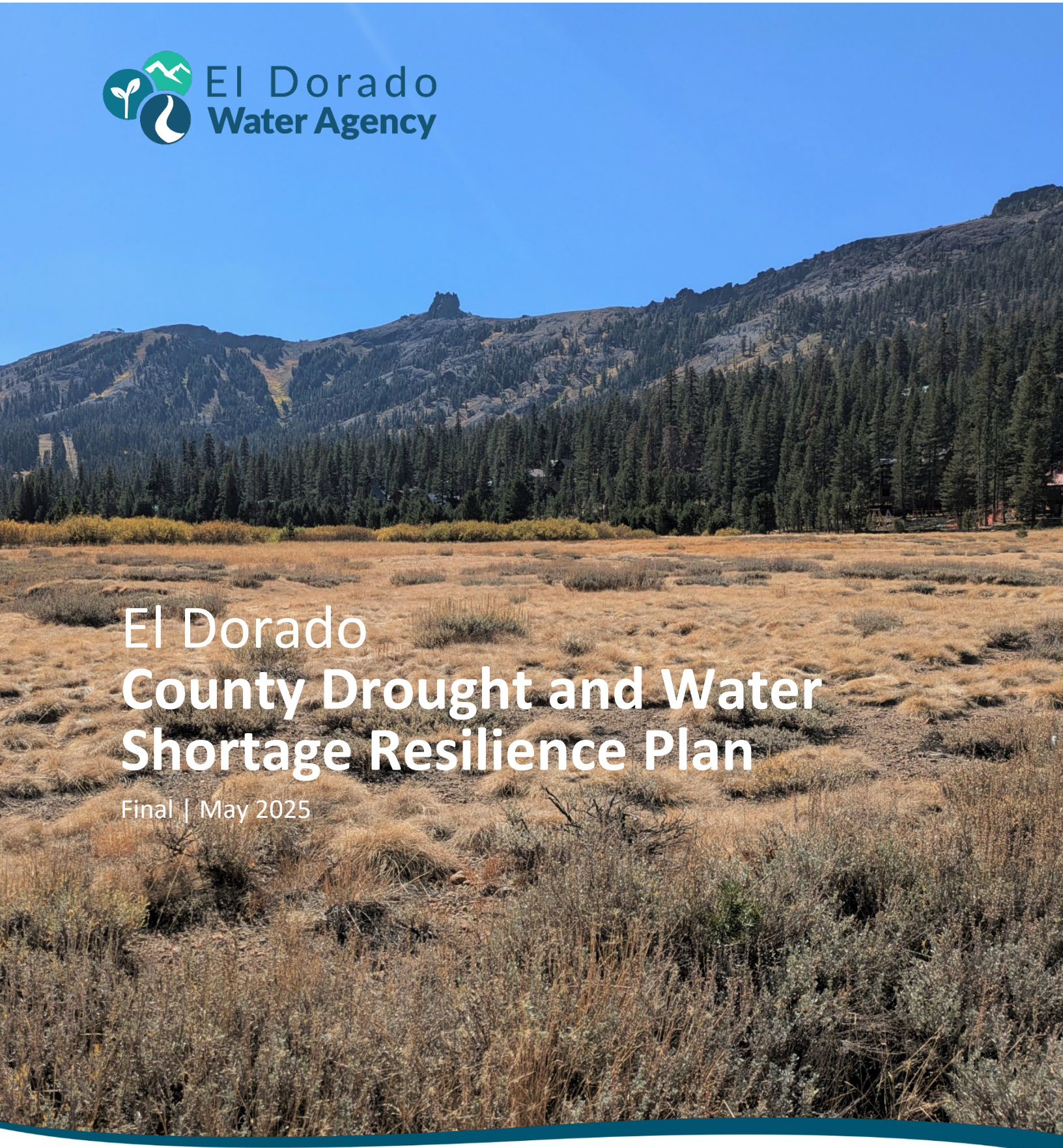
El Dorado Water Agency



El Dorado County Drought and Water Shortage Resilience Plan

Final | May 2025

In collaboration with:

Brown AND Caldwell

Mission Statements

El Dorado Water Agency

Ensure that El Dorado County has adequate and affordable water to maintain economic prosperity, protect the environment, and support the rural-agriculture way of life for today and in the future.

El Dorado County government shall provide efficient, courteous, and effective services and infrastructure for safety, protection, and well-being of our residents, businesses and visitors.

Acknowledgements

The County Drought and Water Shortage Resilience Plan was prepared collaboratively through the contribution of the following groups and individuals.

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Executive Summary

Local entities within El Dorado County are working toward a resilient water future for their communities. Preparedness for drought and water shortage events is a key component for this resilient future and requires taking into consideration El Dorado County's unique local conditions as headwaters within a foothill environment, with both bountiful natural beauty and rural-agricultural communities. The foothill communities have experienced changes in population in recent years, with a steady increase in population between 2019 to 2021 and then a decline from 2021 to 2022 (El Dorado County, 2024a). These communities are continuing to recover from the Caldor, Grizzly Flats, and Mosquito wildfires while also experiencing flooding from atmospheric rivers. El Dorado County has limited surface water storage to capture and hold excess flows, and most of the land area sits atop a fractured rock aquifer which poses a significant challenge for availability of underground water storage. Additionally, climate change may exacerbate existing challenges posed by these local conditions and constraints.

County Drought and Water Shortage Resilience Plan (CDRP) Focus

To better prepare for current and future challenges, the County of El Dorado (County) and El Dorado Water Agency (Agency) have made efforts to set a strong foundation to plan for and meet water resources needs for its many small water systems (SWS) and thousands of domestic wells while stewarding the natural environment. El Dorado County consists of two main areas, the West Slope and Tahoe Basin, as identified in Figure ES-1.

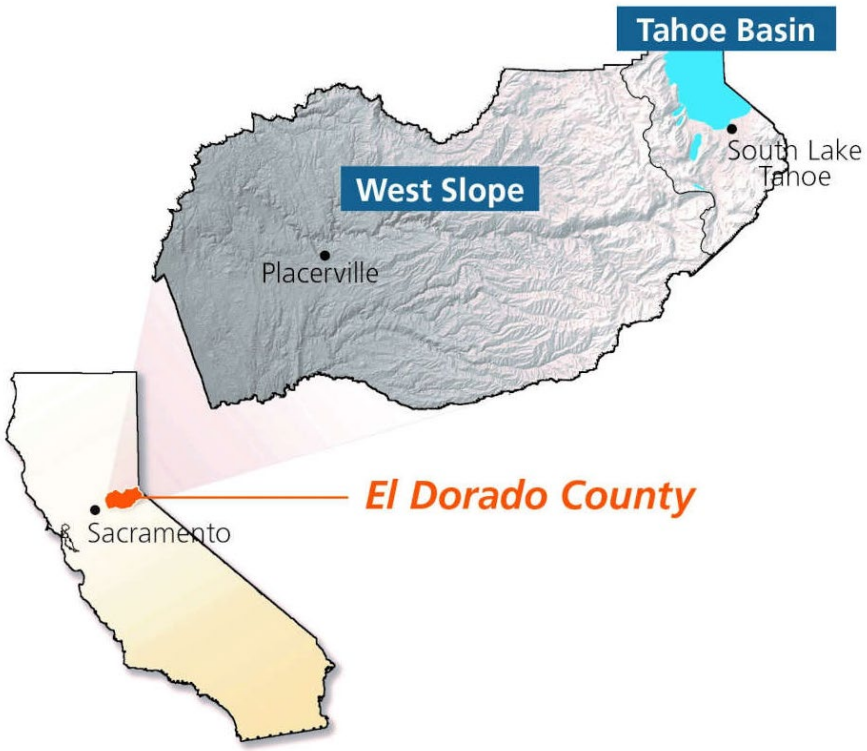

Figure ES-1. West Slope and Tahoe Basin boundaries

The CDRP is a comprehensive plan that helps provide this foundation and works toward achieving the El Dorado County's resilient water future.

These CDRP components support achieving the following objectives:

- Improve small system and domestic well drought and water shortage preparedness in the county to promote the County General Plan's vision.
- Implement proactive drought planning and be better prepared for future water shortage events and dry years.
- Develop a stand-alone CDRP document that is comprehensive and easy to update without having to update multiple sources.

The County requested the Agency to lead development of the CDRP and other county-related SB 552 requirements given the Agency's role as a countywide water resource planning agency and given the Agency's past engagement with DWR in Senate Bill (SB) 552 development and implementation.

Enhancing the Scope of the CDRP to Ensure the Best Drought Preparedness for the Communities

The CDRP fulfills and goes beyond state and county requirements like SB 552 by informing and directing drought and water shortage preparedness actions that are tailored according to local data and needs. It builds on a 50-year legacy of planning and water resources and watershed management implementation, and especially drought and water shortage preparedness within the past decade, as outlined in Figure ES-2.

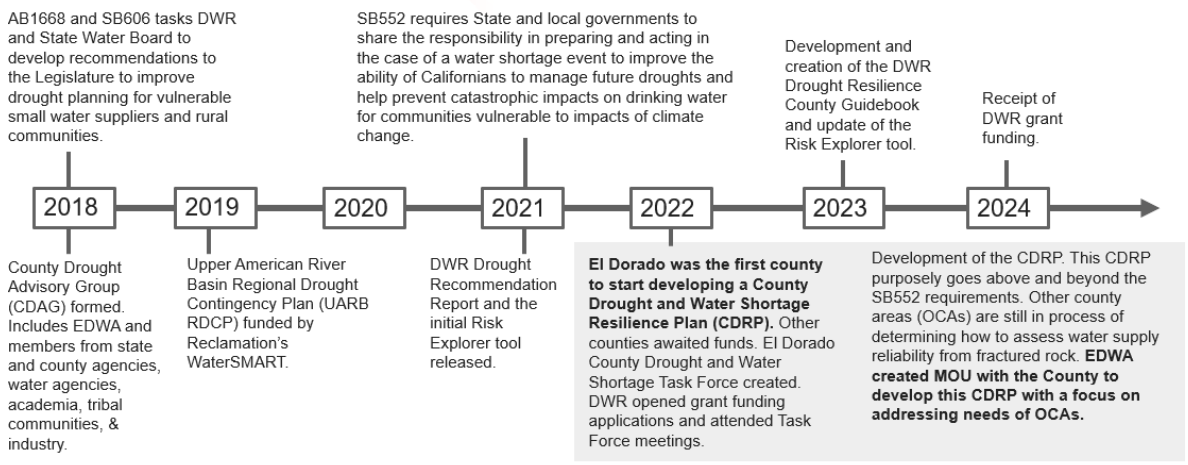

Figure ES-2. Drought and water shortage preparedness planning and milestones since 2018

Under SB 552, counties are only required to address water shortage preparedness for domestic wells and State small water systems (SSWS) (5 to 14 connections). The CDRP includes all SWS, both public and private, which includes those systems that serve up to 2,999 connections. The CDRP includes a custom risk assessment and vulnerability assessment that goes beyond the current Department of Water Resources interactive webtool and vulnerability assessment guidance. The CDRP's assessment approach incorporates more county-specific data and enables a more tailored analysis of local vulnerability of El Dorado County's communities and includes a secondary custom analysis for domestic wells. The risk and vulnerability assessment informs the identification of both short- and long-term drought and water shortage actions, that are then mapped out in an implementation plan.

