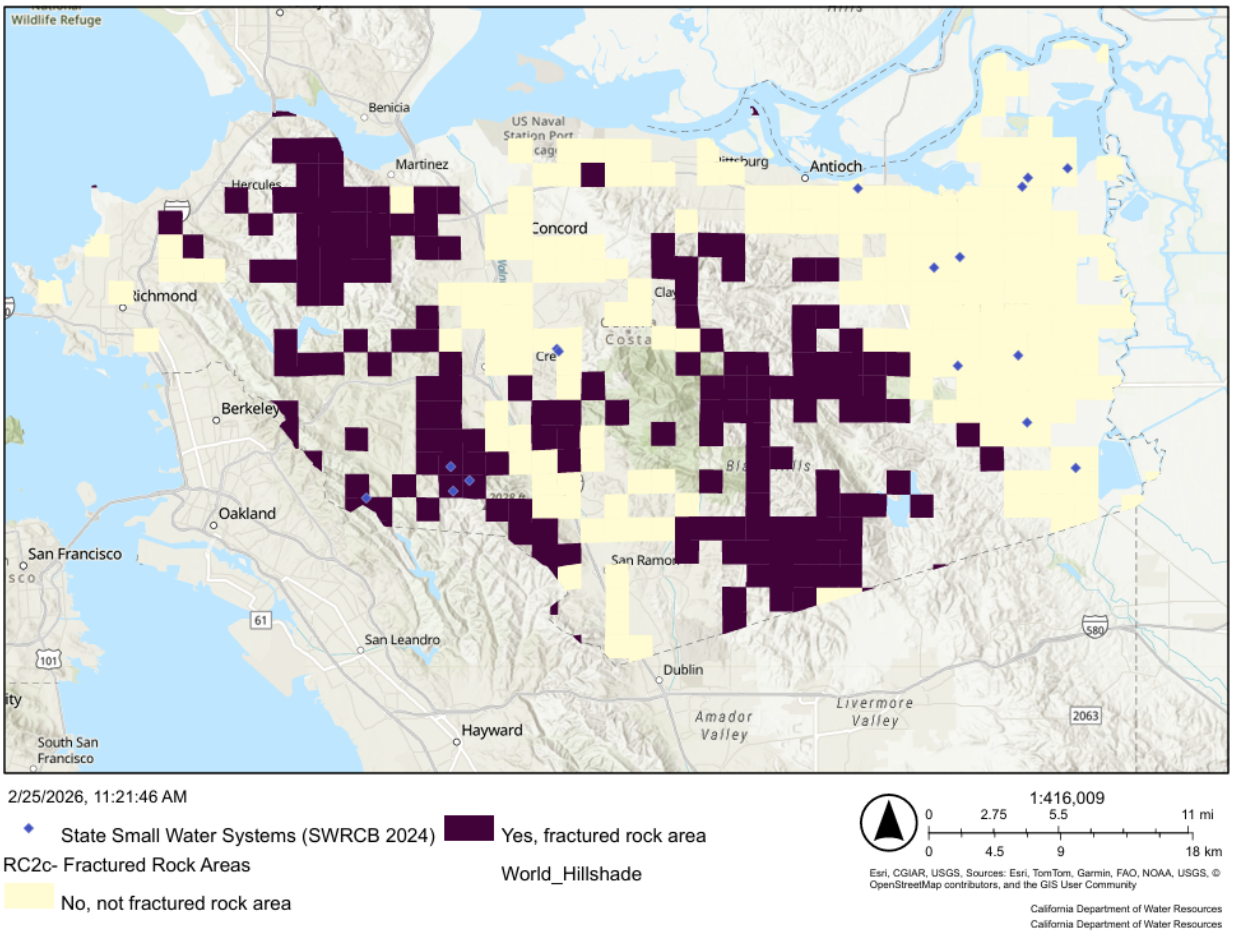
3.5.1 Physical Vulnerability Indicators

The risk assessment summarizes where water shortages associated with domestic wells and SSWSs may be more likely to occur. This section describes factors driving water shortage risk in greater detail. Identifying and characterizing these drivers of physical vulnerability help the County and Task Force develop effective short-term actions, long-term strategies, and their associated implementation considerations for vulnerable communities.

Within the County, the physical indicators driving water shortage vulnerability are domestic well density in fractured rock areas, geology, water quality aquifer risk, and wildfire hazard. Details on these four indicators are included below, and information on all physical vulnerability indicators is summarized in Table 3-3.

An underlying driver of water shortage vulnerability in the County is the areas within a fractured rock basin. The geology indicator indicating the fractured rock basin where domestic wells and SSWSs are

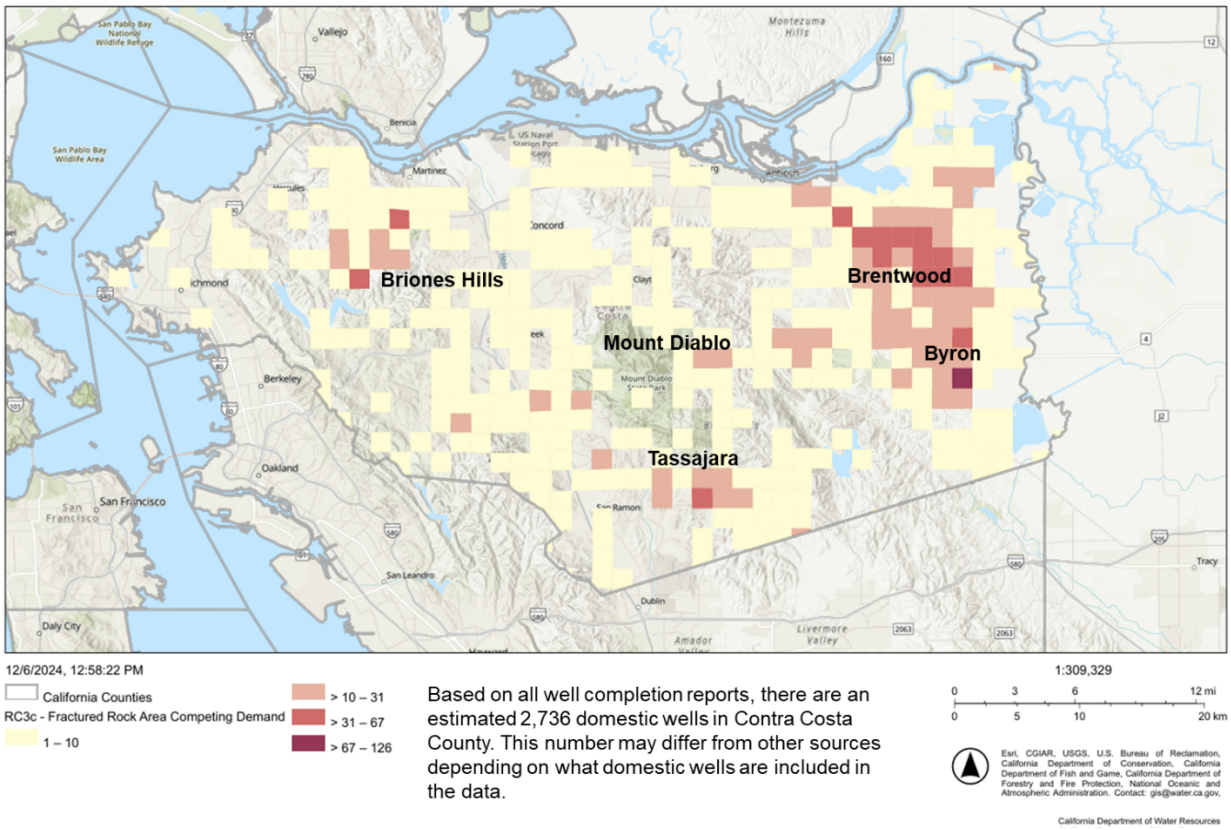
present is shown in Figure 3-2. Approximately 50 percent of the domestic wells and SSWSs in the County are located in the fractured rock areas. Water availability in fractured rock areas is more difficult to track and manage.



Source: Water Shortage Vulnerability Explorer Tool, Water Shortage Vulnerability Explorer Tool.

Figure 3-2. Fractured Rock Areas in Contra Costa County

Figure 3-3 shows the density of domestic wells within a PLSS, which was used as a proxy to estimate water shortage susceptibility in fractured rock areas. A higher density of domestic wells in PLSS within a fractured rock area intensifies the demand on the limited groundwater resources, leading to higher susceptibility to outages, especially during dry conditions. Figures 3-2 and 3-3 show that there is high domestic well densities in fractured rock areas that includes the east side of the Mount Diablo Foothills, the south side of the Black Hills, and the northwestern side of the Briones Hills. Within these areas, the competing demand from multiple domestic wells within a fractured rock area increases the potential for a water shortage during a drought or other conditions that stress the water supply. This figure also shows a high density of domestic wells in the eastern portion of the County within the San Joaquin Valley - East Contra Costa Basin (Bulletin 118 Basin ID 5-022.19). These wells are not in a fractured rock area, but may be vulnerable to other physical vulnerabilities as discussed in this section.

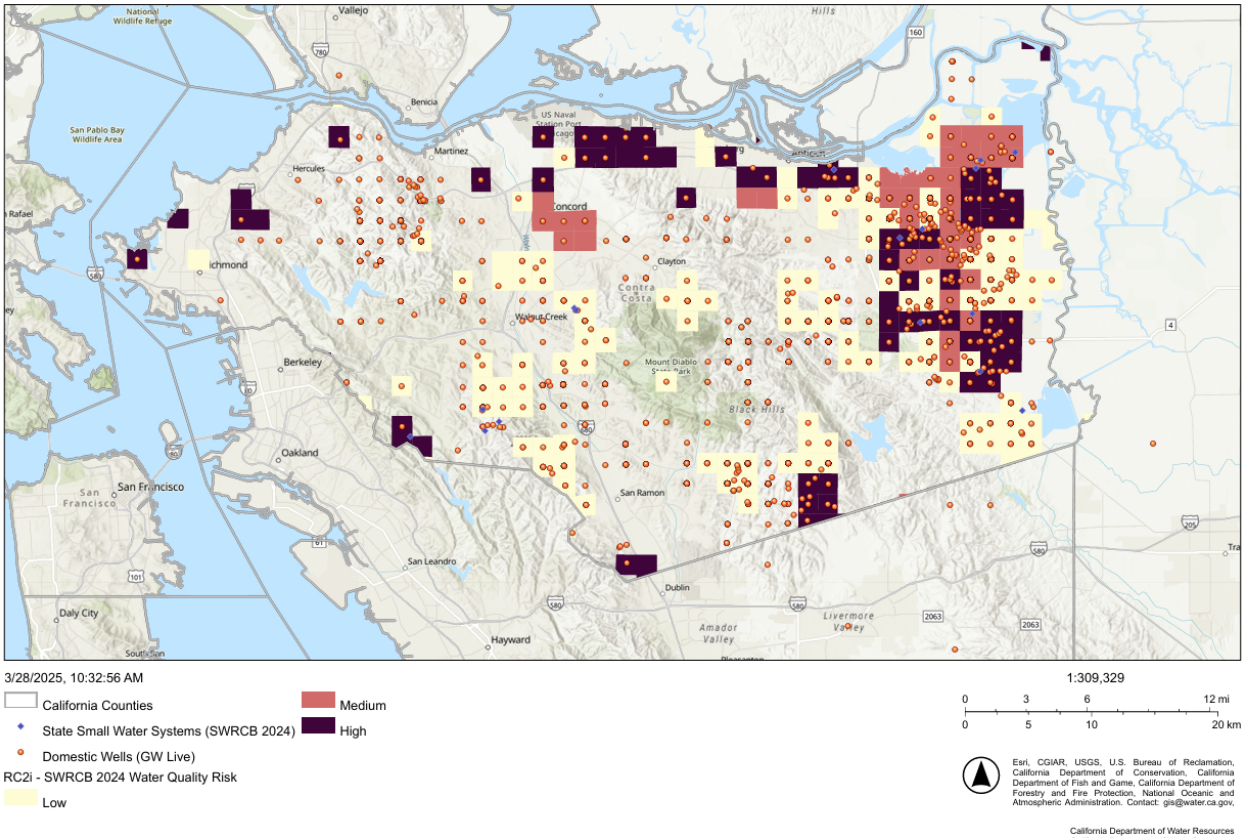


Source: Water Shortage Vulnerability Explorer Tool, Water Shortage Vulnerability Explorer Tool.

Figure 3-3. Domestic Well Density in Contra Costa County

Figure 3-4 shows the potential groundwater water quality risk in the county based on the 2024 State Water Resources Control Board Aquifer Risk assessment.[13] The map shows areas where domestic wells and SSWSs may be accessing groundwater that does not meet safe drinking water standards (maximum contaminant level. The Aquifer Risk Map methodology involves summarizing publicly available water quality data from previously sampled wells of a similar depth to domestic wells or SSWSs, since these systems are largely unregulated by the State and there is no comprehensive database of water quality data available directly from these systems. Water quality data is summarized for each PLSS using the long-term average (20 years) and recent samplings (5 years) of reports submitted to the State Water Board. A risk score is assigned depending on how the historical averages compare to regulatory levels of a contaminant. A PLSS containing existing water quality data is assigned a risk score and then extrapolated to neighboring PLSSs where water quality data is not available (State Water Board 2024b). Note the information shown in this map does not reflect actual water quality conditions. Table 3-3 includes details on potential water quality risk criteria. The areas in darker color have a high risk of potential water quality, which are primarily within the East Contra Costa Basin and Delta areas of the county.

[13] Drinking Water Quality: Needs Assessment | California State Water Resources Control Board



Source: Water Shortage Vulnerability Explorer Tool, Water Shortage Vulnerability Explorer Tool. Accessed March 2025.

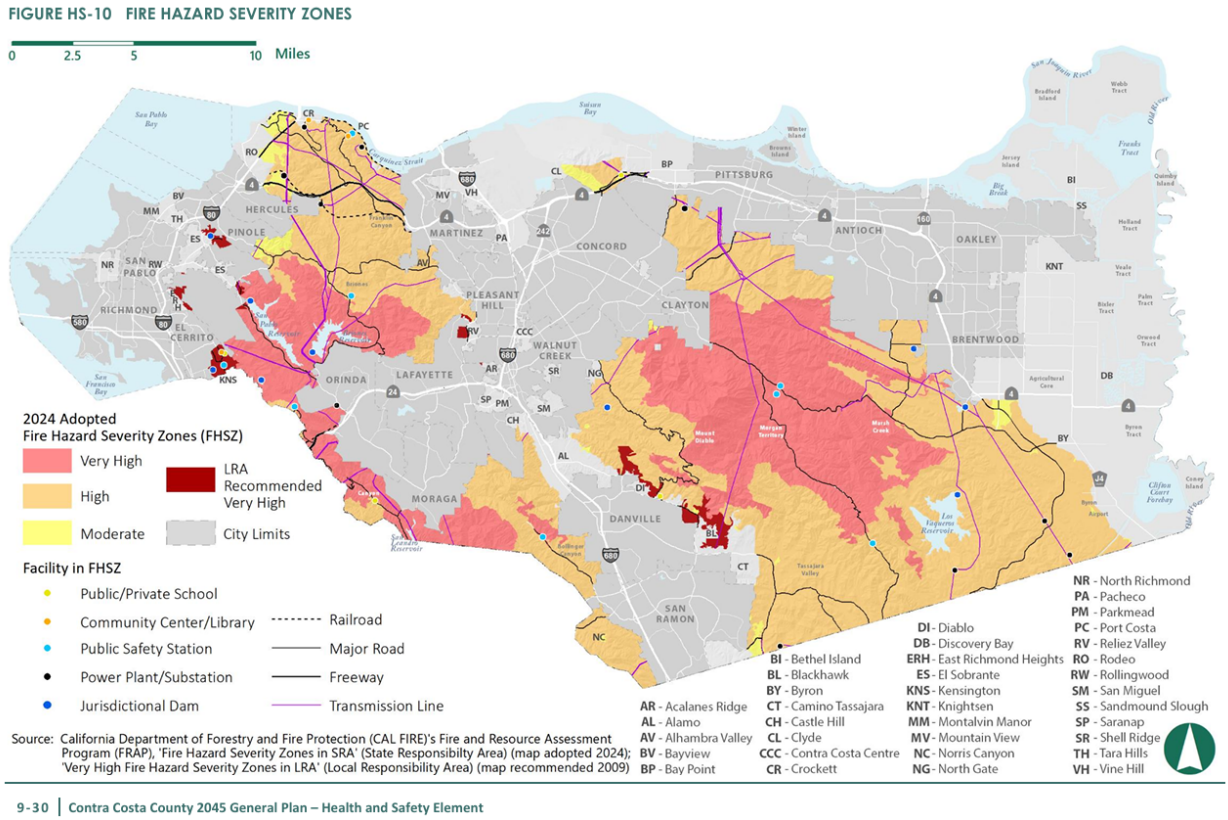
Figure 3-4. Water Quality Aquifer Risk Indicator in Contra Costa County

Table 3-3. Details on Potential Water Quality Risk Criteria

Potential Water Risk	Criteria
High	Twenty-year average OR highest recent sample are above the comparison concentration for one or more contaminants.
Medium	Twenty-year average OR highest recent sample are within 80–100% of comparison concentration for one or more contaminants.
Low	Twenty-year average OR highest recent sample are below 80% of the comparison concentration for all sampled contaminants.