Carrying out the components of this CDRP included gathering existing data on SWS and summarizing these data into questionnaires for each system. Data collected were further supported by interviews with SWS to gather additional information. A review and analysis of existing domestic well data was undertaken. Combined, the combination of the SWS and domestic well data helped identify vulnerabilities across the county.

El Dorado County Vulnerabilities

The vulnerability analysis provided insight into what systems are vulnerable to drought and water shortages and highlighted in what ways these systems and domestic wells are at risk. The vulnerabilities identified are organized by vulnerability categories: environmental, regulatory and organizational, infrastructure, and social. A high-level summary of these vulnerabilities are:

- **Environmental.** Fractured rock aquifer groundwater resources present water supply reliability risks for many West Slope SWS and domestic wells. High wildfire risks are identified across El Dorado County, and limited data on whether systems are competing with agriculture for use of their water source presents a challenge to understanding shared water stress issues. These combine with a relatively high number of drought years. There are also limited water supply alternatives, which can be an issue for SWS that have had or now have current water quality concerns. This can be an even more acute issue for the SSWS that have no secondary supply.
- **Infrastructure.** Many SWS have no water supply redundancy, and most of these rely on one primary supply. There are very few systems able to receive water transfers, and many that lack monitoring or connection metering. Of the SWS that are missing information, all but one of these are SSWS and the majority are in the Tahoe Basin. For domestic wells, infrastructure was not as high a risk factor, although moderate risk was indicated for wells located outside a Water Purveyor Service Area.
- **Regulatory and organizational.** A fair number (4,500) of SWS connections have a supply dependent upon a water right, which may be susceptible to water curtailments. Additionally, many SWS are not located near a major transportation corridor and may have difficulty obtaining bulk water. The majority of these rely on wells and are in the West Slope. For domestic wells, there are pockets of moderate to high risk of the ability to obtain bulk water.
- **Social.** Although there are only 31 SWS systems located in an area categorized as disadvantaged or severely disadvantaged, these systems account for 6,000 connections. Twelve of these systems are in severely disadvantaged areas in the Tahoe Basin.

Short- and Long-term Actions

This CDRP identifies vulnerabilities to support and inform actions for the short- and long-term and provides context to help guide their implementation. Many of these actions require coordination between the Agency and the County, and a number of these include direct support and coordination with SWS and domestic well owners. In summary, these actions included the following priority actions for the short-term for both SWS and domestic wells:

- **Emergency Potable Water Supply.** Maintain (and possibly expand) water filling station locations, support water trucking and bulk water hauling, purchase packaged or bottled water.
- **Planning and Assistance.** Implement a streamlined well permitting system during drought or water shortage events, more frequent County Drought and Water Shortage Task Force (Task Force) coordination, support and assist with funding opportunities for emergency water supply, and distribute emergency communication templates.

For the long-term, prioritized actions include:

- **Water Supply.** Drill new wells or deepen existing ones.
- **Water System Infrastructure.** Install reserve tanks, update water system infrastructure, and install standby generators.
- **Water Conservation.** Encourage and implement water conservation measures.
- **Data/Information.** Update the County website with drought resources.
- **Planning and Assistance.** Develop and maintain drought preparedness or Water Shortage Contingency Plans; develop a streamlined well permitting system (to support use during periods of water stress as well as normal water supply conditions).

For all actions above, responsible entities who would complete these actions are identified in Figure ES-3 and in Chapter 4 Implementation Plan of the CDRP.

Implementation Plan

The implementation plan, as shown on Figure ES-3 and as presented in the CDRP, provides the sequence of these priority actions and identifies which of the actions, especially short-term, are activated by drought and water shortage triggers.

Financial and Technical Support Findings

In developing the CDRP, several discussions were held between the Agency and other key agencies to take a deeper dive into identified policy and regulatory issues. Delving into resources for SWS and domestic wells (and particularly resources for schools), identified two key gaps in currently available financial and technical support, and in current regulations for dry well reporting:

- Schools seeking support for water supply issues, that are not in a disadvantaged community (but may have other vulnerability factors), may not be eligible for funding for programs such as the Drinking Water for Schools program.
- Adhering to the County Ordinance and California Health & Safety Code[1] currently allows no buffer time for well owners who report a dry or non-functioning domestic well to seek interim solutions before their parcels are deemed uninhabitable and can result in a lack of dry well reporting.

[1] Refers to the El Dorado County Ordinance Code
Title 9 - PUBLIC PEACE, MORALS AND WELFARE, CHAPTER 9.02. - CODE ENFORCEMENT, Sec. 9.02.510. - Substandard housing enforcement and the Health and Safety Code - HSC, DIVISION 13. HOUSING, PART 1.5. REGULATION OF BUILDINGS USED FOR HUMAN HABITATION, CHAPTER 2. Rules and Regulations 17920.3.

Next Steps

The findings from the risk and vulnerability assessment provide insight into what systems are at risk to impacts from drought and water shortage across a variety of factors. The CDRP presents these and recommended actions to support greater drought and water shortage resilience for SWS and domestic wells across the county. The next step for the CDRP is for the Agency to continue coordination with the Task Force and especially the County in carrying out the implementation plan starting with the identified low regret actions (low-cost, high-priority actions which provide great benefits), and putting the implementation monitoring and evaluation schedule into effect.

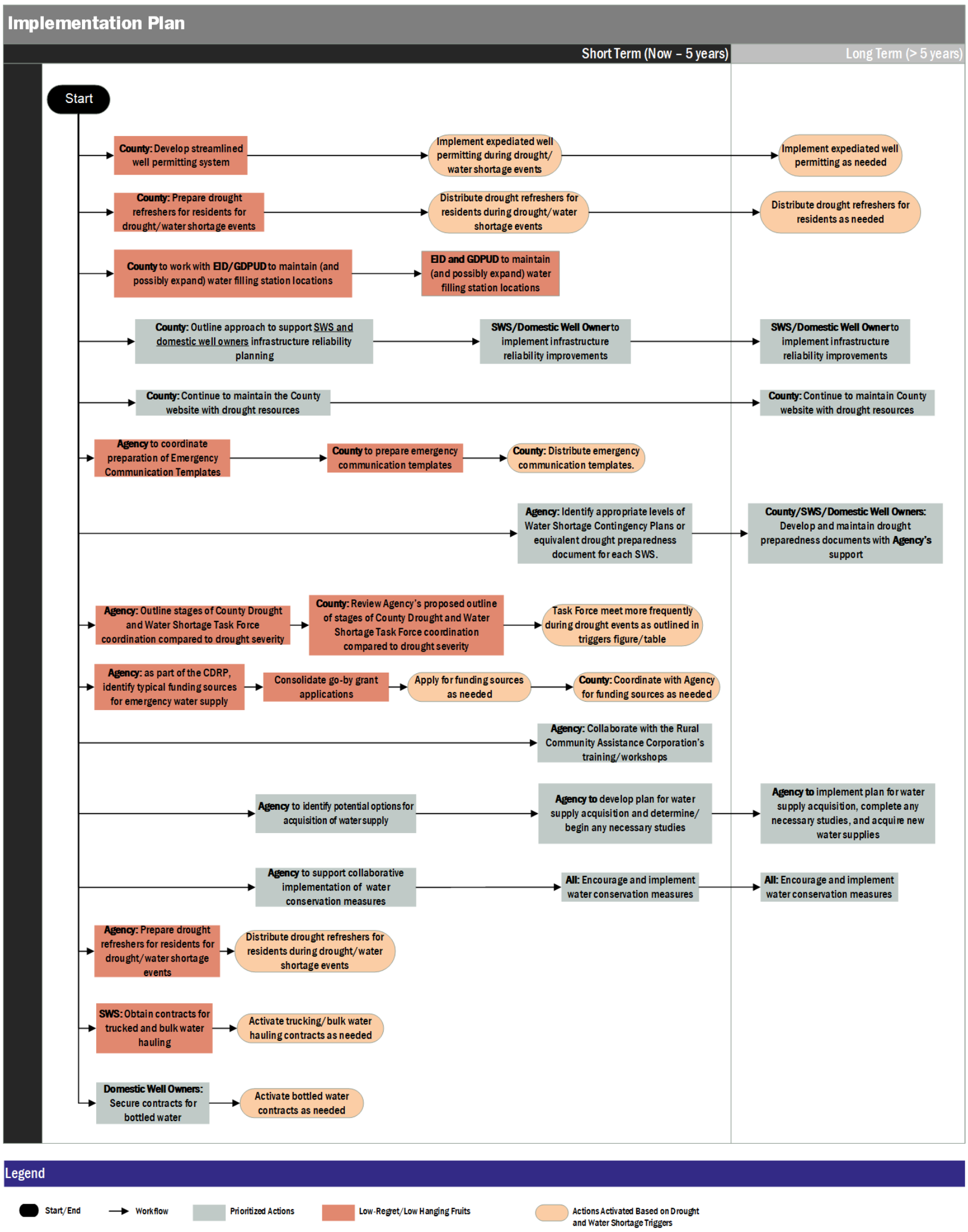

Figure ES-3. Implementation plan overview

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Abbreviations and Acronyms

AF	acre-feet
Agency	El Dorado Water Agency
ARBS	American River Basin Study
CAL FIRE	California Department of Forestry and Fire Protection
CDAG	County Drought Advisory Group
CDRP	El Dorado County Drought and Water Shortage Resilience Plan
CFR	Code of Federal Regulations
Charter	County Drought and Water Shortage Task Force Charter
County	County of El Dorado
CPUC	California Public Utilities Commission
CWC	California Water Code
DDW	Division of Drinking Water
DWR	California Department of Water Resources
eAR	Electronic Annual Report
EID	El Dorado Irrigation District
EMD	County Environmental Management Department
FEMA	Federal Emergency Management Agency
Guidebook	County Drought Resilience Plan Guidebook
GDPUD	Georgetown Divide Public Utility District
GFCSD	Grizzly Flats Community Services District
GIS	geographic information system
GMP	Groundwater Management Plan
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IPG	implementation program goals
IRWM	Integrated Regional Water Management
LTRA	Lake Tahoe Restoration Act
LPA	Local Primacy Agency
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
MOU	Memorandum of Understanding
NC	non-community
NTNC	non-transient non-community

O&M	operation and maintenance
OCA	Other County Area
OES	Office of Emergency Services
PSPS	public safety power shutoffs
PWA	public water agency
PWP	Programmatic Watershed Plan
RCAC	Rural Community Assistance Corporation
RDCP	Regional Drought Contingency Plan
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
RMS	resource management strategy
SAFER	Safe and Affordable Funding for Equity and Resilience
SB	Senate Bill
SDWIS	Safe Drinking Water Information System
SGMA	Sustainable Groundwater Management Act
SSWS	State small water system
State Water Board	California State Water Resources Control Board
STUPD	South Tahoe Public Utility District
SWS	Small Water System
Task Force	El Dorado County Drought and Water Shortage Task Force
TVGB	Tahoe Valley Groundwater Basin
UARB	Upper American River Basin
USDA	United States Department of Agriculture
West Slope	El Dorado County area west of the Sierra Nevada Crest
WRDMP	Water Resources Development and Management Plan
WSCP	Water Shortage Contingency Plans
WWD	Water and Waste Disposal

1 Introduction

1.1 Purpose

The El Dorado County Drought and Water Shortage Resilience Plan (CDRP) works to improve drought and water shortage preparedness for all small water systems (SWS) and domestic wells in El Dorado County and promotes the vision of the County General Plan. The CDRP also fulfills requirements under Senate Bill (SB) 552 that requires counties, small water suppliers, and schools to prepare for and take action in case of water shortage events.

The CDRP also supports the El Dorado Water Agency's (Agency) overall mission to "Ensure that El Dorado County has adequate and affordable water to maintain economic prosperity, protect the environment, and support the rural-agriculture way of life for today and in the future." (Agency, 2024). In fulfilling this mission, the CDRP considers the unique nature of the local communities and natural resources to provide useful information and guidance that are relevant and supportive of local needs.

The CDRP provides an understanding of available information on SWS and domestic wells and identifies drought and water shortage vulnerabilities within the county. The results presented in the suggested actions of this CDRP serve as a key reference for water shortage and drought planning now and into the future. A variety of informational resources are provided in the appendices to help SWS and domestic well users become more self-resilient. Key takeaways are provided in each section to help clearly identify information that can benefit SWS and domestic wells.

1.2 Background

In June 2018, the passage of Assembly Bill 1668 and SB 606 represented the beginning of a new paradigm in California for water conservation and drought planning. Among other things, this legislation tasked the California Department of Water Resources (DWR) and the State Water Resources Control Board (State Water Board) to develop recommendations to the Legislature to improve drought planning for vulnerable small water suppliers and rural communities.

1.2.1 Drought Planning in El Dorado County

The Agency and County of El Dorado (County) have been proactive in drought planning to ensure countywide long-term water supply reliability in the entire county, including both sides of the Sierra Nevada in the Tahoe Basin and the West Slope foothill area. As part of this drought planning, relevant plans of various stakeholders were considered during the development of the CDRP:

- **County General Plan.** The El Dorado County General Plan (County, 2004) provides long-range policy for land use in the El Dorado County and provides mechanisms through which the County can focus and make decisions on areas of local concern. The General Plan describes a vision and goals for the county, which espouse striving to maintain rural character, balancing considerations for environment and growth, maintaining the quality of the living environment,

and providing adequate infrastructure, all while conserving lands and natural resources. The County's rural character is based on a tradition of conserving and appreciating the beautiful and abundant natural landscape in combination with continued stewardship of these resources. Maintaining forest health and local resource lands is important for local and regional economies, especially as it concerns crop production, recreation, tourism, and watershed management. The General Plan emphasizes careful management of watershed areas to support local economies. It is assumed within the General Plan that additional water supplies will be needed to support population growth.

- **Water Resources Development and Management Plan (WRDMP).** The Agency developed its first WRDMP in 1993 to outline its strategy and actions for water resources development and management in the county. Its 2007 update brought forth some emerging issues such as climate change. The 2014 update, which was limited to the West Slope water use demand only, was updated in 2019 to reevaluate and adjust Agency focus in future investments and its associated roles and responsibilities. The 2019 updated WRDMP connects the identified water resources-related challenges in the County General Plan with the Agency's implementation programs. It does this using an array of resource management strategies (RMS), which represent strategic directives that may mitigate identified challenges through integrated and coordinated efforts of all responsible parties. The 2019 WRDMP was updated in 2024. Relevant vision and background information from the 2024 WRDMP were incorporated into the CDRP. Additionally, relevant RMS were identified within Chapter 3 of this CDRP.
- **Upper American River Basin Regional Drought Contingency Plan.** The Agency and the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), in collaboration with Tribes, public water purveyors, land use agencies, and environmental interests in the West Slope of El Dorado County developed the Upper American River Basin Regional Drought Contingency Plan (UARB RDCP; Agency, 2023b) to improve long-term water resiliency to drought and expand mitigation planning to what is termed the Other County Area (OCA) which is not currently served by public water purveyors; the OCA consists of areas served by SWS and individual self-supply users with domestic wells. Most residents in OCA rely on the West Slope's shallow groundwater supplies from low-yield, unreliable fractured rock aquifers that is considered an unreliable water supply source for large-scale use due to their limited capacity and uncertainty surrounding these fractured bedrock formations. Additionally, existing infrastructure does not allow for much exchange of water supplies between the public water agencies and those in the OCA. The SWS are particularly vulnerable due to the lack of data and drought planning. The UARB RDCP was funded by Reclamation's WaterSMART program and the Agency's non-federal cost share. The UARB RDCP implements the RMS 7 Improve Drought Preparedness and Responses from the 2019 WRDMP and complements public water agency-specific water shortage contingency plans.
- **Strategic Plan.** The 2016—2020 and 2021—2025 Strategic Plans (Agency, 2020) provide goals and objectives to guide Agency activities and provide information on partnerships to foster water resilience, the mission and values, and challenges and opportunities. The 2021-2025 Strategic Plan builds from the 2019 WRDMP, and prioritizes the Agency's implementation of programs, projects, and initiatives. Improving drought preparedness is part of the County's resilient water future and directly connects to the 2019 WRDMP Water Resources Management Challenge C2 Vulnerability During Droughts as well as several RMS, including RMS 7. The 2021—2025 Strategic Plan also identifies five Implementation Program Goals (IPG), and highlights

water supply and drought planning efforts as a focal point of the Agency's IPG2 Water Security Goal.

- **Multi-Jurisdictional Hazard Mitigation Plan (MJHMP).** The Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), developed in collaboration with cities and special districts, evaluates risks from natural hazards affecting the county, including floods, drought, wildfires, severe weather, and more. For this CDRP, an identified long-term mitigation action is to update the MJHMP and incorporate relevant aspects of the CDRP into the next MJHMP update.
- **Climate Vulnerability Assessment.** The County Climate Vulnerability Assessment (County, 2023a) evaluates the various vulnerabilities of climate change and hazards (increased temperatures, prolonged drought, extreme levels of precipitation and severe heavy snow events, widespread flooding, landslides, and larger and more severe wildfires) which impact county assets. As described in Section 1.8, the County Climate Vulnerability Assessment can incorporate the drought and water shortage vulnerabilities and solutions identified in this CDRP into the next update.

1.2.2 Senate Bill 552

SB 552, signed by Governor Newsom and enacted into law in September 2021, requires State and local governments to share responsibility in preparing for and acting in the case of a water shortage event. The purpose of this is to improve the ability of Californians to manage future droughts and help prevent catastrophic impacts on drinking water for communities vulnerable to impacts of climate change. SB 552 outlines the new requirements for small water suppliers, SSWS, domestic well communities, county governments, DWR, and the State Water Board to implement more proactive drought planning and be better prepared for future water shortage events or dry years. In this context, the following definitions are applicable:

- Per California Water Code (CWC), "small water supplier" means a community water system serving 15 to 2,999 service connections, inclusive, and that provides less than 3,000 acre-feet (AF) of water annually (CWC Section 10609.51(k)).
- "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 year-long residents of the area served by the system, as defined in Health and Safety Code Section 116275(i).
- "State small water system" means a system that provides piped water to the public for human consumption that serves at least five, but not more than 14, service connections and does not 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 Health and Safety Code Section 116275(n) and per CWC Section 10609.51(m).
- "Domestic well" means 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 Health and Safety Code Section 116275(n) and CWC Section10609.51(d).
- "Non-transient non-community water system" means 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 Health and Safety Code Section 116275(k).

Counties

More specifically, SB 552 (CWC Section 10609.70) requires counties to set up a standing drought and water shortage task force to facilitate drought and water shortage preparedness for SSWS and domestic wells within the county's jurisdiction. Each county must also develop a plan that demonstrates the potential drought and water shortage risk and proposed interim and long-term solutions for its SSWS and domestic wells. Both of these requirements may be implemented as part of other existing committees and/or planning processes. Additional requirements include:

- Counties must solicit task-force membership from representatives of state and other local governments, including groundwater sustainability agencies (GSAs), community-based organizations, local water suppliers, and local residents.
- The County Drought and Water Shortage Mitigation Plan must consider:
    - Consolidations for existing water systems and domestic wells
    - Domestic well drinking water mitigation programs
    - Provision of emergency and interim drinking water solutions
    - An analysis of the steps necessary to implement the plan
    - An analysis of local, state, and federal funding sources available to implement the plan

This CDRP goes beyond the current SB 552 county requirements by including all SWS as well as the required SSWS and domestic wells identified in the SB 552 requirements.