Another indicator driving water supply vulnerability in the County is exposure to wildfire hazards, as shown in Figure 3-5. Note that the data source of this figure, the California Department of Forestry and Fire Protection (CALFIRE), is different than what is used by the WSVE Tool to calculate physical vulnerability. However, the wildfire risk between the two is consistent. Wildfires can damage or destroy natural infrastructure, such as watersheds and natural waterways, as well as built infrastructure, such as pipelines and reservoirs. This increases the vulnerability of water shortages for communities either because of wildfire damage or the impacts on water supplies. Mountainous parts of the County, including Mount Diablo, Briones Hills, and San Pablo Ridge, have the highest wildfire hazard ratings, primarily concentrated in the forested areas. The areas with high or very high wildfire hazard ratings also overlap with the highest density of domestic wells within fractured rock basins. The overlap of

these indicators is the major driver of water shortage vulnerability to domestic wells and SSWSs within the County.



Source: Contra Costa County 2045 General Plan 2024

Figure 3-5. Wildfire Hazard Potential Indicator in Contra Costa County

Table 3-4 summarizes all physical vulnerability indicators, as listed in Table 3-1, within the County. The total physical vulnerability score is a combination of 16 datasets grouped into the following components:

- Climate change: Future risks from temperature rise, sea level rise, and wildfire risk.
- Current environmental conditions and events: Conditions such as precipitation levels, wildfire severity zones, subsidence, and water quality issues.
- Infrastructure Susceptibility: Dry well susceptibility and well density.
- Record of shortage: Past occurrences of water outages or failures in the system.

Table 3-4. Summary of Observed Conditions for Physical Vulnerability Indicators in Contra Costa County based on the Water Shortage Vulnerability Explorer Tool

Physical Vulnerability Indicator	Observed Conditions
Climate Change	
Temperature Shift (RC1a)	Projected change in the maximum temperature by end of century shows 2.0°C (western portion of the County, close to the water bodies) to 2.8°C (eastern portion) increase in average temperature throughout the County. Increased temperatures could increase water supply demands from users, evapotranspiration, and others, thereby increasing vulnerability to drought and/or water shortage impacts.
Saline Intrusion Projected (RC1b)	Delta areas of the County and the regions near the San Francisco Bay (northern and north-western portions of the County) are tidally influenced. Potential influence from higher salinity water intrusion from the Delta and the San Francisco Bay impacts groundwater quality and makes the Delta and Bay areas highly vulnerable to saltwater intrusion. Current and future saltwater intrusion into groundwater increases vulnerability of domestic wells and SSWSs.
Wildfire Risk (RC1c)	This indicator evaluates how climate change may increase wildfire vulnerability. County projections developed as part of the Fourth California Climate Change Assessment (Westerling 2018) show less than 25 percent rise in small-area burn within the period of 2035–2064. The projected increase in burning, even in small areas, warrants inclusion in the vulnerability assessment due to inherent high risks involved. Increasing wildfire frequency and severity can increase vulnerability of water sources.
Current Environmental Conditions and Events	
2024 Precipitation (RC2a)	Precipitation in water-year 2024 was above the historic average in all areas of the County. However, data from California Water Watch indicate the maximum precipitation for the 2024–2025 water year, as of December 2024, is below the historical average of similar time in all the previous major drought periods (DWR 2024d). The amount of precipitation received is a key indicator of drought. For those relying on local water supplies, especially domestic wells and SSWSs, the amount of local precipitation can directly impact reliability and risk of shortages.
Multiple Dry Years (RC2aa)	Data show almost all the County has experienced two dry years in the last five years (2020–2024). A higher number of recent dry years may increase physical vulnerability of water supply conditions.
Wildfire Hazard (RC2b)	Mountainous parts of the County are assigned as high to very high U.S. Forest Service wildfire hazard potential. As these zones show the current risk of wildfire, research shows a higher risk contributes to higher physical vulnerability for water sources.

Physical Vulnerability Indicator	Observed Conditions
Geology (RC2c)	Fractured rock is present along mountainous regions, which include Briones Peak and Mount Diablo. Water availability in fractured rock areas is more difficult to monitor and, therefore, more uncertain for those relying on it as a source of water. Areas with fractured rock are considered due to high susceptibility to drought impacts.
Water Quality Aquifer Risk (RC2i)	This index shows groundwater likely accessed by domestic wells may contain concentrations of constituents above regulatory levels. It appears that some regulated constituents are present at elevated concentrations in the wells scattered throughout the County that could increase physical vulnerability for different communities. These areas of high risk where domestic wells and SSWSs are present are primarily within the East Contra Costa Basin and Delta areas of the county.
Subsidence (RC2d)	Minor subsidence in the County has been reported in the East Contra Costa, East Bay Plain, and Livermore Valley Basins. More severe subsidence creates higher vulnerable conditions for groundwater wells.
Basin Salt (RC2e)	Delta areas and all portions of the County adjacent to the San Francisco Bay area are currently experiencing saltwater intrusion. This extends further inland in the north and northwestern portion of the county. The increased salinity not only affects the taste and potability of the water but also threatens agricultural activities that depend on the availability of fresh water. In times of drought or reduced rainfall, the situation exacerbates as the demand for water rises, amplifying the stress on these compromised aquifers.
Overdrafted Basin (RC2f)	Overdrafted basins increase physical vulnerability to water shortage and drought. Groundwater basins in the county are not identified by DWR as being critically overdrafted.
Chronic Declining Water Levels (RC2g)	The 20-year groundwater level trends show no chronic declining groundwater levels in the East Contra Costa Basin. Declining levels in groundwater increases vulnerability and puts wells at higher risk of shortage (DWR 2024e).
Surrounding Land Use (RC2j)	Contra Costa County is heavily farmed, mostly in the eastern parts of the County. Presence of agricultural activities could indicate competing demands on groundwater suppliers, as well as water quality concerns, both of which could create higher vulnerability for domestic wells and SSWSs, especially during a drought or water shortage event.

Physical Vulnerability Indicator	Observed Conditions
Infrastructure Susceptibility	
Dry Domestic Well Susceptibility in Basins (RC3a) – Alluvial Basin	This factor analyzes locations where there are many susceptible wells to go dry, if the current groundwater trends in the county continue. Data show high likelihood of dry well susceptibility in the northwestern and western parts of the East Contra Costa Basin (a medium-priority groundwater basin) in the eastern portion of the County, as well as the eastern corner of the East Bay Plain Basin (a medium-priority groundwater basin) in the northwestern part of the County (DWR 2024f).
Domestic Well Density in Fractured Rock Areas (RC3c)	The higher density of domestic wells in a single square mile within a fractured rock area tends to create a higher susceptibility for outages and increase competing demands, especially in a dry period. County data show this trend in the fractured rock areas. The specific areas include east side of Mount Diablo Foothills, south side of Black Hills in southeastern Contra Costa County, and northwestern side of Briones Hills in northwestern Contra Costa County.
Record of Shortage	
Reported Household Outage on Domestic Well (RC5a)	Areas that have already experienced outages are more likely to experience it during future dry years due to combinations of aquifer sensitivity/fluctuations and shallow wells. Due to the presence of a handful of reports in the County, this indicator is included in the assessment. There are six dry well reports throughout the County, primarily in alluvial groundwater basins. Evaluating the dry well data provides further insight into the nature of the reported well outages. The reported well outages occurred primarily during the spring and summer of 2014 and 2015, which were drought periods. This indicates the areas could be vulnerable to water supply shortages during future droughts (CNRA 2024).

Notes:

[1] Abbreviations are included next to Indicator Name (i.e., “RC1a”) for clarity to underlying methodology

Key:

°C = degrees Celsius

County = Contra Costa Couty

DWR = California Department of Water Resources

SSWS = state small water system

3.6 Risk Assessment Results

This section summarizes the risk assessment results, including the County's total physical and social vulnerability scores, followed by discussion of the individual indicators driving physical vulnerability. This information was used to identify the regions of water supply shortage vulnerability described in Section 3.5.

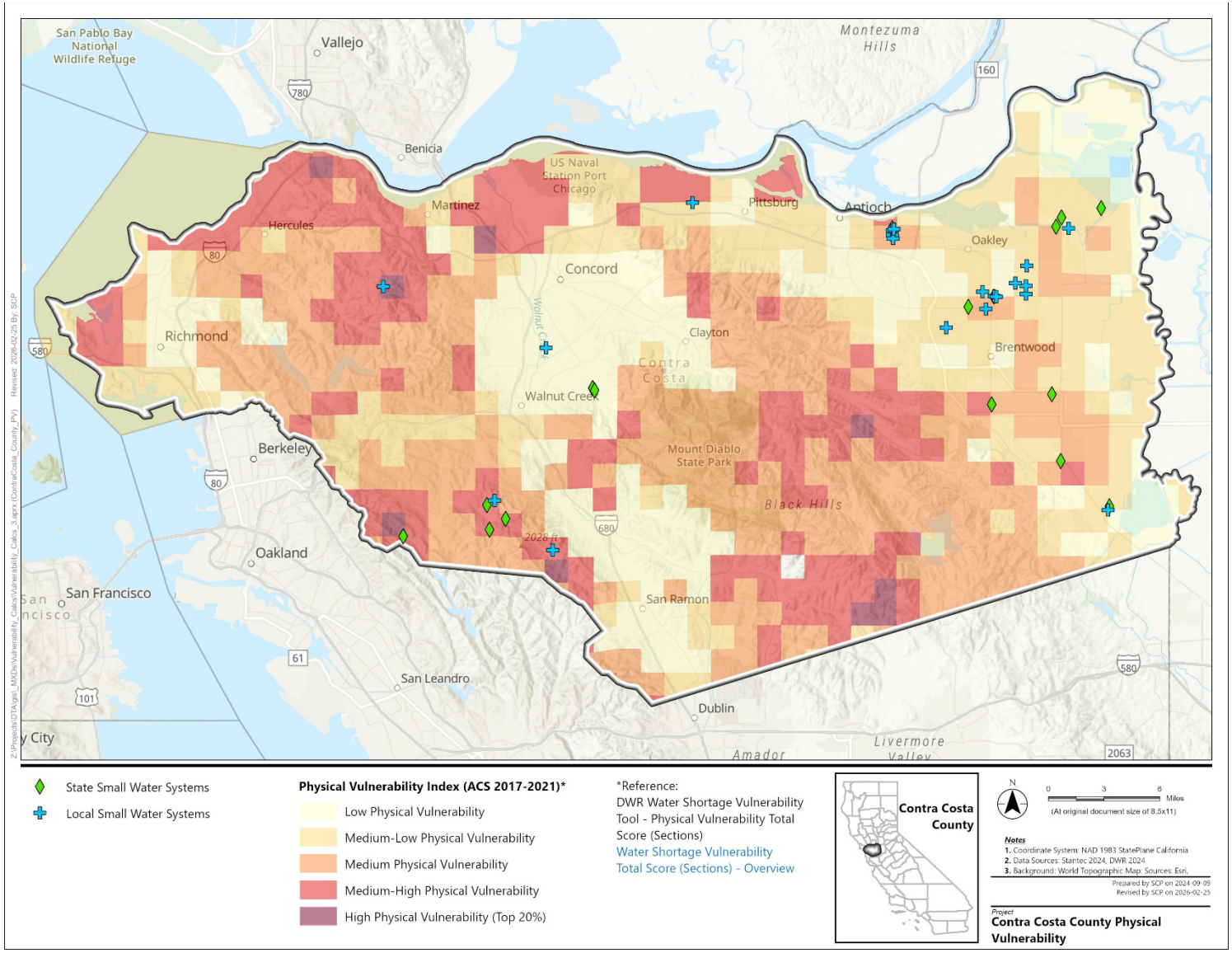
3.6.1 Total Physical Vulnerability Score

Total physical vulnerability scores within the County are shown in Figure 3-6, with darker shaded PLSSs indicating higher physical vulnerability scores. Physical and social vulnerability were scored for the entire State, but the figures in this DRP show PLSSs only containing domestic well, LSS and SSWS communities. PLSSs with high physical vulnerability to water supply shortages are communities with groundwater from fractured rock basins in the central north-west, south-east, south-west, and central-east parts of the County. These communities are mostly in mountainous and foothill regions, including Mount Diablo, Briones Peak, and Las Trampas Peak, as well as the west side of Byron and Brentwood in the East Contra Costa Basin.

Figure 3-7 displays the intersection of physical vulnerability and location of domestic wells and SSWSs within the County. A quadratic coloring system was used. Dark brown shades, noted as High-High, indicates a higher presence of domestic wells per PLSS with high physical vulnerability. A blue area, noted as High-Low, has a higher physical vulnerability but minimal domestic wells, and an orange area, noted as Low-High, has a high presence of domestic wells but low physical vulnerability. The High-High regions indicated areas where short-term actions and long-term mitigation strategies should be prioritized within the County. The areas include Byron and Brentwood in the East Contra Costa Basin, Mount Diablo foothills, northwestern side of Briones Hills, and Tassajara area in the southern part of the County.