Small Water Suppliers and Schools Non-Transient, Non-Community (NTNC) Water Systems

All small water suppliers and NTNC water systems that are schools are required by SB552 to:

1. Implement drought resiliency measures (subject to funding availability by January of the specified year):
    a. Implement monitoring systems sufficient to detect production well groundwater levels by 2023.
    b. Maintain membership in the California Water/Wastewater Agency Response Network (CalWARN) or similar mutual aid organization by 2023.
    c. Ensure continuous operations during power failures, provide adequate backup electrical supply by 2024.
    d. Have at least one backup source of water supply, or a water system intertie, that meets current water quality requirements and is sufficient to meet average daily demand by 2027.
    e. Meter each service connection and monitor for water loss due to leakages by 2032.
    f. Have source system capacity, treatment system capacity if necessary, and distribution system capacity to meet fire flow requirements by 2032.

2. Complete an abridged Water Shortage Contingency Plan or equivalent (drought element added to Emergency Notification or Response Plan)
    a. Community water systems 1,000-2,999 connections and NTNC water systems that are schools are required to complete an abridged Water Shortage Contingency Plan
    b. Community water systems 15-999 connections are required to complete the alternative (drought element added to Emergency Notification or Response Plan)
3. Report annually on the water supply and demand conditions to the State Water Board

State Government

SB552 also identifies the responsibilities for both the State Water Board and DWR to support small water suppliers and counties in avoiding and mitigating drought impacts, and to better prepare for and respond to water shortage events:

1. Create a Water Shortage Contingency plan template for the small water suppliers serving 1000-2999 service connections and NTNC water systems that are schools.
2. Offer technical assistance for water suppliers with under 1,000 connections for the implementation of drought and water shortage resiliency measures and requirements related to the emergency notification or response plan.
3. Facilitate and support annual water supply and program reporting
4. Technical assistance for counties to address systems with under 15 connections and domestic wells
5. Maintain and update the Water Shortage Vulnerability Tool (which includes but is not limited to refining and gathering new data on small water suppliers, NTNC water systems that are schools, SSWS, and domestic wells).
6. Establish a standing Interagency Drought and Water Shortage Task Force
    a. To facilitate proactive state planning and coordination, both for pre-drought planning and post-drought emergency response
    b. To develop strategies to enhance collaboration between various fields; and to develop these plans, responses, and strategies in a way that considers all types of water users.
    c. Membership must include representatives from local governments, community-based organizations, nonprofit technical assistance providers, the public, and experts in land use planning, water resilience, and water infrastructure

Support for Counties

Additionally, the state board is to work with counties, groundwater sustainability agencies, technical assistance providers, nonprofit organizations, community-based organizations, and the public to provide:

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

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

1.2.3 Recent Droughts and Water Shortage

Recent droughts and water shortages severely impacted the county. The gravity of the situation is best captured by the 2024 Water Resources Development and Management Plan (WRDMP, p.23):

> *Despite the improvements, the increasing frequency and severity of extreme conditions continue testing the limits of water management throughout the state. California experienced two back-to-back severe droughts in 2012-16 and 2020-22, both with record-breaking persistence and intensity that stressed and overwhelmed the Sacramento and San Joaquin Rivers system. While the larger water purveyors in the county had sufficient water stored in their local reservoirs to meet customer demand, some smaller water systems and domestics wells had springs and groundwater wells run dry. Furthermore, under emergency drought declarations during these two droughts, the SWRCB implemented unprecedented curtailments of senior water rights and statewide mandatory water conservation that impacts communities throughout the state including El Dorado County.*

The CDRP must consider what can cause these droughts as well as water shortage and how El Dorado County can be safeguarded. Challenges that can impact water supply and result in water shortages considered in this CDRP are:

- Climate change – reduced precipitation, increased temperatures and demands
- Water quality and contamination issues
- SWRCB curtailments and statewide mandatory conservations
- Fractured rock aquifer supply uncertainty and wells and springs going dry, exacerbated by a general lack of water supply redundancies, inability to receive water transfers, and disadvantaged communities of old age or vehicular access to pick up bulk water or access to water filling stations.
- Wildfire-induced water quality degradation/power shutoffs for safety/infrastructure damage and destruction.
- Groundwater level decline.
- Loss of water supply due to distribution system leaks and lack of monitoring
- Lack of drought planning to combat above challenges

For climate change considerations, Reclamation's American River Basin Study (ARBS) projected that climate change through 2100 will reduce snowpack in the County because of more precipitation falling as rain instead of snow. Additionally, heightened temperatures will increase urban outdoor and agricultural water needs. Most importantly, the seasonal precipitation distribution will shift. The runoff midpoint[2] may shift from March to between 30 and 35 days earlier in the mid- and end-of-century projections, which could result in "flashier" hydrology (less frequent but more intense rainfall events)

[2] Runoff midpoint occurs when 50 percent of the total annual runoff has occurred.

that could overwhelm the existing facilities that were designed for operation based on the historical hydrology (Reclamation, 2022).

With these drought and water shortage challenges outlined, this document's purpose is clear. The CDRP aims to shore up the available data, identify which areas are most vulnerable and address vulnerabilities with actionable items, determine avenues for funding, and provide technical support resources.

1.3 El Dorado County Drought and Water Shortage Task Force

The Agency and County recognize the importance of having a regionally accepted and implementable CDRP to create a lasting and significant improvement in drought resilience for SWS and domestic wells. Lessons learned in past droughts suggest that a locally driven planning process will identify unique challenges and needs, focus attention on priorities, and encourage a more equitable response. To create this type of CDRP, extensive collaboration was needed from a wide range of local entities that may be affected by drought. Therefore, to facilitate drought and water shortage preparedness for SWS throughout El Dorado County through proactive planning and coordination, the Agency formed the El Dorado County Drought and Water Shortage Task Force (Task Force) to serve as the forum for collaborative discussions related to drought and water shortage conditions, regulatory requirements, updates and implementation, and potential funding opportunities for water shortage actions.

The Task Force Charter (Charter) was established in 2022 that provides the purpose and goals of the Task Force while also referencing relevant SB552 background and language, membership, roles and responsibilities, as well as attendance and meeting schedule (see Charter in Appendix A).

The Task Force includes core members who provide countywide water resources planning and oversight and are responsible for implementing the county planning requirements of SB 552. Core Task Force members are expected to:

- Review current drought conditions using tools provided by the U.S. Drought Monitor and state agencies, identify drought-related issues that will impact county residents, and develop actionable solutions to address identified problems.
- Provide support during SB 552 implementation to meet regulatory compliance, including the development of the CDRP for SSWS and domestic wells.
- Disseminate Task Force findings and recommendations to the community and County Board of Supervisors.

The Task Force also includes advisory members who are relied on for information and input related to drought conditions, SWS needs, and potential response actions. Advisory Task Force members are expected to:

- Provide current water supply conditions, data, and feedback, when applicable, to support water shortage preparedness and response in El Dorado County.
- Disseminate Task Force findings/recommendations to the community and, when applicable, its customers.

The Task Force provided valuable insight into the CDRP development. The Task Force participated in multiple meetings to provide input on the drought and water shortage risk assessment, development of short-and long-term actions, and the implementation plan.

Both the Agency and El Dorado County Environmental Management Department (EMD) have specific roles that have particular importance to the facilitation of the Task Force and with key programs that have high relevance for SWS and domestic wells in the county. The Agency, in maintaining consistency with its Memorandum of Understanding (MOU) (County, 2018) with the County, facilitates Task Force meetings and provides the venue for discussions related to SB 552 support and implementation. El Dorado County EMD upholds state mandates for the Local Primacy Agency (LPA) Program, with its specific duties including:

- Maintaining water supply permits and water system inventory
- Conducting sanitary surveys and providing written reports
- Reviewing and overseeing compliance with water quality monitoring
- Managing data for El Dorado County and State (Safe Drinking Water Information System, SDWIS)
- Tracking and reviewing Electronic Annual Reports and Consumer Confidence Reports
- Enforcement and tracking compliance

EMD also maintains specific relevant functions within its Water Well Program including determining eligibility for new well construction, reviewing and approving or denying well permit applications, conducting site inspections, and ensuring well production and completion reports are submitted.

1.4 Geographic Location

El Dorado County is in northeast California, extending to the Nevada border, and includes the cities of South Lake Tahoe and Placerville. El Dorado County's diverse landscapes includes a portion of the Tahoe Basin located on the east of the Sierra Nevada Crest and the vast West Slope foothill area (West Slope) to the west. The Agency's responsible area covers the entire county, as shown in Figure 1-1.

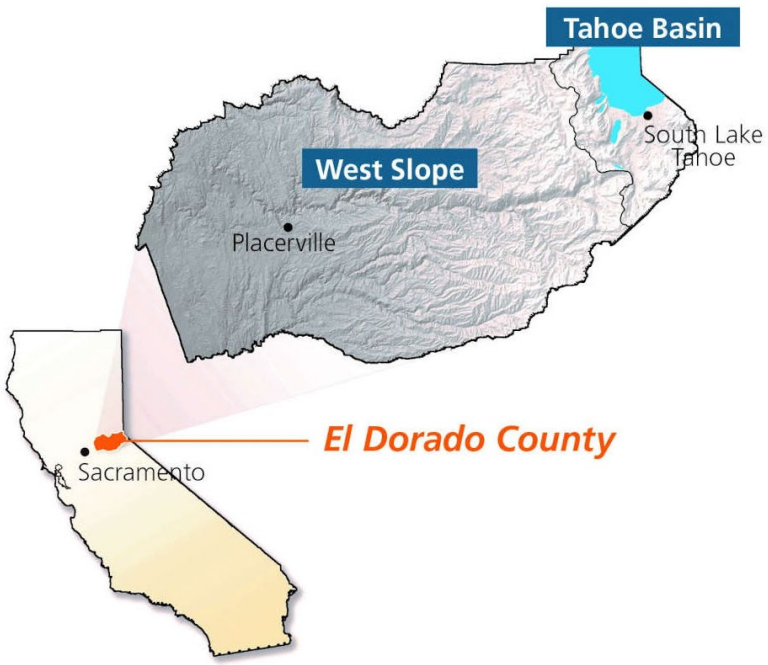

Figure 1-1. West Slope and Tahoe Basin boundaries [3]

The West Slope is located to the west of the Sierra Nevada Crest and contains a diverse landscape of national forests, headwaters, and primarily rural-agricultural surroundings with some urbanization. Most of the high-density urban development is concentrated in areas adjacent to Sacramento County and along Highway 50. It also includes sections of the Cosumnes River and upper American River watersheds. Snowpack is the primary water source in the West Slope where there are no major water storage reservoirs. Shallow groundwater supplies from low-yield, fractured rock aquifers make the West Slope's groundwater basin an unreliable water supply source because of the limited capacity and uncertainties of the fractured bedrock formations.