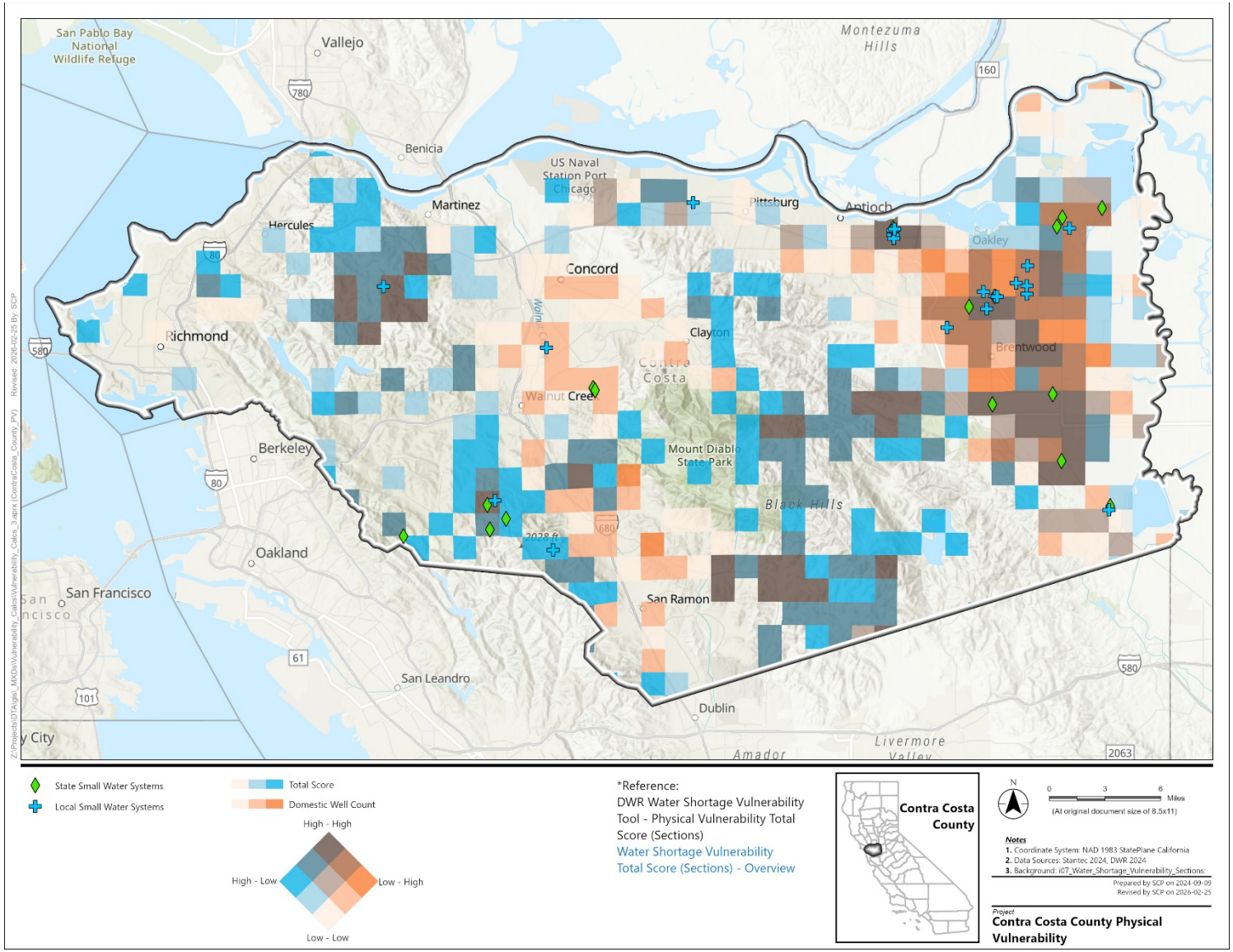
3.6.2 Total Social Vulnerability Score

Social vulnerability is also an important factor in assessing the risk of water supply shortage and need for mitigation through short-term actions and long-term strategies, as certain communities and individuals may lack access to resources during a drought and water shortage event. Total social vulnerability scores are shown by Census Block Groups in Figure 3-8, with darker shaded areas indicating higher vulnerabilities. Comparing the social vulnerability scores in Figure 3-8 with the physical vulnerability scores in Figure 3-7 helps characterize how social vulnerability may overlap with the physical vulnerability of domestic wells, LSSs, and SSWSs. The areas with high physical vulnerability and domestic well presence on the County's central-south and northwest side have lower social vulnerability scores. The central-east part of the County, which also has high physical vulnerability and domestic well presence, has high social vulnerability.



Note: there are 16 State Small Water Systems in the Contra Costa County. This figure only shows PLSSs with domestic wells.

Figure 3-6. Physical Vulnerability to Drought and Water Supply Shortage in Contra Costa County



Note: there are 16 State Small Water Systems in the Contra Costa County. This figure only shows PLSSs with domestic wells.

Figure 3-7. Intersection of Physical Vulnerability and Density of Domestic Wells and State Small Water Systems in Contra Costa County

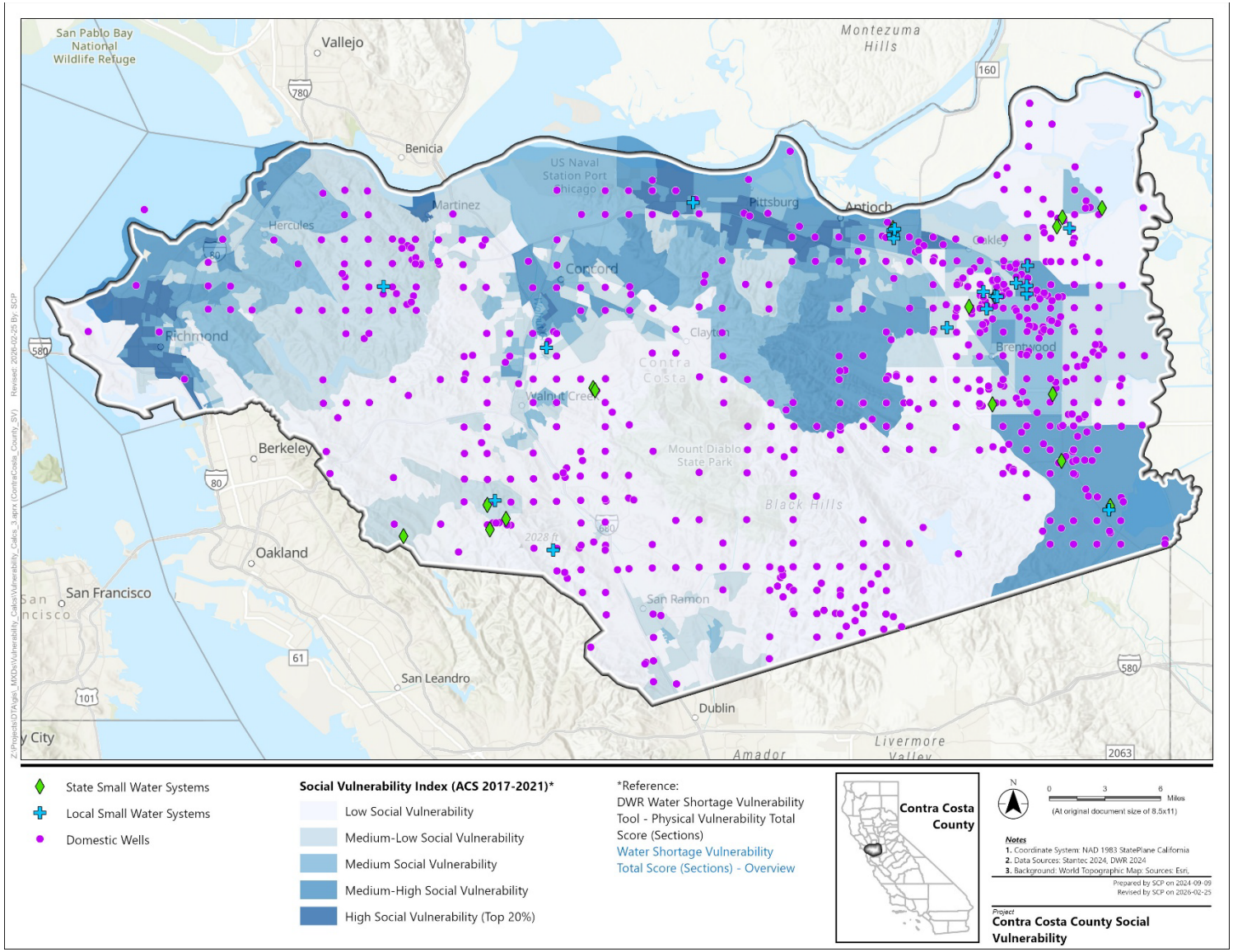


Figure 3-8. Social Vulnerability Score by Census Block Group in Contra Costa County

3.7 Risk Assessment Findings

The areas within the County with domestic wells, LSSs, and SSWSs that are vulnerable to water supply shortages, the drivers of those physical vulnerabilities, and the corresponding total social vulnerability scores (Figures 3-4, 3-9 and Table 3-5). These areas and vulnerabilities were used by the County and Task Force to develop short-term actions and long-term strategies for addressing water shortage of domestic wells and SSWSs across the County.

Table 3-5. Summary of Risk Assessment Findings in Contra Costa County

Area with Water Shortage Vulnerability and Domestic Wells, LSSs, and SSWS	Physical Vulnerability Indicators	Social Vulnerability Score	Location in Figure
Northwest of Briones Hills	• Domestic well density in fractured rock area	Mix of Low and Medium	A
Las Trampas Ridge East Side of Moraga	• Domestic well density in fractured rock area • Wildfire hazard	Mix of Low and Medium	B
South Side of Black Hills	• Domestic well density in fractured rock area • Wildfire hazard	Low	C
Mount Diablo Foothills on East Side	• Domestic well density in fractured rock area • Wildfire hazard	Mix of Low and Medium	D
Briones Valley	• Domestic well density in fractured rock area • Wildfire hazard	Medium	E
East Contra Costa Basin in Brentwood and Byron Areas	• Domestic well density • Percent land as irrigated agriculture • Water quality risk	Mix of Low and Medium	F
City of Antioch	• Dry domestic well susceptibility in basins • Water quality risk	Mix of Medium and High	G

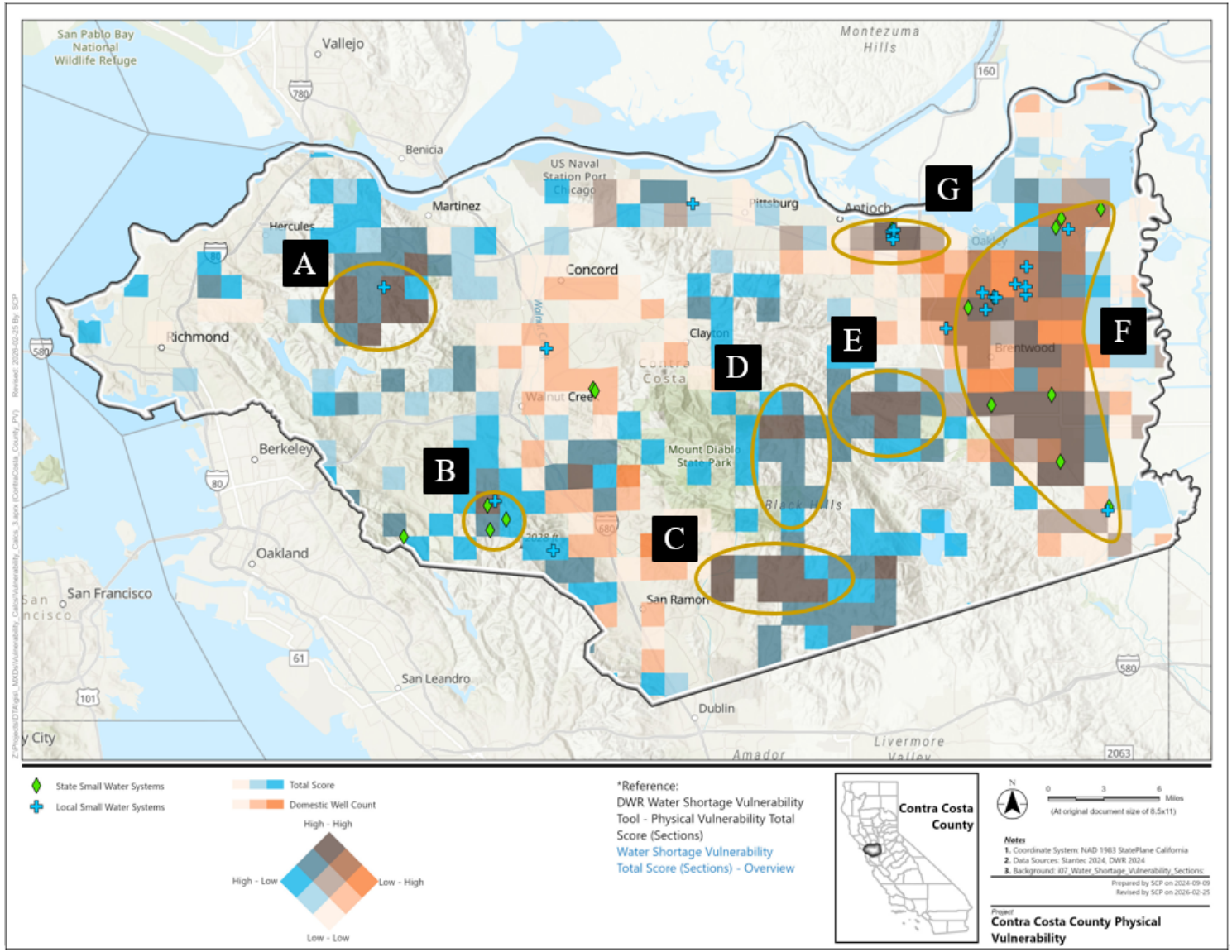


Figure 3-9. Summary of Risk Assessment Findings Showing Areas with Water Shortage Vulnerability and Domestic Wells in Contra Costa County

4.0 Short-Term Response Actions

The risk assessment presented in Chapter 3 provided insight into County areas supplied by domestic wells, LSSs, and SSWSs that may be susceptible to water shortages, particularly due to extended droughts. Based on the outcomes of that assessment, the Task Force identified STRA to include in the County DRP to help address the effects of water shortage emergencies that could occur in the vulnerable regions of the County. The identified STRAs are not exhaustive and may be modified in the future. In the context of this County DRP, STRAs are defined as actions implemented in advance of, and during, water shortage emergencies caused by drought and water shortage events, often addressing immediate and basic public safety needs.

This section describes the STRAs included in the County DRP and the Drought and Water Shortage Emergency Response Process developed as part of the County DRP to assist with implementing STRAs.

4.1 Legislative Direction

SB 552 requires each County develop a drought and water shortage plan that includes proposed interim solutions for SSWSs and domestic wells, per CWC Section 10609.70 (**bold face** added for emphasis as related to STRAs and this section of the County DRP):

> *(b)* ***A county shall develop a plan that includes potential drought and water shortage risk and proposed interim*** *and long-term* ***solutions for state small water systems and domestic wells within the county's jurisdiction****. The plan may be a stand-alone document or may be included as an element in an existing county plan, such as a local hazard mitigation plan, emergency operations plan, climate action plan, or general plan. A county shall consult with its drought task force or alternative coordinating process as established by this section in developing its plan. A county shall consider,* ***at a minimum****, all of the following in its plan:*
>
> *(1) Consolidations for existing water systems and domestic wells.*
>
> *(2) Domestic well drinking water mitigation programs.*
>
> ***(3) Provision of emergency and interim drinking water solutions.***
>
> *(4) An analysis of the steps necessary to implement the plan.*
>
> *(5) An analysis of local, state, and federal funding sources available to implement the plan.*

4.2 Short-Term Response Actions Included in the Contra Costa County Drought Resilience Plan

STRAs included in the County DRP are summarized in Table 4-1 and described in this section. Most of these STRAs provide emergency and interim drinking water supplies via bulk water delivery or with packaged or bottled water. Other STRAs include mutual aid agreements required to (1) provide these emergency and interim drinking water supplies efficiently, and (2) expedite the well permitting approval process. A process for STRA implementation is presented in Section 4.5, while future efforts to address STRA implementation challenges and develop new STRAs are described in Section 6.2.2. Measures which

recommend water conveyance must be compliant with existing water rights requirements of major water purveyors.

Table 4-1. List of Short-Term Response Actions Included in Contra Costa County Drought Resilience Plan

ID	Short-Term Response Action Type	Short-Term Response Action Name	Short-Term Response Action Description	Responsible Entity	Supporting Entities
STRA 01	Emergency and Interim Drinking Water Supplies	Dedicated Water Filling Stations	County Staff to coordinate with major water purveyors to establish dedicated potable water filling stations for domestic well, LSS, and SSWS users during water shortage emergencies and that are compliant with existing water rights requirements of major water purveyors.	OES	EHD, DCD, Water Districts
STRA 02	Emergency and Interim Drinking Water Supplies	Water Hauling, Bulk Water for Existing and Temporary Tanks	County Staff to ensure policies and mutual aid agreements are in place for coordination with public water systems that allow for water hauling and bulk water delivery to domestic well, LSS, and SSWS users with existing or temporary bulk water supply storage tanks that are accessible. Measures must be compliant with existing water rights requirements of major water purveyors.	OES	EHD, DCD, Water Districts
STRA 03	Emergency and Interim Drinking Water Supplies	Packaged and Bottled Water Supplies	County Staff to identify and establish a program to acquire and distribute packaged or bottled water to domestic well, LSS, and SSWS users during a water shortage emergency. SWRCB may provide direct or financial assistance.	OES	EHD, DCD, SWRCB
STRA 04	Emergency and Interim Drinking Water Supplies	Voluntary Water Conservation Program	County Staff to establish a communication and engagement program to support voluntary water conservation measures among domestic well, LSS, and SSWS users in the event of a water shortage event.	DCD	EHD, OES, OCM, Water Districts
STRA 05	Interties	SSWS and LSS Intertie	County Staff to establish policies/regulations that allow for installation of temporary interties between SSWS, LSS, and/or public water systems in the event of a water shortage. Measures must be compliant with existing water rights requirements of major water purveyors.	EHD	DCD, Water Districts
STRA 06	Permit Streamlining and Coordination	Expedited New or Replacement Well Approval During Water Shortage	County Staff to, within its jurisdiction, prepare and implement expedited permit authorization for construction of replacement wells in the event of a water shortage emergency.	EHD	

Key: CCWD = Contra Costa Water District, County = Contra Costa County, County DRP = Contra Costa County Drought and Water Shortage Resilience Plan, DCD = Contra Costa County Department of Conservation and Development, EBMUD = East Bay Municipal Utility District, EHD = Contra Costa County Environmental Health Division, LSS = Local Small Water Systems, OCM = Contra Costa County Office of Communications and Media, OES = Contra Costa County Office of Emergency Services, STRA = Short-Term Response Action, SSWS = State Small Water Systems, SWRCB = State Water Resources Control Board

4.2.1 Emergency and Interim Drinking Water Supplies

Emergency and interim drinking water supplies involve providing temporary water supplies until longer-term water supplies are secured or the water shortage emergency ends. Emergency and interim drinking water supplies are used during water shortage emergencies to meet basic health and safety needs. In emergency situations, the State Water Board may assist, either directly or by financial support, with providing bottled water and hauled water, using certified water haulers, to communities experiencing water shortages. Measures must be compliant with existing water rights requirements of major water purveyors.

4.2.1.1 Dedicated Water Filling Stations (STRA 01)

During a water shortage emergency, domestic well, LSS, or SSWS users could receive water from dedicated water filling stations. These water filling stations are at established locations that would provide potable water to the affected users. Domestic well, LSS, or SSWS users would need to provide their own water storage containers. Dedicated water filling stations are included as a STRA in the County DRP as STRA 01.

In the past, during earthquakes, commodity points of distribution were established for water filling. The same process could be leveraged for water filling during drought. County Staff would need to establish agreements with major water providers, such as the water districts, on the cost to the County as well ensure that measures are compliant with existing water rights requirements of major water purveyors. The County could consider establishing a pilot study with one of the water districts, and once established, it could be expanded to the other parts of the County.

County OES is the lead entity for this STRA, with support from County DCD, County EHD, and water districts. Mutual aid agreements are required for this STRA, which are described in Section 4.4. The facilities described above would be activated for emergency water supplies using the process described in Section 4.5.

4.2.1.2 Water Hauling or Bulk Water Delivery (STRA 02)

Water hauling or bulk water delivery involves using licensed water haulers or tankers to deliver emergency water supplies to those in need at either (1) a central distribution point for residents to bring a container to be filled, or (2) a public water system, hospital or other critical infrastructure to which the water hauler or tanker can be connected. Water hauling or bulk water delivery is included as a STRA in the County DRP as STRA 02 and must be in compliance with existing water rights requirements of major water purveyors.

Water hauling would be effective in remote areas of the County, as most private wells have their own storage tanks. During a past drought, EBMUD provided water via water hauling to impacted communities in the County; future efforts will require coordination to ensure compliance with existing water rights requirements prior to granted authorization by EBMUD. The County could, in the future, recommend or require private well users to have tanks of a certain storage volume available on their premises.

County OES is the lead entity for this STRA, with support from County EHD, County DCD, and water districts. Mutual aid agreements may be required for this STRA, which are described in Section 4.4. Locations, operating hours, and other information regarding water hauling and bulk water delivery would be communicated using the process described in Section 4.5.

4.2.1.3 Packaged or Bottled Water (STRA 03)

In areas where other emergency and interim drinking water supplies are unavailable, the County would provide packaged or bottled water (e.g., 1- to 5-gallon jugs and individual bottled water) to affected domestic well, LSS, and SSWS users. Packaged or bottled water delivery is included as a STRA in the County DRP as STRA 03. During past droughts, the State provided packaged and bottled water to the impacted communities in the County.

County OES is the lead entity for this STRA, with support from County EHD and County DCD. Packaged or bottled water would be distributed to affected domestic well, LSS, or SSWS users following the process described in Section 4.5.2. Locations, operating hours, and other information regarding packaged or bottled water would be communicated using the method described in Section 4.5.

4.2.1.4 Voluntary Water Conservation Program (STRA 04)

County Staff, in coordination with other entities, would support voluntary water conservation programs among domestic well, LSS, and SSWS users in the event of a water shortage.

CCWD and EBMUD have their own water conservation measures that could be leveraged as part of a voluntary water conservation program for domestic wells, LSSs, and SSWSs. County Staff, in coordination with CCWD, EBMUD, and other water districts, would establish a communication and engagement program to support voluntary water conservation measures among domestic well, LSS, and SSWS users in the event of a water shortage. This would include strategies on how to reduce water use and monitor water usage.

County DCD is the lead entity for this STRA, with support from County EHD, County OES, County Office of Communications and Media, and water districts. More discussion is provided in Section 1.4.3.3. A voluntary water conservation program is included in the DRP as STRA 04.

4.2.2 Interties (STRA 05)

An emergency intertie is an aboveground or shallow subsurface pipeline that temporarily connects two or more willing water systems in the event of a water supply emergency that risks the basic health and safety of residents. As the County is not a water purveyor, its role is to serve as facilitator and convenor to assist in the successful execution of such agreements. The use of interties for emergency water supply is included as STRA 05 in the County DRP.

Some SSWSs and LSSs are near waterlines of public water systems. During a water shortage emergency, an emergency intertie could be implemented to connect the SSWS and LSS to these public water systems subject to compliance with existing water rights requirements of major water purveyors. The feasibility of an intertie would depend on proximity to the public water system and the public water system's willingness and ability to provide emergency water supplies. This intertie feasibility has not been evaluated. County Staff would work with the involved SSWSs, LSSs, and public water providers to evaluate the feasibility of an emergency intertie.

County EHD is the lead entity for this STRA, with support from County DCD and water districts.

4.2.3 Permit Streamlining and Coordination (STRA 06)

As drought or water shortage conditions worsen and the production or quality of water at domestic wells, LSSs, or SSWSs declines, well owners may be able to install a new well or rehabilitate an existing one to ensure continued water supply reliability. Within the County's authority, streamlining the permitting process for activities such as new well construction or existing well rehabilitation for

domestic well, LSS, or SSWS users could provide relief during an ongoing water shortage. This streamlining could be achieved, in part, with enhanced coordination between the County entities involved in permitting. Permit streamlining and coordination are included in the County DRP as STRA 06. County EHD is the lead for this STRA.

County Staff have already implemented a streamlined well permitting process during water shortage emergencies and can usually approve new or rehabilitated well permits within a few days of submission under this process. Permit streamlining was achieved through improved coordination amongst County entities and/or redirecting staff time during water shortage conditions to review and approve these permits. This streamlining process does not relax permitting criteria related to water supply, such as proximity to other wells or water quality. Not appropriately considering water supply criteria could worsen a water supply shortage for other groundwater users or exacerbate an ongoing water shortage.

4.3 Pre-Negotiated Contracts and Mutual Aid Agreements

Efficient implementation of STRAs requires coordination and cooperation with entities beyond the County government. This can include pre-negotiated contracts and mutual aid agreements. Conveyance of water supplied from major water purveyors must be compliant with existing water rights requirements.

The acquisition of materials to implement this County DRP may be subject to local and State policies and regulations that govern their purchase. In the event of an emergency, counties can acquire materials necessary for protecting public health, welfare, or safety through existing emergency procurement policies, which are faster than traditional procurement. The exercise of this authority requires the declaration of a local emergency and is time-limited, obligating counties to follow traditional procurement practices at the earliest practicable opportunity.

The County may seek to establish pre-negotiated contracts and related agreements for STRA 01, STRA 02, STRA 03, and other STRAs identified, to be exercised during a recognized water shortage event. This would allow the County to act quickly and maintain consistent resources during emergencies and interim water shortage events. Such pre-negotiated contracts may involve private companies or other local public agencies, such as public water systems, to secure needed resources. The establishment, renewal, and ongoing management of these pre-negotiated contracts will comply with traditional procurement practices as required by local and State policies, except when emergency procurement authorities are temporarily invoked during a declared emergency.

A mutual aid agreement is an arrangement established before an emergency through which another entity(ies) provides personnel, equipment, materials, and/or associated services during an emergency. A mutual aid agreement clearly describes how the involved entities will engage with the County and each other during a water shortage emergency, including their roles and responsibilities.

Mutual aid agreements recommended for efficient activation of STRAs are outlined in Table 4-2, including the entities that should have a mutual aid agreement, the nature of the mutual aid, and the status of any agreement as of December 2025.

Table 4-2. Pre-Negotiated Contracts and Mutual Aid Agreements Recommended for Activation of Short-Term Response Actions Included in Contra Costa County Drought Resilience Plan (as of December 2025)

STRA	Contract or Mutual Aid Agreement Need	Lead	Status
STRA 01 / Dedicated Water Filling Stations	County needs to develop mutual aid agreements with water providers to support dedicated water filling stations.	County OES	Pending
STRA 02 / Water Hauling and Bulk Water Delivery	County needs to establish pre-negotiated contracts with water hauling providers for bulk water delivery and may need mutual aid agreements with water providers to source water from.	County OES	Pending
STRA 03 / Packaged and Bottled Water Supplies	County needs to procure pre-negotiated contracts for packaged and bottled water vendors.	County OES	Pending

4.4 Drought and Water Shortage Emergency Response Process

The Drought and Water Shortage Emergency Response Process describes (1) how County Staff would evaluate drought and water shortage conditions in the County and declare a water shortage, and (2) its Emergency and Interim Drinking Water Distribution (EIDWD) Plan to activate emergency and interim drinking water supplies and communicate with affected domestic well, LSS, and SSWS communities.

4.4.1 Drought or Water Shortage Triggers

Declaring a drought or water shortage is important because it communicates a potential or ongoing emergency, activates mutual aid agreements, and is the first step in accessing State and Federal resources that may assist the County in implementing STRAs.

This DRP outlines a process for classifying water shortage stages, as detailed in Appendix A. This process uses indicators of water supply and defined criteria to categorize the County into one of three water shortage stages: Information, Alert, and Response, as described below.

- In the **Water Shortage Information Stage**, there is no major drought or potential for water shortage. In this stage, County Staff completes its County DRP adaptive management planning described in Section 6.2.
- In the **Water Shortage Alert Stage**, drought or the potential for water shortage exists, but there is no active water shortage emergency. In this stage, County Staff increase communication and outreach activities and initiate coordination with other entities.
- If a water shortage emergency is imminent or actively occurring, the County is in the **Water Shortage Emergency Response Stage**. In this stage, County Staff, in coordination with the Task Force, County Administrator's Office, and County Board of Supervisors, would consider declaring a water shortage emergency and activate the EIDWD Plan described in Section 4.5.2

If a State drought or water shortage emergency declaration includes areas within the County, the County would go into the Water Shortage Emergency Response Stage and activate the EIDWD Plan described in Section 4.5.2. In the event of a Federal disaster declaration, County Staff would evaluate if

the disaster could require emergency and interim drinking water supplies; if so, it would activate the EIDWD Plan. State and/or Federal disaster declarations may make additional resources available to provide emergency and interim drinking water supplies. County Staff would evaluate how these declarations may influence the implementation of the STRAs identified in this County DRP and the activation of the EIDWD Plan.

4.4.2 Emergency and Interim Drinking Water Distribution Plan

The EIDWD Plan outlines the process for County staff to follow when distributing emergency and interim drinking water supplies to affected domestic well, LSS, and SSWS communities. Table 4-3 shows the process County Staff would follow in the event distribution of emergency or interim drinking water supplies is required due to a short-term water shortage. These activities are anticipated for events lasting up to four weeks. Unless otherwise noted, implementation of these activities is subject to declaration of an emergency consistent with the County DRP or by direction of the County Board of Supervisors.

Across all areas with water shortage vulnerabilities identified in Section 3.7, the same set of short-term response actions apply including dedicated water filling stations, water hauling or bulk water delivery, and packaged or bottled water distribution. For emergency and interim drinking-water supply, each area would receive dedicated water filling stations when supplies are available, along with bulk water delivery and packaged water distribution. In all areas, the conveyance of supplied water must comply with existing water-rights requirements. This information can assist in selecting which emergency and interim drinking water supplies to activate for distribution and in identifying the organizations that may need to be coordinated with for that distribution. It aligns the emergency and interim drinking-water STRAs described in Section 4.2 with the mutual-aid agreements summarized in Section 4.3. This information is not exhaustive and should be periodically reviewed and updated by County Staff. It may also help identify the types and locations of emergency water supplies needed in the event of a water-shortage emergency occurring outside the currently identified vulnerable domestic well, LSS, and SSWS communities.

Table 4-3. Emergency and Interim Drinking Water Distribution Plan Summary

EIDWD Plan Component	Description
Lead Agency	County OES leads the EIDWD Plan in coordination with County DCD and County EHD.
Activation	Activation of the EIDWD Plan is subject to recommendation by the Task Force to County OES and an Emergency Operations Center proclamation. Activation is informed by an assessment conducted by County DCD that includes: • Trigger or cause of water shortage emergency. See Section 4.5.1 for drought and water shortage triggers to be considered in the assessment • Affected geographic area and demographics of the affected population • Emergency and interim water supply type(s) • Estimated duration of need County OES, following review of the assessment, may recommend activation administratively through the County Board of Supervisors or other applicable authorities.

EIDWD Plan Component	Description
Notification	County EHD will serve as the lead agency managing notification to the affected community on how and where to get emergency water supplies, in coordination with County OES. The notification method may vary depending on the cause of the water shortage emergency (climate-influenced, wildfire, power interruption, etc.) Anticipated notification methods include: • Agency website (https://www.cchealth.org/about-contra-costa-health/divisions/environmental-health) • Email • U.S. Mail • Broadcast media (radio/television) • Door hangers, fliers, information kiosks • Public outreach meetings, and other existing meetings • Hotline (311, other) • Agency social media Conduct of notifications may include coordination/collaboration with other partner agencies and organizations, such as: • Neighborhood Associations • Non-Profit Organizations • Schools, Churches, and Community Groups Depending on the demographics of the affected community, information, materials, and other notifications may be required for non-English speaking communities. County OES will determine whether bilingual services are needed in support of water distribution activities.
Information Collection	County OES will collect specific information to support applicable cost recovery and inform future emergency and interim drinking water distribution efforts. Such data collection would not include personal information and generally include: • Number of people served by emergency supply, including age and household income • General geographic location of household • Occupancy status (homeowner or tenant) • Duration for which emergency supplies would maintain water needs • Distance traveled to receive emergency supplies and mode of transportation • Known condition of well; prior experiences with water supply shortages • Others as identified as needed

Key:
County DCD = Contra Costa County Department of Conservation and Development
County EHD = Contra Costa County Environmental Health Division
County OES = Contra Costa County Office of Emergency Services
EIDWD Plan = Emergency and Interim Drinking Water Distribution Plan

5.0 Long-Term Mitigation Strategies and Actions

Findings revealed through the risk assessment presented in Chapter 3 show localized and regional water supply concerns, including the density of domestic wells in fractured rock areas, geology, water quality aquifer risk, and wildfire hazard. While risks that impact the basic public health and safety of residents can be addressed through STRAs, LTMSA mitigate and potentially prevent the conditions that lead to water shortage emergencies. This County DRP identifies 15 LTMSAs, organized into 4 categories: drinking water well mitigation programs, system consolidation, regional water infrastructure investment, and data gaps. These LTMSAs are not exhaustive and may be modified in the future.