The Tahoe Valley Groundwater Basin (TVGB), located to the east of the Sierra Nevada Crest, includes cities such as South Lake Tahoe and has unique governance and ecological sensitivities. A key basin feature is Lake Tahoe, which has an approximate area of 192 square miles and surface elevation partially controlled by the Lake Tahoe Dam at the discharge to the Truckee River. All of its surface water is from precipitation, mostly as snowmelt. The TVGB's primary water supply source for most communities is groundwater from the established TVGB, which is located within the Lake Tahoe watershed around the lake and to the south under the Upper Truckee River. The TVGB is divided into three subbasins: South, West, and North. The primary groundwater sources in the TVGB are fluvial, glacial, and lacustrine basin fill deposits overlying bedrock and recharging predominantly through snowmelt infiltration, with some recharge occurring through stream seepage (South Tahoe Public Utility District [STPUD], 2019). Consequently, the TVGB has a more reliable water source and is less susceptible to extended droughts, though small public water systems could be adversely affected, such as through temporary water supply losses.

1.5 Sustainable Groundwater Management Act (SGMA)

In general, counties often only have one department that is designated as the enforcing agency, although there are cases in which responsibilities are shared with cities or local water agencies. Counties are encouraged, however, to coordinate with cities and local water agencies to support consistency in how standards are regulated and enforced. Efforts made through the Task Force identified in Section 1.3 support this coordination across El Dorado County, its cities, and local water agencies. This coordination also includes the local GSAs. Per requirements under SGMA, both STPUD and the Agency serve as the GSAs for the Tahoe South Subbasin (Tahoe Basin) and are members of the Task Force.

The SGMA of 2014 requires local groundwater sustainability agencies (GSA) to develop and implement groundwater sustainability plans (GSP) or Alternatives to GSP (CWC Section 10727). Alternatives to GSP include an existing groundwater management plan (GMP) (CWC Section 10733.6(b)). The STPUD, which is an authorized GSA within the meaning of CWC Section 10753(a), applied its 2014 Tahoe Valley South Subbasin GMP to meet GSP requirements. The GMP's goal is to manage, protect, and conserve the groundwater supplies available to STPUD and other water users so they remain a viable potable water source and are efficiently and beneficially used (STPUD, 2014).

[3] Source: WRDMP24 (Agency, 2024)

1.6 El Dorado County SWS

To address the concerns discussed in the UARB RDCP, this CDRP will address all SWS and domestic wells within the region. This goes beyond the SB 552 requirement, which only requires addressing water shortage preparedness for SSWS and domestic wells.

El Dorado County currently has 136 active SWS which include community, noncommunity (NC), non-transient noncommunity (NTNC), and SSWS, as shown on Figure 1-2.

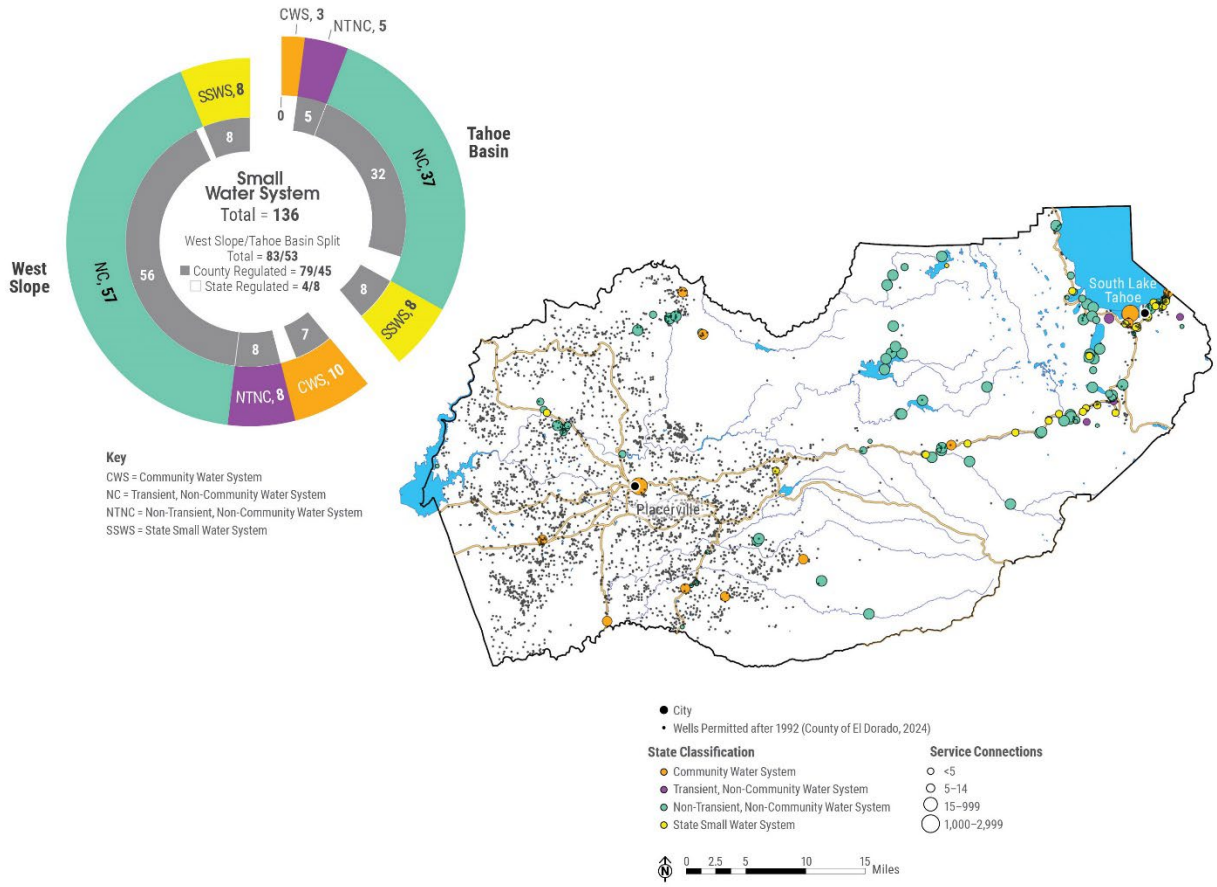

Figure 1-2. Map of SWS in El Dorado County by service type[4]

Table 1-1 classifies the SWS by number of service connections and type. Of those water systems, 40 have specific requirements under SB 552. In Appendix B, Tables 1, 2, and 3 list the SWS with specific SB 552 requirements and Table 4 lists the remaining SWS in El Dorado County.

[4] Source: WRDMP24 (Agency, 2024)

Table 1-1. Number of SWS by Number of Service Connections and Type

Number of Service Connections	Community Water Systems	NC Water Systems	NTNC Water Systems	State Small Water System	Total
1,000 to 2,999	2[a]	0	0	N/A	**2**
15 to 999	11[a]	46	1[b]	N/A	**58**
5 to 14	N/A	18	6[b]	20[a]	**44**
Less Than 5	N/A	30	2	N/A	**32**
Total	**13**	**94**	**9**	**20**	**136**

[a] Responsible for adhering to specific SB 552 requirements.
[b] Non-transient non-community systems that are schools are responsible for adhering to specific SB 552 requirements. Five of the seven NTNC systems are schools.

1.7 El Dorado County Domestic Wells

The County is home to thousands of domestic wells. EMD records suggest there are currently about 5,600 active wells within the county (Agency, 2024). These domestic wells are defined in CWC Section 1060951(k) as a groundwater well that is used to provide water for domestic needs of a residence or water system that has less than five service connections and is not a public water system. Since 1977, drilling for domestic wells within the county has been limited to parcels that have at least 4.5 acres. Since the adoption of the 2004 General Plan, this limitation has been adjusted to at least 5 acres (Agency, 2024). Production wells under city and local water agency jurisdiction often serve urbanized areas and are under water conservation requirements from 2018 Legislation (AB 1668 and SB 606). Residences, farms, ranches, and businesses located outside of major water purveyor jurisdictions often rely on domestic wells or other small water systems for consumptive use (Agency, 2024).

The local enforcing agency within El Dorado County is the El Dorado County EMD (as mentioned in Section 1.3), which is charged with carrying out well permitting and enforcement. EMD has authority to regulate construction, alteration, and destruction of these wells and has authority to adopt local well ordinances. These ordinances must meet or exceed standards as provided by California Well Standards in DWR Bulletins 74-81 and 74-90.

Within the Tahoe Basin, domestic wells and SWS are at risk of water shortage during drought and in the case of other factors that may occur with extreme weather conditions, such as power shutoffs. In the West Slope, wells draw from fractured rock aquifers. Water storage in these areas is unreliable and is not recognized as a groundwater basin in California due to lack of permeable materials (Agency, 2024). This supply source (i.e., fractured rock aquifers) presents additional challenges for ensuring continuous, reliable water supply and contributes to the vulnerability of domestic wells to water shortage in this area.

1.8 Consistency with Senate Bill 552

DWR has drafted the County Drought Resilience Plan Guidebook (Guidebook) in coordination with the State Water Board and the California Governor's Office of Emergency Services (OES), as a resource for California counties to meet their SB 552 requirements.

The Task Force complies with CWC Section 10609.70. The Agency volunteered and was selected to be a part of a small group of counties to help develop the Guidebook. This CDRP conforms with the Guidebook. Table 1-2 presents a brief overview of the SB 552 requirements and the corresponding CDRP section that addresses that requirement.