In the context of this County DRP, LTMSAs serve to reduce drought and water shortage vulnerabilities for domestic well, LSS, and SSWS communities. When implemented, LTMSAs can reduce the extent and cost of emergency response actions but cannot eliminate the need for emergency response actions.

5.1 Legislative Direction

SB 552 requires that each county develop a drought and water shortage plan that covers long-term solutions for SSWS and domestic wells, per CWC Section 10609.70 (**bold face** added for emphasis as related to long-term mitigation strategies and actions and this section of the County DRP):

> *(b)* ***A county shall develop a plan that includes potential drought and water shortage risk and proposed*** *interim and* ***long-term solutions for state small water systems and domestic wells within the county's jurisdiction****. The plan may be a stand-alone document or may be included as an element in an existing county plan, such as a local hazard mitigation plan, emergency operations plan, climate action plan, or general plan. A county shall consult with its drought task force or alternative coordinating process as established by this section in developing its plan. A county shall consider,* ***at a minimum****, all of the following in its plan:*
>
> ***(1) Consolidations for existing water systems and domestic wells.***
>
> ***(2) Domestic well drinking water mitigation programs.***
>
> *(3) Provision of emergency and interim drinking water solutions.*
>
> *(4) An analysis of the steps necessary to implement the plan.*
>
> *(5) An analysis of local, state, and federal funding sources available to implement the plan*

5.2 Long-Term Mitigation Strategies and Actions Included in the Contra Costa County Drought Resilience Plan

LTMSAs included in the County DRP are summarized in Table 5-1. LTMSAs related to drinking water well mitigation programs are described in Section 5.3. The system consolidation opportunity within the county is described in Section 5.4. The ability of regional water infrastructure investments to help address domestic well, LSS, and SSWS vulnerabilities is detailed in Section 5.5. LTMSAs that address data gaps are discussed in Section 5.6. Future efforts related to LTMSA implementation, priority, and

challenges are described in Section 6.2.2. The LTMSAs shown in this table may be updated or replaced as part of future County DRP updates.

Table 5-1. List of Long-Term Mitigation Strategies and Actions Included in Contra Costa County Drought Resilience Plan

ID	Long-Term Mitigation Strategy or Action Category and Type	Long-Term Mitigation Strategy or Action Name	Long-Term Mitigation Strategy or Action Description	Responsible Entity	Supporting Entities
LTMSA 01	Drinking Water Well Mitigation Programs: Communication and Outreach	Domestic Well, LSS, and SSWS Resource Website	County Staff to create, review, and maintain a website with relevant information (County DRP, contacts, permitting processes, data, etc.) for domestic well, LSS, and SSWS communities. The County DRP website will be understandable, accessible, and easy to navigate to remove avoidable associated barriers.	DCD	N/A
LTMSA 02	Drinking Water Well Mitigation Programs: Communication and Outreach	Maintain Network of Vendors and County Contacts	County Staff has assembled a list of well drillers, laboratories, and County contacts that can be shared with domestic well, LSS, and SSWS communities on the County DRP website. County Staff would regularly check, update, and expand this list.	EHD	DCD
LTMSA 03	Drinking Water Well Mitigation Programs: Communication and Outreach	Grant Application Assistance to Domestic Wells, LSS, and SSWS	County Staff would include information on potential grants available for domestic well, LSS, and SSWS communities on the County DRP website.	DCD	EHD, OES
LTMSA 04	Drinking Water Well Mitigation Programs: Drought and Water Shortage Risk Assessment	SSWS Vulnerabilities Assessment	County would develop a revised Risk Assessment by including a more detailed evaluation of risks to SSWSs within the County, such as more thorough evaluation of individual SSWS vulnerabilities, including characterizing well depth, infrastructure age, and capacities.	EHD	N/A
LTMSA 05	Drinking Water Well Mitigation Programs: Drought and Water Shortage Risk Assessment	Aging Infrastructure Assessment	County Staff would evaluate LSSs and SSWSs to determine the potential effectiveness of a future program to rehabilitate or replace aging infrastructure.	EHD	N/A
LTMSA 06	Drinking Water Well Mitigation Programs: Water Shortage Prevention	Point-of-Use Water Treatment Installation Outreach	County Staff would implement outreach to users of domestic wells, LSSs, and SSWSs regarding point-of-use water treatment options (e.g., undersink reverse osmosis, whole-house filter packs)	EHD	N/A

ID	Long-Term Mitigation Strategy or Action Category and Type	Long-Term Mitigation Strategy or Action Name	Long-Term Mitigation Strategy or Action Description	Responsible Entity	Supporting Entities
LTMSA 07	Drinking Water Well Mitigation Programs: Water Shortage Prevention	Regional Groundwater Level Monitoring and Communication	County Staff would communicate, via the County DRP website, regional groundwater levels based on information provided by GSAs and DWR.	DCD	EHD
LTMSA 08	Drinking Water Well Mitigation Programs: Water Shortage Prevention	Water Quality Outreach for Domestic Wells, LSS, and SSWS	County Staff would share water quality data collected by GSAs, via the County DRP website, for domestic wells, LSSs, and SSWSs within the GSA-managed basins.	EHD	DCD
LTMSA 09	Drinking Water Well Mitigation Programs: Water Shortage Prevention	Bulk Water Tank Installation	County would outreach to domestic well, LSS, and SSWS operators about the value of sizing and installing bulk water storage tanks at existing wells.	EHD	DCD
LTMSA 10	Drinking Water Well Mitigation Programs: Water Shortage Prevention	Assistance with Domestic Well Monitoring	County Staff to assist domestic well communities with monitoring groundwater conditions by listing resources on the County DRP website.	EHD	DCD
LTMSA 11	System Consolidation	System Consolidation Planning	County Staff would support domestic well, LSS, and SSWS communities and community water systems with more detailed system consolidation planning and outreach.	EHD	DCD, Water Districts, Community Water Systems
LTMSA 12	Regional Water Infrastructure Investment	Regional Planning Integration	County Staff will participate in related regional planning efforts to provide the perspective of domestic well, LSS, and SSWS communities.	DCD	OES, Water Districts
LTMSA 13	Regional Water Infrastructure Investment	Regional Water Project Integration	County Staff to coordinate with community water systems and/or GSAs to evaluate if planned projects have opportunities to improve water supply resilience for domestic wells, LSSs, and SSWSs through enhancements of these planned projects.	DCD	EHD, Water Districts

ID	Long-Term Mitigation Strategy or Action Category and Type	Long-Term Mitigation Strategy or Action Name	Long-Term Mitigation Strategy or Action Description	Responsible Entity	Supporting Entities
LTMSA 14	Data Gaps	Dry Well Reporting and Abandonment	County Staff to coordinate with DWR to improve dry well reporting accuracy by monitoring submissions in the online portal, updating well permit applications to indicate replacement wells, and reviewing well completion reports to identify abandoned wells.	EHD	N/A
LTMSA 15	Data Gaps	Create Local Small Water System Classification and Monitoring for Communities with 2-4 Connections	County Staff have established a LSS monitoring program that monitors the water quality of systems that serve two to four connections.	EHD	N/A

Key:
County = Contra Costa County
County Staff = Contra Costa County Staff
DCD = Contra Costa County Department of Conservation and Development
DRP = Drought Resilience Plan
DWR = California Department of Water Resources
EHD = Contra Costa County Environmental Health Division
GSA = Groundwater Sustainability Agency
LSS = Local Small Water System
LTMSA = Long-Term Mitigation Strategy and Action
N/A = not applicable
PWD = Contra Costa County Public Works Department
SSWS = State Small Water System
State Water Board = State Water Resources Control Board
STRA = Short-Term Response Action

5.3 Drinking Water Well Mitigation Programs

This County DRP considered the utility of domestic well drinking water well mitigation (DWWM) Programs as directed under CWC Section 10609.70 (b)(2). The DWWM programs describe actions to help domestic well, LSS, and SSWS communities with groundwater wells that are relatively shallower than those in the area or located in areas where wells are at a higher risk of running dry. This section first identifies the DWWM program(s) within the County, organized by Bulletin 118 groundwater basins and fractured rock areas. This section then details the LTMSA components included in the DWWM programs. The DWWM programs and LTMSA components described herein are not exhaustive and may be modified in the future.

When identifying and defining DWWM programs, the County DRP considered the following factors:

- Domestic well, LSS and SSWS vulnerability to water supply shortages (see Chapter 3)
- If a DWWM program had already been defined as part of a GSP
- The SGMA priority for Bulletin 118 basins
- The occurrence of potentially shallow wells that could be at enhanced risk of drying up
- History of dry well reports and/or new well permits for replacement or deepened wells

Table 5-2 details the identified DWWM programs within the County.

Table 5-2. Drinking Water Well Mitigation Programs within Contra Costa County

Location	Vulnerable Domestic Wells and State Small Water Systems Included	Drinking Water Well Mitigation Program Description
East Bay Plain Subbasin	None	The East Bay Plain Subbasin GSP does not include a DWWM program. Wells in this area were generally found not to be at risk of drying up or water quality impacts.[1]
East Contra Costa Subbasin	Areas within East Contra Costa in Brentwood and Byron (vulnerable areas F and G in Section 3.7)	The East Contra Costa Subbasin GSP does not include a DWWM program.[2] Wells in this area were generally found not to be at risk of dry up or water quality impacts. The County DRP DWWM program for this location will focus on communication and outreach, as well as water shortage prevention.
Livermore Valley Basin	None	The Livermore Valley Alternative GSP does not include a DWWM program. Wells in this area were generally found not to be at risk of dry up since groundwater levels within the basin have reached a state of stability.[3]

Location	Vulnerable Domestic Wells and State Small Water Systems Included	Drinking Water Well Mitigation Program Description
Communities in Fractured Rock Basins	Domestic wells in Northwest of Briones Hills, Las Trampas Ridge East side of Moraga, South Side of Black Hills, Mount Diablo Foothills on East Side, Briones Valley, City of Antioch, and other isolated domestic wells (vulnerable areas A, B, C, D, and E in Section 3.7)	There has not been a systematic and/or concentrated history of well dry ups within fractured rock areas in the County. Due to the difficulty in monitoring groundwater conditions in these areas, the County DRP DWWM program for these locations will focus on communication and outreach, as well as water shortage prevention.

Notes:

[1] East Bay Plain Basin GSP includes that the East Bay Plain Subbasin is not experiencing a chronic lowering of groundwater levels and is currently in a sustainable condition

[2] The East Contra Costa Subbasin GSP includes an evaluation of dry supply wells during droughts which concluded that less than 5% of the domestic wells in the East Contra Costa Subbasin have the potential to go dry (i.e., the well would experience less than 10 feet of saturated screen). This comparison is highly conservative given the inclusion of wells that are 50 years old and that newer wells are likely not completed solely in the Shallow Zone.

[3] The basin has not seen consistently low groundwater levels recently, as the basin has been managed within its sustainable yield for at least 10 years (DWR 2019).

Key:

County = Contra Costa County
DRP = Drought Resilience Plan
DWWM = Drinking Water Well Mitigation
GSP = Groundwater Sustainability Plan
LTMSA = Long-Term Mitigation Strategies and Actions

5.3.1 Communication and Outreach (LTMSA 01, 02, 03)

Effective communication and outreach are essential components of drought resilience efforts, enabling timely information sharing and community engagement to support water shortage mitigation. These strategies aim to provide accessible resources to domestic well, LSS, and SSWS communities, enabling them to improve the reliability of their water supply.

5.3.1.1 Domestic Well, LSS, and SSWS Resource Website (LTMSA 01)

As part of this County DRP, the County will establish a website focused on domestic well, LSS, and SSWS communities. County Staff will update and maintain this website, enhancing its content as part of other LTMSAs. This website could house a variety of relevant resources, such as the County DRP, contact information, links to monitoring and water quality data, and characterization of water supply. County DCD would maintain the website with input from County EHD and County OES. Technical content, such as sampling guidance, disinfection information, and well-safety information, would be reviewed by County EHD before being included on the website.

5.3.1.2 Establish Network of Vendors and County Contacts (LTMSA 02)

County Staff have a list of well drillers and laboratories that provide water sampling and testing services. This list is available to domestic well, LSS, and SSWS communities and would include a disclaimer stating that it does not constitute a recommendation or endorsement from the County. County Staff would (1) continue to maintain this list with regular updates, (2) post this list on the County DRP website, and (3) remind domestic well, LSS, and SSWS communities of this list during drought or other events that could cause water shortages. County EHD is the lead of this LTMSA, with support from County DCD.

5.3.1.3 Grant Application Assistance to Domestic Wells, LSS, and SSWS (LTMSA 03)

State and Federal grants may be available to domestic well, LSS, and SSWS owners to support a variety of activities, including technical training, new infrastructure, and studies. While the exact availability and resources covered by these grants vary, County Staff would include links to major funding organizations on its website, such as DWR and the Rural Community Assistance Partnership, for domestic well, LSS, and SSWS owners to check and track. County DCD is the lead of this LTMSA, with support from County EHD and County OES.

5.3.2 Drought and Water Shortage Risk Assessment (LTMSA 04, 05)

The drought and water shortage risk assessment documented in Chapter 3 is a key component of a DWWM program. It helps define areas and populations with domestic wells, LSSs, and SSWSs that are more vulnerable to water shortages. It also characterizes what conditions may be driving water shortage vulnerabilities. Both can help inform the components of a drinking water well mitigation program. The LTMSAs in this section improve upon this County DRP risk assessment.

5.3.2.1 SSWS Vulnerabilities Assessment (LTMSA 04)

The risk assessment completed and documented in Chapter 3 was used to help select the components of the DWWM program documented in this County DRP. However, this risk assessment could be enhanced by including a more detailed evaluation of risks to SSWSs within the County. A more thorough evaluation of individual SSWS vulnerabilities, including characterizing well depth, infrastructure age, and capacities, would identify areas where reliability could be improved in the future. County Staff would update the County DRP risk assessment with the findings from this SSWS vulnerabilities assessment as part of future County DRP updates. County EHD is the lead of this LTMSA.

5.3.2.2 Aging Infrastructure Assessment (LTMSA 05)

County Staff would investigate the LSSs and SSWSs to determine the value of a program that provides financial assistance to LSS and SSWS owners to rehabilitate or replace aging infrastructure. County EHD is the lead of this LTMSA.

5.3.3 Water Shortage Prevention (LTMSA 06, 07, 08, 09, 10)

Water shortage prevention LTMSAs address water supply vulnerabilities by improving the understanding of groundwater conditions and enhancing the resilience of domestic well, LSS, and SSWS groundwater assets.

5.3.3.1 Point-of-Use Water Treatment Installation (LTMSA 06)

County Staff would implement outreach to end users of domestic wells, LSSs, and SSWSs in eastern County areas about the value of point-of-use water treatment options. These areas have potential for nitrate-related water-quality issues. The outreach would include information on available point-of-use water treatment options and a list of vendors that install such systems. County EHD is the lead of this LTMSA.

5.3.3.2 Regional Groundwater Level Monitoring and Communication (LTMSA 07)

County Staff would coordinate with GSAs in the County and DWR to communicate existing groundwater level monitoring results to domestic well, LSS, and SSWS communities. This includes linking to updated GSA annual reporting on the County DRP website and characterizing results specifically for domestic well, LSS, and SSWS communities. The GSAs typically complete groundwater monitoring in October and April and develop an annual report by April 1 of each year. County Staff would coordinate their website

updates to include these GSA updates. In addition, DWR provides an acoustic well-depth measurement program to support groundwater well monitoring. As part of this program, well users who participate are required to provide their measurement data to DWR. County Staff may incorporate information from this program, where appropriate and available, to enhance communication of groundwater conditions to domestic well, LSS, and SSWS communities. County DCD is the lead of this LTMSA, with support from County EHD.

5.3.3.3 Water Quality Outreach for Domestic Wells, LSS, and SSWS (LTMSA 08)

County Staff would share water quality data with domestic well, LSS, and SSWS communities on the County DRP website and update brochures related to known water quality issues. Communication with these communities would focus on known water quality issues within their area and provide updates as new water quality data is collected. For domestic wells, LSSs, and SSWSs within the GSA-managed basins, County Staff would coordinate with the GSAs on their water quality data for presentation on the County DRP website. County EHD is the lead of this LTMSA, with support from County DCD.

5.3.3.4 Bulk Water Tank Installation (LTMSA 09)

Bulk water tank installation at domestic wells, LSSs, and SSWSs would improve water supply reliability in areas vulnerable to drought and water shortages. In the near term, County Staff would provide outreach to these areas regarding the value of installing bulk water tanks and available resources for installation. In the future, the County may implement a policy that encourages the installation of bulk water storage tanks for domestic well, LSS, and SSWS owners. County EHD is the lead for this LTMSA, with support from County DCD.

5.3.3.5 Assistance with Domestic Well Monitoring (LTMSA 10)

The vulnerable domestic wells within the County are in both Bulletin 118 groundwater basins and fractured rock areas. The GSAs monitor groundwater conditions within their basins but do not aid with sampling individual domestic wells. There is no existing groundwater monitoring program for domestic wells within fractured rock areas.

County Staff would assist domestic well communities with monitoring their wells by providing resources on the County DRP website, including a list of laboratories that perform well sampling and testing, as well as County contacts to assist with interpreting results. With additional resources, County Staff could (1) coordinate with the GSAs to provide annual testing of domestic wells at no cost to the communities within their managed groundwater basins, and (2) provide financial assistance to domestic well communities outside the GSA-managed basins for an annual groundwater test. Data collected through these annual tests could then assist with broader groundwater monitoring. County EHD is the lead for this LTMSA, with support from County DCD.

5.4 System Consolidation Planning

System consolidation is the physical or managerial joining of two or more water systems. In the context of domestic wells, LSSs, and SSWSs, these systems can be consolidated with each other and/or a larger water system. System consolidation can improve water supply reliability by broadening water supply sources and/or the number of users. With more users in a singular system, operating and maintaining that system can be cost-effective compared to smaller or individual systems. This section identifies potential consolidation opportunities for domestic wells, LSSs, and SSWSs. The County DRP separates system consolidation opportunities into two categories: (1) existing (those that have already been identified and undergone at least an initial assessment), and (2) potential (those identified during

development of this County DRP), based on proximity to community water system service area boundaries.

5.4.1 Existing Consolidation Opportunities

5.4.1.1 Existing Efforts

- **Domestic Wells.** There are currently no known consolidation efforts—past or ongoing—involving domestic wells.
- **LSS or SSWS.** There are currently no known consolidation efforts—past or ongoing—involving LSSs or SSWSs.

While there have not been consolidation efforts within the County involving domestic wells, LSSs, or SSWSs, CCWD and DWD have been completing consolidation efforts with public water systems on Bethel Island (CCWD 2020b). One example being consolidation of Couty Service Area M-28 (Willow Mobile Home Park) into DWD. These consolidation efforts were completed with assistance from the Proposition 1 Disadvantaged Community Involvement Grant Program and the Safe and Affordable Funding for Equity and Resilience Program. DWD received State Technical Assistance to conduct feasibility studies for the potential consolidation of Bethel Island, with Rural Community Assistance Corporation advancing the effort through a revised 2025 workplan, which is on hold as of February 2026 due to shifting funding priorities (DWD 2026). The lessons learned through this process, such as DWD and CCWD changing their service areas and the Central Valley Project service area for the Bethel Island water system consolidations, could be applied to future consolidation efforts involving domestic wells, LSSs, and SSWSs within the County.

5.4.2 Potential System Consolidation Opportunities (LTMSA 11)

There are system consolidation opportunities for domestic wells, LSSs, and SSWSs that are within the existing service area boundaries of a community water system.[14] While a community water system is not required to provide water service to domestic well, LSS, and SSWS communities, their proximity may increase the feasibility of system consolidation. There may be nearby water supply infrastructure from a community water system that could connect to domestic wells, LSSs, and SSWSs. Policy or institutional hurdles may be less onerous if domestic wells, LSSs, and SSWSs are in an existing service area. Any potential consolidation effort must be compliant with existing water rights requirements of major water purveyors.

Domestic Wells, LSSs, and SSWSs in Community Water System Service Areas. Table 5-3 presents community water systems that likely have domestic wells, LSSs, and/or SSWSs in their service areas. Due to the uncertainty of the domestic well location data, this table may not reflect all domestic wells, LSSs, or SSWSs within community water system service areas. The information in this table highlights where outreach and additional analysis by County Staff in collaboration with these community water systems may be most effective.

[14] As defined in HSC Section 116275(i), a community water system means a public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 yearlong residents of the area served by the system.

Table 5-3. Community Water Systems with Domestic Wells, Local Small Water Systems, and/or State Small Water Systems Likely Within their Service Area

Community Water Systems with Domestic Wells Likely in Their Service Areas[1,2]	Number of State Small Water Systems Likely in Their Service Areas[2]	Number of Local Small Water Systems Likely in Their Service Areas[2]
Contra Costa Water District	6	5
East Bay Municipal Utility District	4	0
Town of Discovery Bay	1	0
Diablo Water District	0	3
City of Brentwood	0	2
City of Antioch	0	1
Knightsen Community Water System	0	1
Contra Costa County County Service Area M-28 (County CSA M-28)	0	0
Willow Park Marina	0	0

Table Notes:

[1] Number of domestic wells within a community water system's service area is not shown as it may be inaccurate due to the locations of some domestic wells not being known.

[2] Domestic wells, LSSs, and SSWSs within a community water system's service area are based on the established service area boundary and do not reflect the proximity to existing water delivery infrastructure. Additional analysis would be needed to determine the proximity of domestic wells, LSS, and SSWS to existing water delivery infrastructure.

Groupings of Domestic Wells, LSSs, and SSWSs near Community Water Systems. The proximity of domestic wells, LSSs, and SSWSs to the service areas of community water systems was also evaluated to identify opportunities for system consolidation. Concentrations of domestic wells, LSSs, and SSWSs and their proximity to a community water system are presented in Figure 5-1. Areas of system consolidation opportunity with a higher concentration of domestic wells (as shown in Figure 3-3), LSSs, and SSWSs within 1 mile of a community water system are highlighted in this figure. Table 5-4 summarizes the consolidation opportunities, including the number of domestic wells, LSSs, and SSWSs in each area, as well as the nearby community water systems. Note that some areas of system consolidation opportunity highlighted in Figure 5-1 may also overlap with domestic wells, LSSs, and SSWSs within a community water system's boundary as described above.

There may also be system consolidation opportunities outside the areas shown and described below. County Staff would stay informed of all potential opportunities as they arise.

Evaluating Consolidation Opportunities in the County: In this LTMSA, County Staff would support domestic well, LSS, and SSWS communities and community water systems by assisting in pursuing funding and additional resources for exploration, development, and the implementation of a plan for physical consolidation.

With additional resources, County Staff would work with domestic well, LSS, and SSWS communities and community water systems to further evaluate the opportunities for system consolidation and, if appropriate, develop plans for system consolidation. This evaluation would include outreach to the domestic well, LSS, and SSWS communities and community water systems within these areas to better

understand the system consolidation opportunities, and may include evaluating interest in and willingness to consolidate, water supply availability and water quality constraints, water delivery infrastructure (distance to, components and capacities, etc.), potential for funding and financing for a system consolidation study and infrastructure, points of contact, and other considerations. County Staff could lead the outreach effort, or those entities engaged in it could lead it. County EHD is the lead of this LTMSA, with support from County DCD.

Table 5-4. Areas with Opportunity for Domestic Wells, Local Small Water Systems, and State Small Water Systems Consolidation

Area of System Consolidation Opportunity	Approximate Number of Domestic Wells	Number of State Small Water Systems	Number of Local Small Water Systems	Community Water Systems that Could be Involved in Consolidation with Domestic Wells, Local Small Water Systems, or State Small Water Systems
A: Communities Northwest of Briones Hills	88	0	0	East Bay Municipal Utility District
B: Communities North of Briones Hills	77	0	0	Contra Costa Water District City of Martinez
C: South Side of Black Hills	48	0	0	East Bay Municipal Utility District Mount Diablo State Park
D: Mount Diablo Foothills on East Side	58	0	0	Contra Costa Water District
E: South Side of Brentwood	112	1	0	City of Brentwood
F: South and Southeast Side of Oakley	446	2	9	City of Brentwood Diablo Water District Contra Costa Water District
G: City of Antioch	76	1	2	Contra Costa Water District City of Antioch
H: East Contra Costa Subbasin in Byron Area	161	1	0	Byron-Bethany Irrigation District Contra Costa Water District Town of Discovery Bay
I: Communities in Bethel Island	76	3	1	Diablo Water District Contra Costa Water District

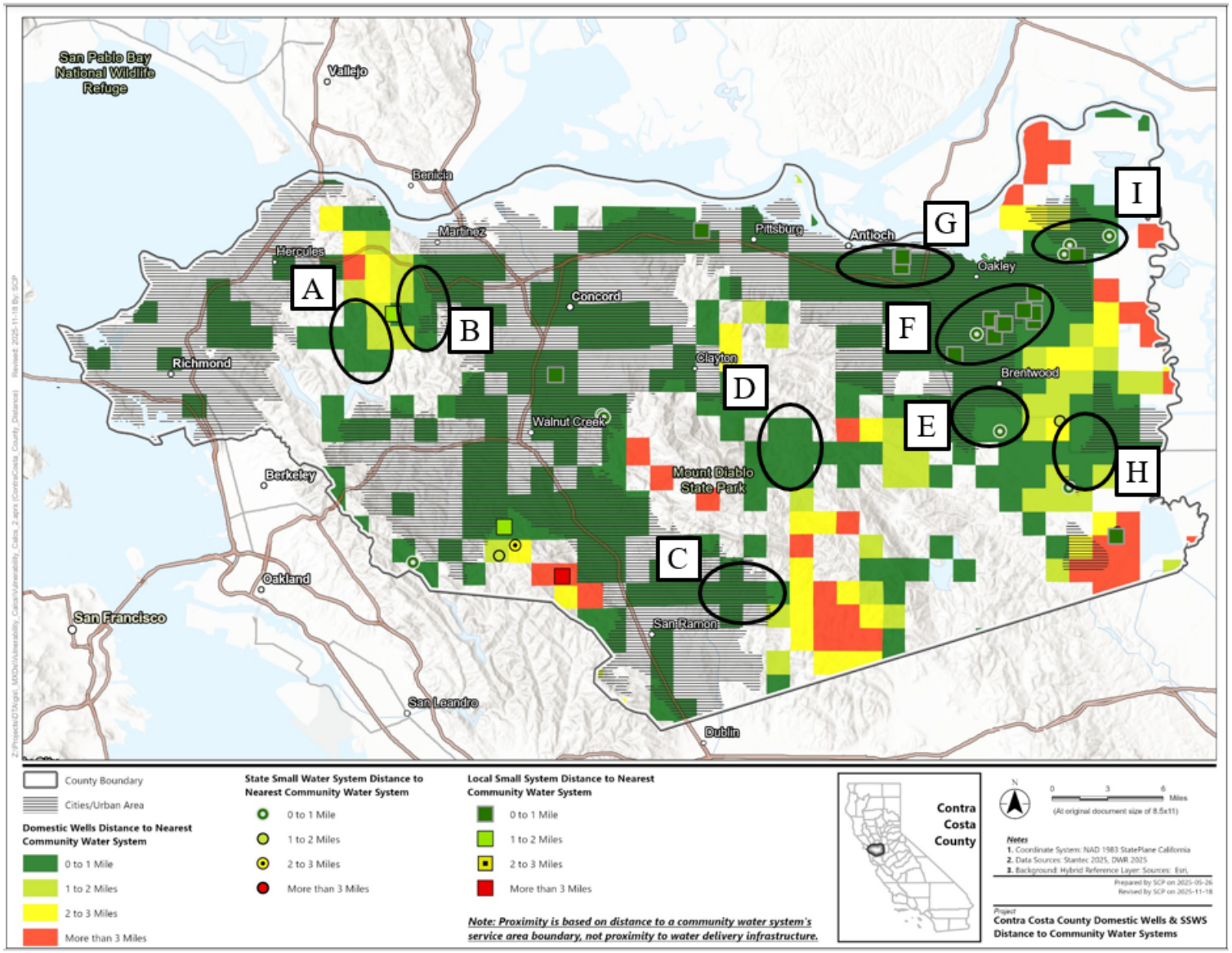


Figure 5-1. Areas with Opportunity for Domestic Wells, Local Small Water Systems, and State Small Water Systems Consolidation

5.5 Regional Water Infrastructure Investment

Regional water infrastructure projects can enhance the water supply reliability of many communities, including domestic wells, LSSs, and SSWSs. The LTMSAs in this section describe how County Staff could integrate regional planning and regional water infrastructure to help enhance the water supply reliability of domestic well, LSS, and SSWS communities. Additional information on the near-term integration into regional planning or water infrastructure is included in Section 6.3.

5.5.1 Regional Planning Integration (LTMSA 12)

Many regional and County planning efforts intersect with the County DRP. Coordination by County Staff within these other regional and County planning efforts will help ensure these plans consider domestic wells, LSSs, and SSWSs. Table 5-5 details the relevant regional planning efforts, their current status, and their intersection with domestic wells, LSSs, and SSWSs. For LTMSA 12, County Staff will participate during the planning effort and provide the perspective of domestic well, LSS, and SSWS communities. Additional information on the timing and County roles/responsibilities for these efforts is presented in Section 6.3. County DCD is the lead of this LTMSA, with support from County OES and the water districts.