Table 1-2. SB 552 Requirements and Respective CDRP Sections

CWC Section	SB 552 Requirement	CDRP Section that Covers Requirement
10609.70 (a)	Establish a standing county drought and water shortage task force or alternative process that facilitates drought and water shortage preparedness for SSWS and domestic wells.	Section 1.3 El Dorado County Drought and Water Shortage Task Force
10609.70 (b)	Assess potential drought and water shortage risk.	Section 2. Drought and Water Shortage Risk Assessment
10609.70(b)(3)	Provide emergency and interim drinking water solutions in the county drought and water shortage risk mitigation plan (plan).	Section 3. Short- and Long-term Actions
10609.70(b)(1)	Consider consolidations for existing water systems and domestic wells in the plan.	Section 3. Short- and Long-term Actions
10609.70(b)(2)	Consider domestic well drinking water mitigation programs in the plan.	Section 3. Short- and Long-term Actions
10609.70(b)(4)	Consider an analysis of steps to implement the plan.	Section 4. Implementation Plan
10609.70(b)(5)	Consider an analysis of local, state, and federal funding sources available to implement the plan.	Section 5. Technical and Financial Assistance

1.9 Intended Use of this CDRP

This CDRP is meant to be a stand-alone, comprehensive, and easy-to-update document that does not require having to update multiple sources. The CDRP provides guidance and resources for drought and water shortage resilience applicable to the foothill way of life and the County's unique characteristics. It supports improving drought preparedness for SWS and domestic wells in El Dorado County and promotes the vision of the County General Plan. Supporting preparedness is based on implementation of proactive drought planning and the ability to be better prepared for future water shortage events or dry years through practical measures and actions. CDRP content also supports maximizing funding opportunities and support from local, state, and federal agencies to the greatest extent possible and as available.

Various County departments and entities responsible for implementing this CDRP may select portions of this document, as applicable to their service area's connections, and incorporate them by reference into their existing plans, such as the MJHMP, Emergency Operations Plan, Climate Vulnerability Assessment, or General Plan.

1.10 Document Organization

This document is organized in seven sections as follows:

- **Chapter 1: Introduction** – provides an overview of the key background information for this CDRP's development, including information regarding requirements to be met in fulfilling SB 552. The chapter also provides insight into the plan's intended use and general workflow.
- **Chapter 2: Drought and Water Shortage Risk Assessment** – describes the methods for conducting a risk and vulnerability assessment to understand drought and water shortage risks within the county and especially for SWS and domestic wells. This chapter also provides the foundational evidence to inform the selection of short- and long-term drought and water shortage mitigation actions.
- **Chapter 3: Short-term and Long-term Actions** – identifies and provides insight into potential short-term actions recommended by the CDRP that help respond to drought and water shortage impacts while supporting greater future preparedness and potential long-term actions recommended to be taken before the next future drought and water shortage to prevent and prepare for impacts.
- **Chapter 4: Implementation Plan** – identifies and provides guidance on the timing for preparing and implementing priority short- and long-term drought and water shortage actions. This includes identifying which entities are recommended to work together toward achieving these actions, and why.
- **Chapter 5: Technical and Financial Assistance** – discusses technical and financial resources available to SWS and domestic wells. Further details on specific resources are provided in Appendix F.
- **Chapter 6: Conclusion** – summarizes key takeaways and next steps.
- **Chapter 7**: **References** – provides a summary of references used in the CDRP's development.

CDRP appendices are as follows:

- **Appendix A** – El Dorado County Drought and Water Shortage Task Force Charter
- **Appendix B** – List of Active El Dorado County Small Water Systems
- **Appendix C** – Small Water System Questionnaire
- **Appendix D** – Data Used in Development of Risk Factors
- **Appendix E** – Water Haulers List
- **Appendix F** – Resources for Domestic Wells
- **Appendix G** – Water Shortage Contingency Plan Template for Schools

2 Drought and Water Shortage Risk Assessment

A drought and water shortage risk assessment is critical to understanding potential vulnerabilities and to analyze the risk of a drought or water shortage occurrence. In the case of this CDRP, this assessment helps inform how to best prepare for and, where possible, mitigate adverse impacts to local communities relying on SWS and domestic wells.

Identifying vulnerabilities equips counties with information that can and should be used to develop response plans to meet short-term needs and to develop long-term mitigation strategies and actions that reduce the need for future short-term emergency response actions (DWR, 2023).

2.1 Risk Assessment Approach

The risk assessment incorporates a custom approach that draws inspiration from the DWR vulnerability assessment and further leverages locally available data, including data collected from extensive outreach efforts. This approach has been reviewed by the Task force and resulted in the identification of 11 common factors and seven County-specific factors. The most recent Task Force risk assessment reviews were at Task Force meetings held October 14 and November 19, 2024.

Temperature and wildfire factors leverage locally available data (American River Basin Study and Cal Adapt). Additionally, factors that were not applicable (sea level rise) or that lacked locally available data (subsidence, source monitoring), or that were more applicable to larger utilities (distribution outage record, rate last updated, rate type, supplier size), were filtered out. El Dorado County-specific factors were added to capture unique foothill community challenges, such as evaluating the difficulty of obtaining bulk water, the potential for consolidation, institutional instability, social vulnerability scores, and disadvantaged communities.

Note that the risk assessment and planning offered in this plan does not replace the more structured regulatory requirements outlined in the Federal Emergency Management Agency (FEMA) Local Mitigation Planning Handbook (FEMA, 2013). However, these requirements are met by the County's MJHMP. As such, El Dorado County is eligible for FEMA's Pre-Disaster Mitigation and Hazard Mitigation Grant programs.

The frequency and severity of drought and water shortage occurrences vary for each event. Where and how people are impacted depends on a combination of hydrological, environmental, and social factors. As a result, each drought and water shortage occurrence poses different risks (DWR, 2023). To identify and define these risks, the risk assessment process included the following six steps:

1. **Gather existing data on SWS** – Information sources included scanned documents from the County EMD, such as water supply permits and inspection reports, and State Water Board's 2020 Electronic Annual Report (eAR).
2. **Summarize data into questionnaires, including the following topics** – Infrastructure, water supply, water demands, emergency drinking water solutions, and long-term drought or water shortage planning.

3. **Interview SWS representatives to gather additional information** – Eight SWS representatives showed interest to share experience and were interviewed to discuss past, current, and potential future issues and further information on their respective water systems.
4. **Review and analyze domestic well data –** Information from the El Dorado County well database (as of May 2024) included information on permit type and completion date, along with parcel number, address, depth, and pumping rate.
5. **Conduct a vulnerability assessment with existing data and information gathered during the interview process** – Risk factors were developed and used to evaluate systems based on available data and information. The evaluation informs potential drought and water shortage vulnerabilities of the county's SWS and domestic wells.
6. **Identify vulnerabilities to inform actions** – Vulnerabilities were determined as a result of the assessment to advise drought and water shortage short-term response and long-term mitigation actions.

2.2 Existing Data on SWS

Existing SWS data used for this assessment was collected from the County's EMD and State Water Board's 2020 eAR.

2.2.1 eAR and EMD Data

The County's EMD has a non-digital repository of information about its SWS at its Placerville and South Lake Tahoe offices. Files for 97 SWS were scanned and relevant information was used. The files typically included documents such as water quality emergency notification plans, water system inspection reports, bacteriological and chemical water sample reports, and domestic water supply permits.

The eAR is a public water system survey that collects critical water system information for purposes such as assessing regulatory compliance, updating contact and inventory information, and informing the financial capacities of water systems (DWR, 2022). California Health and Safety Code Section 116530 requires public water systems to submit a technical report to the California State Water Resources Control Board's Division of Drinking Water (DDW) when requested. DDW has established a requirement for every public water system under DDW jurisdiction or Local Primary Agency jurisdiction (i.e., County Environmental Health Departments) to annually submit a technical report specifying contact and operational information for the prior calendar year.

Valuable information is taken from the annual report to help all California water utilities implement the Safe Drinking Water Act. The eAR was first implemented with large water systems in 2009 and was followed by a significant increase in the number of annual reports by public water systems in 2010. There are separate surveys for large and SWS based on a system size cutoff of 1,000 service connections or 3,000 population (DWR, 2022). 2020 eAR data from the State Water Board eAR Data Library was downloaded for 123 SWS in El Dorado County, one of which included a SSWS. Note that not all systems had an EAR report; also note that only public water systems are required to report to the DWR. When provided by the system, the eAR information included population served, number of potable water connections, long-term drought and water shortage resilience improvements made and/or planned, sensitivity to climate change threats, and climate change adaption strategies.

2.2.2 Questionnaires

EMD and eAR data were then put into questionnaires that summarized critical information for each SWS that could be used to assess their drought and water shortage risks such as information on current water infrastructure, water supply sources, water demands, emergency drinking water solutions, and long-term drought or water shortage planning. An online survey was also provided to SWS as an additional voluntary outreach effort that supported gathering more information to provide more complete questionnaire data.

A summary of the questionnaire components and a copy of the questionnaire template are provided in Appendix C. Table 2-1 summarizes major findings from the questionnaires.

Table 2-1. SWS Summary Information and Major Findings

Small Water System Information	Description	Major Findings
General Information		
Water System Use	E.g., residential area, recreation area, school, etc.	The most common systems (37 systems) were recreation areas. Residential areas were the next most common water system use (28 systems).
Water System Ownership	Type of agency that owns the water system (e.g., local government, privately owned mutual water company or association, etc.)	Of the 108 systems that specified, about 33% were privately owned businesses. State or federal government was the next most common ownership (about 27%).
Infrastructure		
Maximum Hours System Can Maintain System Pressure in All Pressure Zones by Backup Power or Gravity Fed Storage During Power Outages	Maximum time the system can maintain pressure during power outages.	Of the 44 systems that specified, all could maintain pressure in the system for up to 72 hours.
Water Supply		
Water Supply Source	E.g., well, spring, etc.	Of the 134 systems that specified, about 76% of water systems had wells as their primary source and approximately 69% had no alternate sources.
Water Quality Issues	Potential issues include bacteriological (e.g., total coliform) or chemical levels (e.g., nitrates) in water supply samples above state or federal regulations.	Of the 28 systems that indicated issues in the past, about 93% involved total coliform.

Small Water System Information	Description	Major Findings
Emergency Drinking Water Solutions		
Water Quality Emergency Notification Plans	In the case of a water quality emergency, the plan outlines methods to contact water users (e.g., door-to-door contact, written handout sheets, etc.).	Though systems have these plans, many do not have this documented within EMD's recording system.
Long-Term Drought or Water Shortage Planning		
Drought Threat	Sensitivity levels to droughts include none to low, medium, high or already experiencing.	Of the 14 systems that specified, 50% indicated none to low sensitivity, and about 43% indicated medium sensitivity to droughts, except for one system[a] which indicated high sensitivity or already experiencing.
Climate Change Adaptation Measures	Measures include installing new and deeper drinking water wells, interconnections with other supplemental water suppliers, fire prevention, etc.	Of the 11 systems that identified adaptation measures, the implementation status varied with many being completed (about 43%).
Long-term Improvements Made/Planned to Increase System's Drought or Water Shortage Resiliency	E.g., establishing interties, etc.	All improvements made/planned (7 systems) focused on maintenance and aging infrastructure rather than drought or water shortage adaptation. However, updating aging infrastructure could also provide resilience for water shortage and is included as one of the long-term mitigation actions.

a. Grizzly Flats Community Services District

2.2.3 Interviews

To conduct a comprehensive risk assessment and develop a broad drought resilience plan to meet the SB 552 requirements, the Agency reached out to the 20 SWS identified in the county through phone calls, email communications, and distributing surveys to identify the struggles and/or concerns of the SWS based on which the Agency could determine strategies to improve the SWS' reliability and drought resilience. Eight SWS participated in in-person/remote interviews and shared their concerns, thoughts, and experience based on previous conditions and their observations. These SWS included:

- Bear State Water Works
- Kyburz Mutual Water System
- Lakeside Park Association
- Lukins Brothers Water Company

- City of Placerville
- Quintette Service Corp Water
- Strawberry Trt 1-6, 36-38
- Tahoe Keys Water Company

Interviewees expressed a wide range of concerns for their systems. Supply related concerns included water supply shortages and the lack of secondary or additional supply sources. Water quality was also mentioned, as well as failing infrastructure. Concerns regarding emergency and interim drinking water solutions can be directly related to issues arising where no secondary supply source is established. Maintaining power during power outages through auxiliary sources arose as another concern, funding, and potential water curtailments, which may become a more prominent issue during future drought events, were other issues. How to implement SB 552 and what this will look like for SWS rounded out the range of concerns.

2.3 Existing Data on Domestic Wells

The County well database (as of May 2024) includes information on permit type and completion date, as well as parcel number, address, depth, and pumping rate. The well data was exported as an Excel spreadsheet and geocoded according to address. It is important to note that this data is representative of currently existing, electronically documented well data starting in 1993. The dataset does not include all domestic wells within the County.

2.3.1 Well Permitting Data

The database's well and permit types (permitting program/element) were aggregated into three permitting categories (new well construction, well deepen/modify/repair/re-construction, and well deconstruction/removal). As shown in

Table 2-2 below, there are significantly more well construction (2,890 wells) than well deepening/modifications (541 wells), and more deepening/modifications than deconstructions (97 wells).

Table 2-2. Existing Domestic Well Permitting Data

Permitting Category (as shown on Figure 2-1)	Permitting Program/Element (per GIS/Excel export)	Well Count in Permitting Program	Well Count in Permitting Category
New Well Construction	4320 – New well construction permit	2,890	2,890
Well Deepen/modify/repair/re-construction	4321 – Well deepen/modify/repair/re-const. permits	418	541
	4323 – Well re-construction permits	23	
	4322 – Well destruction permits	235	97

Permitting Category (as shown on Figure 2-1)	Permitting Program/Element (per GIS/Excel export)	Well Count in Permitting Program	Well Count in Permitting Category
Well Destruction/removal (only used in Well Permitting Trends Figure 2-1)	4399 – Well destruction or dry well	33	
Not Categorized/Filtered out	Various program elements. See below.	197	
Total Well Permitting Category Count		**3,725**	

2.3.2 Well Permitting Trends

Well constructions, modifications, and deconstructions are plotted on Figure 2-1 using well permit categories. Overall trends, such as areas of constructions/modifications, zone of inactivity, and South Tahoe deconstructions, were noted. Figure 2-2 provides well depth data of the county. Shallow wells are denoted in blue and deep wells are shown in red.

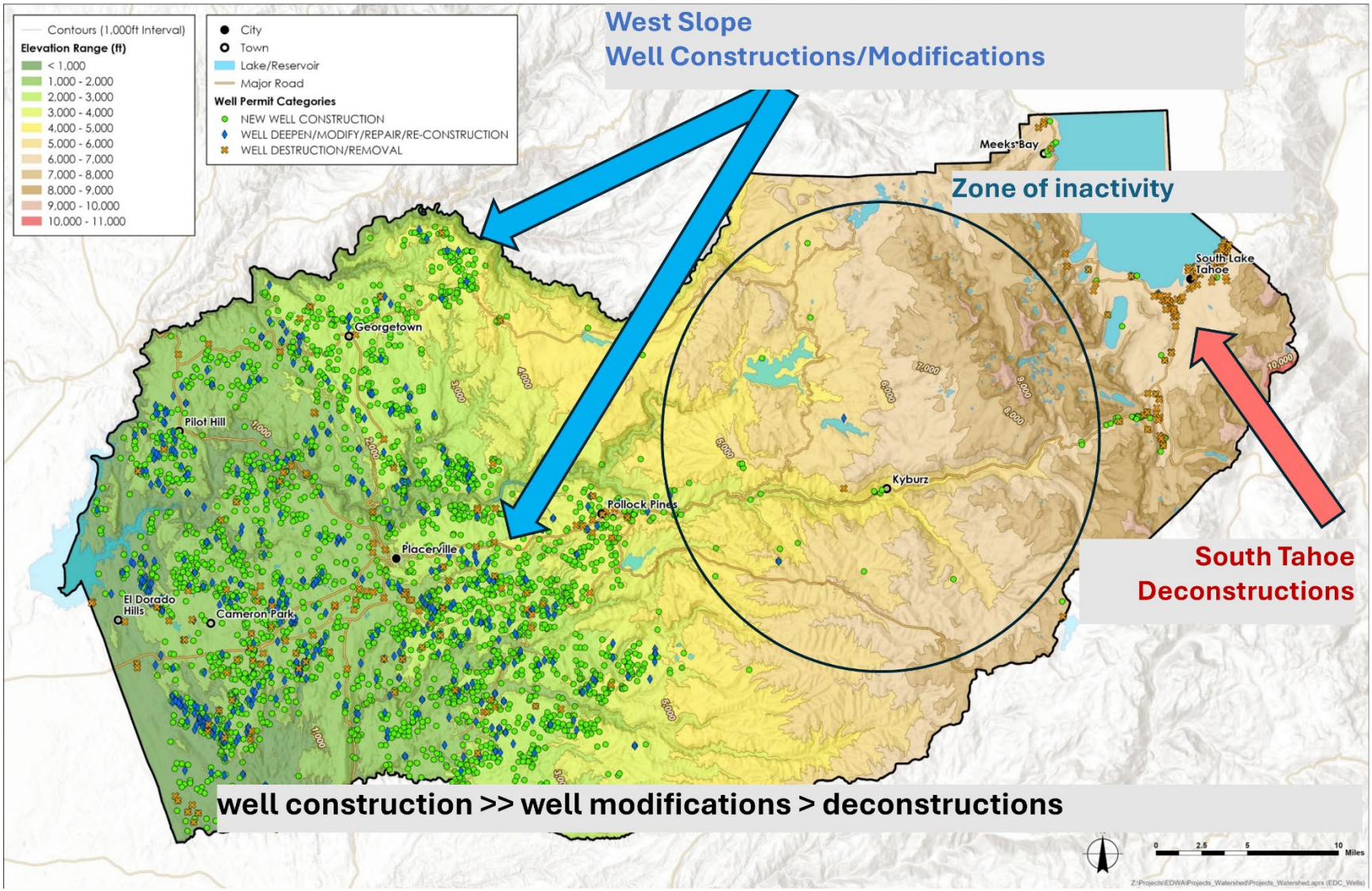

Figure 2-1. Well permitting trends

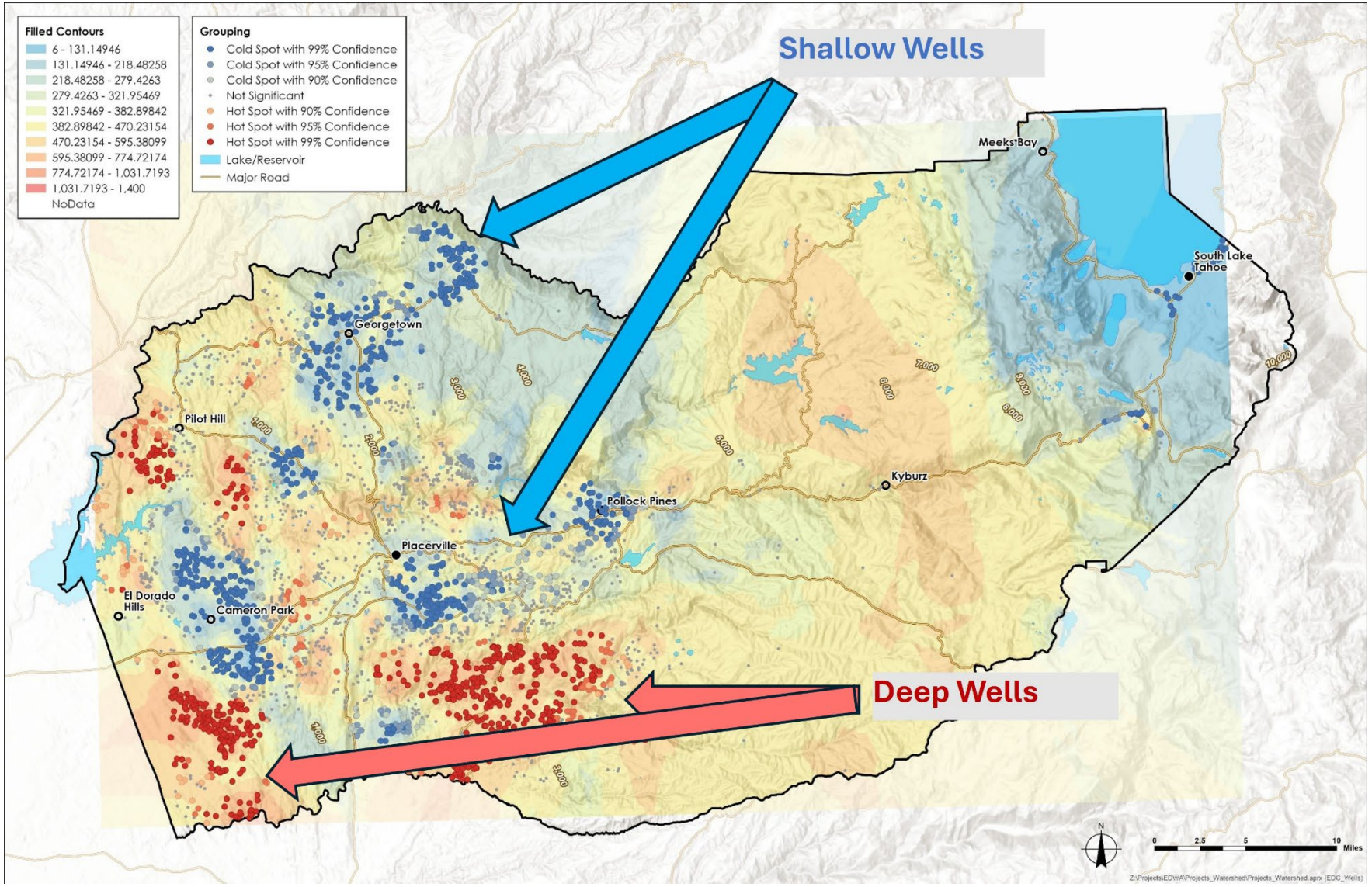

Figure 2-2. Well depth

Existing well data presented in this section was leveraged to understand general areas where risks for drought and water shortage may be present. The dataset does not represent all wells within the county but provides general direction when overlayed and analyzed with other, risk-related data. The results of that analysis are provided in Section 2.6.