Table 5-5. Summary of Relevant Regional Planning Efforts

Planning Effort	Current Status	Intersection with Domestic Wells, Local Small Water Systems, and State Small Water Systems
San Francisco Bay Area Integrated Regional Water Management Plan (Bay Area IRWMP 2019)	Adopted 2024	Evaluated water supply reliability within an area that includes domestic wells, LSSs, and SSWSs.
Urban Water Management Plan(s) (DWR 2020)	Adopted 2021	Well owners residing in Cities of Antioch, Brentwood, Martinez, Town of Discovery Bay, and Pittsburg's service areas. Well owners residing in Contra Costa Water District, Diablo Water District, Discovery Bay Community Services District, Dublin San Ramon Services District, EBMUD, and Golden State Water Company service areas.
Agricultural Water Management Plan(s) (BBID 2025)	Adopted 2025	Focused on the interplay between agricultural irrigation, water reliability, and the surrounding environment that includes domestic wells, LSSs, and SSWSs.
East Contra Costa County Integrated Regional Water Management Plan (ECCWMA 2019)	Updated 2019	Focused on improving water supply reliability through infrastructure investments, facilitating the transfer of water during shortages, bolstering emergency preparedness, and improving climate change resiliency.
East Bay Plain Subbasin Groundwater Sustainability Plan (East Bay Plain GSP 2022)	Approved 2023	The East Bay Plain Subbasin covered in this plan has domestic wells.
East Contra Costa Subbasin Groundwater Sustainability Plan (East Contra Costa GSP 2021)	Approved 2023	The East Contra Costa Subbasin covered in this plan has domestic wells, LSSs, and SSWSs.
Livermore Valley Basin AGSP (Zone 7 Water Agency 2024)	Approved 2024	The Livermore Valley Basin covered in this plan has domestic wells.

Planning Effort	Current Status	Intersection with Domestic Wells, Local Small Water Systems, and State Small Water Systems
Delta Region Drinking Water Quality Management Plan (CALFED 2005)	Developed 2005	Focused on improving water quality in the Delta, which indirectly impacts domestic well, LSS and SSWS communities by addressing sources of contamination and promoting sustainable groundwater management.
San Francisco Bay/Sacramento-San Joaquin Delta Estuary Water Quality Control Plan (State Water Board 2018)	Ongoing Updates	Focused on improving water quality in the Delta, which indirectly impacts domestic well, LSS and SSWS communities by setting standards for freshwater flows and water quality in the Delta.
Contra Costa Water District – 2025 Future Water Supply Study (CCWD 2025)	Updated 2025	Evaluated water supply reliability within an area that includes domestic well, LSS and SSWS communities.
East Bay Municipal Utility District – Water Supply Management Program 2040 Plan (EBMUD 2012)	Adopted 2012	Evaluated water supply reliability within an area that includes domestic well, LSS and SSWS communities.
Mokelumne/Amador/Calaveras Integrated Regional Water Management Plan Update (EBMUD 2013)	Adopted 2013	Improves water supply reliability and ensures long-term balance of supply and demand in areas that include domestic well, LSS and SSWS communities.
Contra Costa County Climate Action and Adaptation Plan (Contra Costa County Climate Action and Adaptation Plan 2024 Update)	Adopted 2024	Evaluates climate change impacts, such as reduced snowpack and more intense droughts, on vulnerable communities dependent on domestic well, LSS and SSWS communities.
EBMUD Climate Action Plan (EBMUD 2021)	Adopted 2023	Evaluates climate change impacts, such as reduced snowpack and more intense droughts, on vulnerable communities dependent on domestic well, LSS and SSWS communities.
EBMUD LHMP (EBMUD 2023)	Adopted 2023	Evaluates conditions, such as drought and wildfire, that would impact the water supply reliability of domestic well, LSS and SSWS communities.
Contra Costa County General Plan (Contra Costa County 2045 General Plan 2024)	Adopted 2024	Covers areas with domestic well, LSS and SSWS communities.
Contra Costa County Local Hazard Mitigation Plan (Contra Costa County 2024 Local Hazard Mitigation Plan)	Adopted 2024	Evaluates conditions, such as drought and wildfire, that would impact the water supply reliability of domestic well, LSS and SSWS communities.

Key:
Delta = Sacramento-San Joaquin Delta
EBMUD = East Bay Municipal Utility District
LHMP = Local Hazard Mitigation Plan

5.5.2 Regional Water Project Integration (LTMSA 13)

The County DRP collected information on potential regional water infrastructure projects and assessed their potential to enhance domestic well, LSS, and SSWS water supply reliability, as well as County Staff's role in developing and implementing such projects. This information is summarized in Table 5-6. These projects are not an exhaustive list. In LTMSA 13, County Staff will monitor the status of these projects

and, as appropriate, engage with the lead entities to evaluate the opportunity for enhancing the reliability of domestic well, LSS, and SSWS water supplies. County Staff will also continue to monitor regional planning efforts for other regional water infrastructure opportunities. County DCD is the lead of this LTMSA, with support from County EHD and the water districts.

Table 5-6. Regional Water Projects with Applicability to Domestic Wells and/or State Small Water Systems

Regional Water Infrastructure Opportunity	Potential Applicability to Domestic Wells and State Small Water Systems[1]	Involved Entities for Coordination
Bay Area Regional Desalination Project (Bay Area IRWMP 2019)	Low-moderate: Indirectly offsets groundwater demand	Various entities including CCWD, EBMUD
Freeport Regional Water Project (EBMUD 2020a)	Low: Imported water reduces reliance on groundwater	EBMUD and USBR
Recycled Water Projects (CCWD 2020a; City of Antioch 2021; City of Brentwood 2021; City of Martinez 2021; City of Pittsburg 2021; DWD 2021a; EBMUD 2020a)	Moderate: Indirectly offset groundwater demand	Various entities including CCWD, Central San, Delta Diablo, and EBMUD; Cities of Antioch, Brentwood, Martinez, and Pittsburg
Advanced Treatment Demonstration Projects (CCWD 2020a; City of Antioch 2021; City of Martinez 2021; City of Pittsburg 2021; EBMUD 2020a)	Moderate: Indirectly offset groundwater demand	Various entities including CCWD, EBMUD, Cities of Antioch, Martinez, and Pittsburg
Delta Habitat Restoration Projects (DWR 2025a)	High: Improve water quality in the Delta	Various entities including DWR and USBR
EBMUD-CCWD Untreated Water Intertie (CCWD 2020a)	Low: Provides alternative water sources	CCWD and EBMUD
SFPUC Hayward-EBMUD Intertie Project (EBMUD 2020b)	Low: Provides alternative water sources	EBMUD and SFPUC
BBID-CCWD intertie (State Water Board 2015)	Low: Provides alternative water sources	BBID, CCWD, State Water Board, USBR
Regional Surface Water Projects (CCWD 2020a; EBMUD 2024a; BBID 2025)	Moderate: Indirectly offset groundwater demand	Various entities including BBID, CCWD, and EBMUD
Groundwater Replenishment Projects (CCWD 2020a; DWD 2021a; East Bay Plain GSP 2022; East Contra Costa GSP 2021)	High: Increases groundwater storage	Various entities including DWD, East Bay Plain Subbasin GSAs, East Contra Costa Subbasin GSAs

Regional Water Infrastructure Opportunity	Potential Applicability to Domestic Wells and State Small Water Systems[1]	Involved Entities for Coordination
Conjunctive Use and Groundwater Banking/Exchange Program (EBMUD 2020a; EBMUD WSMP 2040 Plan 2012)	Low: Increases groundwater storage	EBMUD
Water Transfer Opportunities (Bay Area IRWMP 2019; DWD 2021a; EBMUD 2020a; East Contra Costa GSP 2021; BBID 2025)	Moderate: Provide alternative water sources	Various entities including CCWD, DWD, EBMUD
Contra Costa Canal Replacement Project (CCWD 2020a)	High: Supports efficient water transfer systems and minimizes water loss	Various entities including CCWD
Infrastructure Improvements Projects (CCWD 2020a; EBMUD 2020a; EBMUD 2020b)	High: Support efficient recharge and water distribution systems, minimize water loss	Various entities including CCWD and EBMUD

Note:

[1] For opportunities from EBMUD WSMP 2040 Plan 2012, EBMUD 2020a and EBMUD 2020b, potential applicability is contingent on the domestic well, LSS, and SSWS water systems being within EBMUD's service area. Additional requirements may need to be met for potential applicability. It does not apply to water systems outside of the service area.

Key:

BBID = Byron-Bethany Irrigation District
CCWD = Contra Costa Water District
Central San = Central Contra Costa Sanitary District
Delta = Sacramento-San Joaquin Delta
DWD = Diablo Water District
DWR = California Department of Water Resources
EBMUD: East Bay Municipal Utility District
GSA = Groundwater Sustainability Agency
GSP = Groundwater Sustainability Plan
SFPUC = San Francisco Public Utilities Commission
State Water Board = State Water Resources Control Board
USBR = United States Bureau of Reclamation
UWMP = Urban Water Management Plan

5.6 Data Gaps

The County DRP utilized available data to support (1) evaluation of the vulnerability of domestic wells, LSSs, and SSWSs to water shortages, and (2) development and alignment of effective STRAs and LTMSAs. Access to new or more accurate/complete data would help improve this planning process in the future. This section details the LTMSAs identified by the County DRP that would provide new or improved data for use in future planning efforts.

5.6.1 Dry Well Reporting and Abandonment (LTMSA 14)

DWR established an online dry well reporting system for domestic well communities to report problems with their wells that impact their water supplies (CNRA 2024). County Staff will monitor, via the publicly accessible online portal, information submitted to this system to assist in identifying areas with current or past water shortages that can help inform the potential for future water shortages. However, not all domestic well, LSS, and SSWS owners with a dry or impacted well have submitted a dry well report.

Many times, they will drill a new, deeper well without reporting the previously dry well. To address this data gap, County Staff will update the well permit application so that the applicant must indicate if the new well is replacing a dry well.

County Staff will review dry well reporting data (from DWR's system and the well permit applications it receives) with well completion report data to identify wells to be removed from DWR's well completion report dataset[15] that have been abandoned due to replacement or retirement. The well completion report dataset was used to identify well locations for risk assessment in Chapter 3. County Staff will coordinate with DWR to update information in the well completion report. This coordinated review and update of well-related information will help develop a more comprehensive understanding of dry wells and water shortage issues in the County. County EHD is the lead of this LTMSA.

5.6.2 Local Small Water System Classification (LTMSA 15)

Contra Costa County Ordinance Code §414-- 4.221 defines a small water system as a utility system that furnishes water for domestic purposes to from two through one hundred ninety-nine service connections. Because SSWS is defined to serve at least 5 connections, the County created the LSS classification, which serves drinking water to between 2 and 4 service connections. (Contra Costa Health 2024). These LSS are regulated consistently with SSWS. Systems with a single connection are not included due to the number of these systems in the County and the resources required to implement a program of this size. County staff will continue monitoring LSS water quality as part of this LTMSA. County EHD is the lead of this LTMSA.

[15] https://water.ca.gov/Programs/Groundwater-Management/Wells/Well-Completion-Reports

6.0 Implementation Considerations

The STRAs and LTMSAs identified and described in Chapters 4 and 5 represent the range of in-progress and proposed activities. Implementation of these STRAs and LTMSAs often (1) falls under the authorities and jurisdictional responsibilities of separate County departments and other local and State public agencies, and (2) requires the involvement of other interested parties. To implement these STRAs and LTMSAs, and contribute to continued improvement of water supply reliability for domestic well, LSS, and SSWS communities, this section describes the implementation steps designed to assist the County with:

- Ongoing water supply monitoring and interagency collaboration in support of implementation
- Outlining STRA and LTMSA implementation responsibility, status, and resource needs
- Identifying opportunities to align the County DRP with other County policy and County and regional planning documents
- Adaptive management
- Identifying funding opportunities

6.1 Legislative Direction

SB 552 requires the County to develop a drought and water shortage plan that analyzes the steps to implement the plan and funding sources available to support implementation, per CWC Section 10609.70 (**bold face** added for emphasis as related to plan implementation and this section of the County DRP):

> *(b) A county shall develop a plan that includes potential drought and water shortage risk and proposed interim and long-term solutions for state small water systems and domestic wells within the county's jurisdiction. The plan may be a stand-alone document or may be included as an element in an existing county plan, such as a local hazard mitigation plan, emergency operations plan, climate action plan, or general plan. A county shall consult with its drought task force or alternative coordinating process as established by this section in developing its plan. A county shall consider,* ***at a minimum****, all of the following in its plan:*
>
> *(1) Consolidations for existing water systems and domestic wells.*
>
> *(2) Domestic well drinking water mitigation programs.*
>
> *(3) Provision of emergency and interim drinking water solutions.*
>
> ***(4) An analysis of the steps necessary to implement the plan.***
>
> ***(5) An analysis of local, state, and federal funding sources available to implement the plan.***

6.2 Implementation Roadmap

The County DRP describes existing and proposed STRAs and LTMSAs that, when executed, help the County meet its objectives under CWC Section 10609.70 (b) (1), (b) (2), and (b) (3). Implementing these STRAs and LTMSAs will require resources and clear roles and responsibilities. The identified STRAs and

LTMSAs include existing or new activities to be implemented under existing authorities and funding of County departments and those activities dependent on additional funds from local, State, or Federal sources. This section presents the implementation roadmap for this County DRP, identification of ongoing monitoring and collaboration with County staff, and management oversight, prioritization, and resource identification needs.

6.2.1 Monitoring and Collaboration

Water supply monitoring and interagency collaboration support County DRP implementation by evaluating water supply reliability and maintaining ongoing coordination and collaboration among County departments, related organizations, and the Task Force. County Staff will conduct a range of activities as described in Table 6-1. These activities may be superseded by the activities described in Section 4.5 if a drought or water shortage emergency has occurred.

Table 6-1. Contra Costa County Drought Resilience Plan Monitoring and Collaboration Activities

Activity	Description	Activity Lead	Timing
GSA ECC Subbasin Coordination	County Staff to meet with GSA manager/staff prior to the GSA's release of the basin/subbasin GSP Annual Report (Water Code Section 10728). May include additional coordination based on water supply conditions.	DCD	February/March
Water Supply Monitoring and Coordination	County DCD to regularly engage with agencies/ organizations that monitor physical risk factors and water supply conditions to evaluate water supplies associated with domestic well, LSS, and SSWS communities (Section 4.5.1). Coordinating agencies to include ECC Subbasin GSAs, East Bay Plain Subbasin GSAs, DWR, and public water systems.	DCD, in coordination with OES and EHD	April
Large Water Purveyor Coordination	County Staff to meet with EBMUD, CCWD, and ECC to discuss STRA, LTMSA, and the water supply condition assessment.	DCD, in coordination with OES and DEH	As needed in consultation with Large Water Purveyors and ECC
Internal Coordination	Annual meeting to inform the development of the water supply condition assessment. This meeting prepares the presentation for the annual Task Force meeting.	DCD, in coordination with OES and DEH	April
Task Force Meeting	County Staff to schedule and facilitate a minimum of one Task Force meeting annually. The meeting will follow County DCD's update of its annual water supply condition assessment (Section 4.5.1). Results of this assessment shall support County Staff, in collaboration with the Task Force, to identify potential activation of water shortage response measures as described in this DRP.	DCD	May of each year.

Activity	Description	Activity Lead	Timing
Drought Resilience Plan Website Update	County Staff to update the County DRP website content and resource materials as described in the water supply condition assessment. This includes any contact info, lists of resources (vendors, links to external websites, etc.), and other website content related to LTMSA.	DCD, in coordination with OES and DEH	May of each year after the Task Force meeting, and as water supply conditions merit
GSA East Bay Plain Subbasin Coordination	County Staff to engage, where applicable, with GSA advisory or technical groups/committees where those activities assist in informing or implementing actions that complement the County DRP.	DCD	As Needed

Key:
CCWD = Contra Costa Water District
County = Contra Costa County
County DRP = Contra Costa County Drought and Water Shortage Resilience Plan
DCD = Contra Costa County Department of Conservation and Development
DWR = California Department of Water Resources
EBMUD = East Bay Municipal Utility District
ECC = East Contra Costa
EHD = Contra Costa County Environmental Health Division
GSA = Groundwater Sustainability Agency
GSP = Groundwater Sustainability Plan
OES = Contra Costa County Office of Emergency Services
SSWS = State Small Water Systems
Task Force = Drought and Water Shortage Task Force

6.2.2 Oversight, Responsibilities, Priorities, and Resource Needs

Individual STRAs and LTMSAs identified in this County DRP have been assigned to individual County departments and agencies pursuant to each agency's regulatory and policy authorities. County DCD, as lead agency of the County DRP, shall provide administrative oversight and/or collaboration for all implementation actions that fall outside of its regulatory and policy authorities.

Table 6-2 details the type, status, and lead of County DRP STRAs and LTMSAs. Activities described in this table are subject to modification based on climate conditions, engagement with the Task Force, and other relevant factors. While activities have been assigned a near-, mid-, and long-term priority status, the pace of an activity's implementation schedule can be changed depending on various drivers, such as new regulations, climate conditions, and funding.

"Priority" is classified as:

- Near-term (in the next 2 years)
- Mid-term (within 2 to 5 years)
- Long-term (5 or more years in the future)

"Status" is classified as:

- Available (the resource or action is ready for use or implementation immediately)
- In-Progress (for those currently being implemented but may require a longer timeline)
- Proposed (for those that require additional resources)

The “Resource Requirement” columns specify if the STRA/LTMSA would require additional staff time, additional County budget for purposes other than staff time, and/or external funds beyond what the County currently has available. These external funds could include grants, financing, Federal funding, and State funding to support DRP implementation.

Beyond these implementation activities, County DCD will coordinate with the entities listed in Table 6-2 on mid-term and long-term priorities. The status of these mid- and long-term priorities, as well as the information in this table, will be reviewed at least annually in coordination with the Task Force meeting.

Table 6-2. Contra Costa County Drought Resilience Plan Short-Term Response Action and Long-Term Mitigation Strategy and Action Implementation Summary

Action/Strategy ID and Name	Lead Agency	Coordinating Agency	Priority	Status	Resource Requirement		
					Additional Staff Time	Additional County Budget	External Funds
STRA 01 / Dedicated Water Filling Stations	OES	EHD, DCD, Water Districts	Long-Term	Proposed	Yes	Yes	Yes
STRA 02 / Water Hauling, Bulk Water for Existing and Temporary Tanks	OES	EHD, DCD, Water Districts	Near-Term	Available	Yes	Yes	Yes
STRA 03 / Packaged and Bottled Water Supplies	OES	EHD, DCD	Near-Term	Available	Yes	Yes	Yes
STRA 04 / Voluntary Water Conservation Program	DCD	EHD, OES, OCM, Water Districts	Near-Term	Available	Yes	No	No
STRA 05 / SSWS and LSS Intertie, Emergency	EHD	DCD, Water Districts	Long-Term	Proposed	Yes	Yes	Yes
STRA 06 / Expedited New or Replacement Well Approval During Water Shortage	EHD		Near-Term	Available	Yes	No	No
LTMSA 01 / Domestic Wells, LSS, and SSWS Resource Website	DCD		Near-Term	Available	Yes	No	No
LTMSA 02 / Maintain Network of Vendors and County Contacts	EHD	DCD	Near-Term	Available	Yes	No	No
LTMSA 03 / Grant Application Assistance to Domestic Wells, LSS, and SSWS	DCD	EHD, OES	Mid-Term	Proposed	Yes	Yes	Yes
LTMSA 04 / SSWS Vulnerabilities Assessment	EHD		Mid-Term	Proposed	Yes	Yes	Yes
LTMSA 05 / Aging Infrastructure Assessment	EHD		Mid-Term	Proposed	Yes	No	No
LTMSA 06 / Point-of-Use Water Treatment Installation Outreach	EHD		Long-Term	Proposed	Yes	Yes	Yes

Action/Strategy ID and Name	Lead Agency	Coordinating Agency	Priority	Status	Resource Requirement		
					Additional Staff Time	Additional County Budget	External Funds
LTMSA 07 / Regional Groundwater Level Monitoring and Communication	DCD	EHD	Mid-Term	In-Progress	Yes	No	No
LTMSA 08 / Water Quality Outreach	EHD	DCD	Mid-Term	In-Progress	Yes	No	No
LTMSA 09 / Bulk Water Tank Installation	EHD	DCD	Mid-Term	Proposed	Yes	Yes	Yes
LTMSA 10 / Assistance with Domestic Well Monitoring	EHD	DCD	Long-Term	Proposed	Yes	Yes	Yes
LTMSA 11 / System Consolidation Planning	EHD	DCD, Water Districts, Community Water Systems	Long-Term	Proposed	Yes	Yes	Yes
LTMSA 12 / Regional Planning Integration	DCD	OES, Water Districts	Near-Term	Available	Yes	Yes	Yes
LTMSA 13 / Regional Water Project Integration	DCD	EHD, Water Districts	Near-Term	Available	Yes	Yes	Yes
LTMSA 14 / Dry Well Reporting and Abandonment	EHD		Near-Term	In-Progress	Yes	No	No
LTMSA 15 / Create Local Small Water System Classification for Communities with 2-4 Connections	EHD		Near-Term	Available	Yes	No	No

Key:
CCWD = Contra Costa Water District
DCD = Contra Costa County Department of Conservation and Development
EHD = Contra Costa County Environmental Health Division
LTMSA =Long-Term Mitigation Strategy and Action
OES = Contra Costa County Office of Emergency Services
STRA = Short-Term Response Action
County = Contra Costa County
EBMUD = East Bay Municipal Utility District
LSS = Local Small Water Systems
OCM = Contra Costa County Office of Communications and Media
SSWS = State Small Water Systems

6.3 Policy Alignment and Integration

While this County DRP is a standalone document, the information and actions contained in this document provide mutual benefits towards realizing goals and objectives of other County and regional planning efforts associated with domestic well, LSS, and SSWS communities. Table 6-3 describes recommended policy alignment and/or integration actions that promote delivery of STRAs and LTMSAs identified in this County DRP through coordinated efforts with other related County and regional planning efforts.

Table 6-3. Contra Costa County Drought Resilience Plan Policy Alignment and Integration

Related Planning Effort	Release Date	County Lead	Integration Activity
San Francisco Bay Area IRWMPs (Bay Area IRWMP 2019)	October 2019	DCD	County Staff will track planned updates to the regional plan and provide input on domestic wells, LSSs, and SSWSs, as applicable.
UWMPs (DWR 2020)	2020	DCD	County Staff will track planned updates to the Urban Water Management Plans and provide input on domestic wells, LSSs, and SSWSs, as applicable.
AWMPs (BBID 2025)	2025	DCD	County Staff will track planned updates to the Agricultural Water Management Plans and provide input on domestic wells, LSSs, and SSWSs, as applicable.
East Contra Costa County IRWMP (ECCWMA 2019)	March 2019	DCD	County Staff will track planned updates to the regional plan and provide input on domestic wells, LSSs, and SSWSs, as applicable.
East Bay Plain Subbasin GSP (East Bay Plain GSP 2022)	January 2022	DCD	County Staff will participate in annual reports and any plan updates and provide perspectives from domestic well, LSS, and SSWS communities.
East Contra Costa Subbasin GSP (East Contra Costa GSP 2021)	October 2021	DCD	County Staff will participate in annual reports and any plan updates and provide perspectives from domestic well, LSS, and SSWS communities.
Livermore Valley Basin AGSP (Zone 7 Water Agency 2024)	December 2021	DCD	County Staff will participate in annual reports and any plan updates and provide perspectives from domestic well, LSS, and SSWS communities.
Delta Region Drinking Water Quality Management Plan (CALFED 2005)	June 2005	DCD	County Staff will participate in any plan updates and provide perspectives from domestic well, LSS, and SSWS communities.
Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Watershed (State Water Board 2018)	December 2018	DCD	County Staff will participate in any plan updates and provide perspectives from domestic well, LSS, and SSWS communities.

Related Planning Effort	Release Date	County Lead	Integration Activity
Contra Costa Water District – 2025 Future Water Supply Study (CCWD 2025)	Target Release Date: Q1 Fiscal Year 2026	DCD	County Staff will participate in plan updates and provide perspectives from domestic well, LSS, and SSWS communities
East Bay Municipal Utility District – Water Supply Management Program 2040 Plan (EBMUD 2012)	April 2012	DCD	County Staff will participate in plan updates and provide perspectives from domestic well, LSS, and SSWS communities
Mokelumne/Amador/Calaveras Integrated Regional Water Management Plan Update (EBMUD 2013)	March 2013	DCD	County Staff will participate in plan updates and provide perspectives from domestic well, LSS, and SSWS communities
Contra Costa County Climate Action and Adaptation Plan (Contra Costa County Climate Action and Adaptation Plan 2024 Update)	November 2024	DCD	County Staff will participate in plan updates and provide perspectives from domestic well, LSS, and SSWS communities
EBMUD Climate Action Plan (EBMUD 2021)	January 2021	DCD	County Staff will participate in plan updates and provide perspectives from domestic well, LSS, and SSWS communities.
EBMUD LHMP (EBMUD 2023)	2023	OES	County Staff will participate in plan updates and provide perspectives from domestic well, LSS, and SSWS communities.
Contra Costa County General Plan (Contra Costa County 2045 General Plan 2024)	November 2024	DCD	In future updates, County Staff will consider where details could be included to benefit water supply resilience for domestic wells, LSSs, and SSWSs during plan updates and incorporate them to the extent feasible.
Contra Costa County Local Hazard Mitigation Plan (Contra Costa County 2024 Local Hazard Mitigation Plan)	November 2024	OES	In future updates, County Staff will consider where details could be included to benefit water supply resilience for domestic wells, LSSs, and SSWSs and incorporate them to the extent feasible.

Key:
AWMP = Agricultural Water Management Plan
AGSP = Alternative Groundwater Sustainability Plan
County = Contra Costa County
DCD = Contra Costa County Department of Conservation and Development
EBMUD = East Bay Municipal Utility District
GSA = Groundwater Sustainability Agency
GSP = Groundwater Sustainability Plan
IRWMP = Integrated Regional Water Management Plan
LHMP = Local Hazard Mitigation Plan
OES = Contra Costa County Office of Emergency Services
UWMP = Urban Water Management Plan

6.4 Adaptive Management

The County DRP will be reviewed and updated periodically or in response to new information or changing conditions to ensure findings, STRAs, and LTMSAs are appropriate and relevant. At a minimum, this County DRP will be reviewed and updated by County Staff every 5 years. The County DRP may also be revisited after major droughts, water shortage events, and changes in GSA status, as well as when new data, strategies, policies, or requests from the Task Force arise. County DCD is responsible for initiating and coordinating the County DRP update.

Updates to the County DRP will include: (1) reviewing the risk assessment findings in light of new and improved information that characterizes water supply vulnerability, (2) evaluating progress on STRA and LTMSA implementation, (3) updating any communications and outreach materials and information, (4) updating Task Force details, and (5) revising the County DRP content to incorporate any changes. During this update, County DCD will report on these updates to the Task Force to ensure transparent communication and coordination.

6.5 Funding Opportunities and Assistance Programs

As described in Table 6-2, this County DRP includes a variety of proposed activities that require additional funds as approved by the County Board of Supervisors or through other State or Federal sources. Receipt of these additional funds could involve a variety of activities both for County Staff and domestic well, LSS, and SSWS owners/operators, including DRP administration, management, and updates; submitting funding applications and administering agreements; outreach and communications; coordination with other agencies and entities; Task Force engagement; managing assistance programs; development and construction of infrastructure and associated operations, maintenance, repair, rehabilitation, and eventual replacement; and other efforts. Those activities require funding—both short-term for projects with a finite schedule (e.g., design and construction of a new domestic well) and long-term for ongoing activities (e.g., use and upkeep of that new well). As SB 552 does not provide funding for implementation activities, this DRP analyzed local, State, and Federal funding sources available to implement the DRP.

A combination of funding sources could be used to support County DRP implementation—such as generated revenue (e.g., rates and assessments), grants, loans, agency staff time, services provided by others (e.g., in-kind work, technical or training assistance through a State or Federal agency)—with various agencies and entities involved in securing and administering each source. The availability of these internal and external funding sources will impact the success and timeliness of DRP implementation.

Although access to reliable funding is a hurdle faced by agencies and entities when implementing any program or project, domestic well, LSS, and SSWS owners/operators are the most acutely impacted due to limited staff and reserves, as well as the requirements of the implementing agencies. Agencies and entities may find (1) it is cost- and resource-prohibitive to implement short-term response actions and long-term mitigation strategies and actions by themselves, (2) solutions frequently require participation or involvement of other entities, and (3) it is challenging to prepare for, navigate, apply for, and administer the various local, State, and Federal funding mechanisms that could be available at any given time. These system owners/operators will need assistance and support from the County and other agencies and entities.

Using the STRAs and LTMSAs developed for the County (listed in Sections 4.3 and 5.2, respectively), this DRP investigated and analyzed potential funding sources for implementation, as shown in Table 6-4. The analysis presented in this table will be used as basis for developing future funding strategies and is not a complete/exhaustive list. Note that available funding sources are constantly changing, and funding needs, timing, eligibility, and potential opportunities should be periodically reassessed. Some of these programs are only accessible to public agencies, while others may be available to individuals or small water systems.

Table 6-4. Funding Opportunities and Assistance Programs for Drought Resilience Plan Implementation

Resource	Funding Agency	Description
General Fund	County	The County General Fund includes revenues such as sales and property tax. Use of these funds is discretionary and subject to approval by the Board of Supervisors.
Proposition 4: Safe Drinking Water, Wildfire Prevention, Drought Preparedness, and Clean Air Bond Act of 2024	Multiple State agencies	Major categories with potential support for domestic well, LSS, and SSWS communities include: • Safe Drinking Water, Drought, Flood, and Water Resilience • Wildfire and Forest Resilience • Coastal Resilience
Sustainable Groundwater Management Grant Program (DWR 2025b)	DWR	Provides GSAs with assistance and engagement support for preparation and implementation of GSPs.
Countywide and Regional Funding Program (State Water Board 2025a)	State Water Board	Direct funding to support SSWSs, LSSs, and domestic wells serving disadvantaged communities and low-income households. Community outreach, domestic well testing, and interim and long-term solutions are eligible to receive funds.
Drinking Water State Revolving Fund (State Water Board 2025b)	State Water Board	Fund provides low-cost loans for planning, design, and construction of drinking water improvements to water systems and can be used to support system consolidation.
Technical Assistance Funding Program (State Water Board 2025c)	State Water Board	Provides technical assistance for small, disadvantaged communities to develop, fund, and implement eligible drinking water needs, including system consolidation support.
Clean Water State Revolving Fund (CWSRF) Program (State Water Board 2025d)	State Water Board	Offers low-cost financing for a wide variety of water quality projects. The program has significant financial assets and is capable of financing projects between $1 million and $100 million. The mission is to maintain abundant clean water for human uses and environmental protection to sustain California's future.
Water and Environmental Program (WEP) (USDA 2025)	USDA	Through the Rural Utilities Service Water and Environmental Programs, communities with populations of 10,000 or less can submit for funding support to construct water and wastewater facilities. Such programs could support annexation of SSWS, LSS, and domestic well communities as part of a multi-benefit project led by a WEP eligible public water system.

Resource	Funding Agency	Description
Hazard Mitigation and Building Resilient Infrastructure and Communities (BRIC) Program (FEMA 2025)	FEMA	This program provides funding to states, local governments, and Tribal Nations for long-term hazard mitigation projects that are implemented after a Presidential disaster declaration.

Key:
County = Contra Costa County
DWR = California Department of Water Resources
FEMA = Federal Emergency Management Agency
GSA = Groundwater Sustainability Agency
GSP = Groundwater Sustainability Plan
LSS = Local Small Water System
SSWS = State Small Water Systems
State = State of California
State Water Board = State Water Resources Control Board
USDA = United States Department of Agriculture
WEP = Water and Environment Program

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Contra Costa County
Drought Resilience Plan

FOR DOMESTIC WELL, LOCAL SMALL AND STATE SMALL WATER SYSTEM COMMUNITIES

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