2.4 SWS Vulnerabilities

Drought and water shortage risks for each SWS were determined using a vulnerability assessment method tailored for El Dorado County small systems. This assessment supports understanding the current state of drought resilience and was applied to each of the 136 SWS within El Dorado County.

To form this complete understanding, a list of drought and water shortage vulnerability risk factors was compiled based on review of existing data. These factors were refined with Task Force input and organized into four vulnerability categories: environmental, infrastructure, regulatory and organizational, and social. Across all categories there is a total of 18 risk factors that may hinder a system's ability to provide water supply, meet water demand under stress, and continue functioning under conditions of drought or water shortage stress conditions. These factors were weighted and used to assess all SWS across the Tahoe Basin and West Slope. This section explains the risk factor development and the results of the SWS vulnerability evaluation.

2.4.1 Risk Factors Development

To form the assessment, data was reviewed for an initial list of 32 identified risk factors. This data is summarized in Appendix D and includes resources such as the American River Basin Study analysis, Cal-Adapt, Agency interactive GIS data layers, California Department of Forestry and Fire Protection's (CAL FIRE) Fire Hazard Severity Zones, Utilities Fire Threat Areas (CPUC), California Water Watch (DWR Vulnerability Tool), well permit data and well completion reports, EMD data, County Planning and Building Department, California Natural Resources Agency (CNRA) Statewide Crop Mapping, County Drought Advisory Group (CDAG), Davids Engineering and ERA Economics (Agricultural Development Feasibility Report), eAR data (questionnaire), SDWIS, public water agency (PWA) infrastructure layer, eWRIMS, Google Maps, and the State Water Resources Control Board's (SWRCB's) Division of Financial Assistance.

This list of 32 was later reduced to 18 risk factors and weighted based on input from the Task Force and Agency. Shortlisting involved removing multiple risk factors were removed to reflect available data, and in some cases factors that were similar were combined to avoid double counting and to ensure a holistic and varied assessment (e.g., "Projected Agricultural Development in the Service Area" and "Service Area Contains Agriculture" became "Competing Demand on Water Use"). Risk factors were initially evenly weighted but were assigned uneven weights based on Task Force members' input. This input considered the importance of the consequence and frequency of each risk factor occurring as part of these assigned weights. For each of the risk factors, high impact factors (H) were assigned half of the weight, medium impact factors (M) were assigned one third, and low impact factors (L) were assigned one sixth. The weights were also split by the West Slope and Tahoe Basin regions to allow specified weighting based on geographic differences, as shown in Table 2-3.

Table 2-3. Weights assigned to individual vulnerability risk factors for Tahoe Basin and West Slope

Location	Individual Vulnerability Weights																	
Tahoe Basin Weights	0.20	0.30	0.10	0.10	0.10	0.10	0.00	0.10	0.30	0.30	0.20	0.20	0.27	0.18	0.27	0.27	0.50	0.50
West Slope Weights	0.17	0.25	0.08	0.17	0.08	0.17	0.08	0.00	0.43	0.14	0.14	0.29	0.29	0.29	0.14	0.29	0.50	0.50
Tahoe Basin Priorities	M	H	L	L	L	L	NA	L	H	H	M	M	H	M	H	H	M	M
West Slope Priorities	M	H	L	M	L	M	L	NA	H	L	L	M	M	M	L	M	M	M
	Temperature Increase Expected	**High Wildfire Risk**	**Population Growth**	**High Drought Susceptibility**	**Competing Demand on Water Use**	**Reported Water Quality Concerns**	**Fractured Rock Aquifer Dependent**	**Declining Groundwater Levels**	**Lack of Water Supply Redundancy**	**Inability to Receive Water Transfers**	**Limited Potential for Physical Consolidation**	**Lack of Monitoring**	**Water Curtailment Potential**	**Difficulty of Obtaining Bulk Water**	**Institutional Stability**	**Lack of Drought Planning**	**High Social Vulnerability Score**	**Located in a Disadvantaged Community**

H = High impact factor; assigned half of the weight
M = Medium impact factor; assigned one third of the weight
L = Low impact factor; assigned one sixth of the weight

Risk factors were grouped into four categories: Environmental, Infrastructure, Regulatory and Organizational, and Social Vulnerabilities. The final list of 18 risk factors is shown in Table 2-4.

Table 2-4. El Dorado County SWS Vulnerabilities

Vulnerability Category	Risk Factors
Environmental	• Temperature Increase Expected • High Wildfire Risk • Population Growth • High Drought Susceptibility • Competing Demand on Water Use • Reported Water Quality Concerns • Fractured Rock Aquifer Dependent • Declining Groundwater Levels
Infrastructure	• Lack of Water Supply Redundancy • Inability to Receive Water Transfers • Limited Potential for Physical Consolidation • Lack of Monitoring
Regulatory and Organizational	• Water Curtailment Potential • Difficulty of Obtaining Bulk Water • Institutional Stability • Lack of Drought Planning
Social	• Located in a Disadvantaged Community • High Social Vulnerability Score

The collected data was then used to assess the susceptibility of each system with respect to each identified risk factor. Each system was assigned a rating from 1 to 5 for each of the 18 risk factors, with 1 indicating low vulnerability and 5 indicating high vulnerability. Figure 2-3 provides an example; the full criteria list is provided in Appendix D.

Risk Factor	1	2	3	4	5
Environmental Vulnerabilities					
Temperature Increase Expected	Temperature increase between 3.21° and 3.27°C	Temperature increase between 3.28° and 3.34°C	Temperature increase between 3.35° and 3.40°C	Temperature increase between 3.41° and 3.47°C	Temperature increase between 3.48° and 3.53°C
High Wildfire Risk	Decadal wildfire probability between 0.01 and 0.12	Decadal wildfire probability between 0.13 and 0.24	Decadal wildfire probability between 0.25 and 0.36	Decadal wildfire probability between 0.37 and 0.48	Decadal wildfire probability between 0.49 and 0.60
	Located in a Moderate Fire Hazard Severity Zone		Located in a High Fire Hazard Severity Zone		Located in a Very High Fire Hazard Severity Zone
	Not located in a Utilities Fire Threat Area		Located in a Tier 2 Utilities Fire Threat Area		Located in a Tier 3 Utilities Fire Threat Area
High Drought Susecptibility	0 Dry Years	1 Dry Year	2 Dry Years	3 Dry Years	4-5 Dry Years

Figure 2-3. Example of risk factor criteria from "Environmental Vulnerabilities" category

After each system was scored, weights were assigned to each factor. Each system was then assigned an intermediate score for each vulnerability category, calculated by taking the summed product of individual vulnerability weights and scores within that category. To obtain the final score for each system, the summed product of vulnerability category weights and vulnerability category intermediate scores was taken, which provided a final weighted score for each system. Figure 2-4 shows equations that provide a basis for determining each system's overall vulnerability scores.

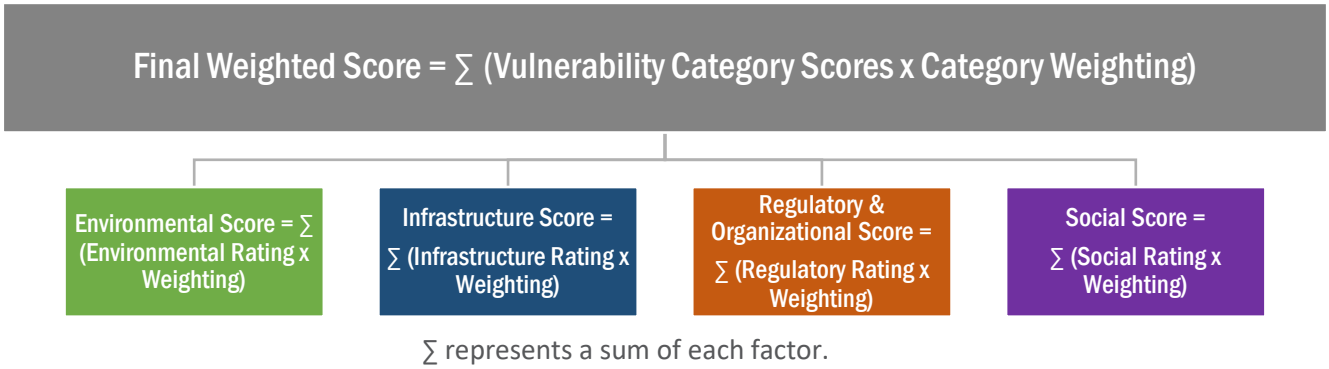

Figure 2-4. Equation for final weighted vulnerability scores

These scores were leveraged to determine where areas of higher and lower risk occur and enabled the creation of risk scores for each SWS. The scores by risk factor and the final vulnerability scores were documented in the risk assessment matrix and used to group the 136 systems from most at risk to least at risk. Figure 2-5 provides a visual of the contents for the risk matrix.

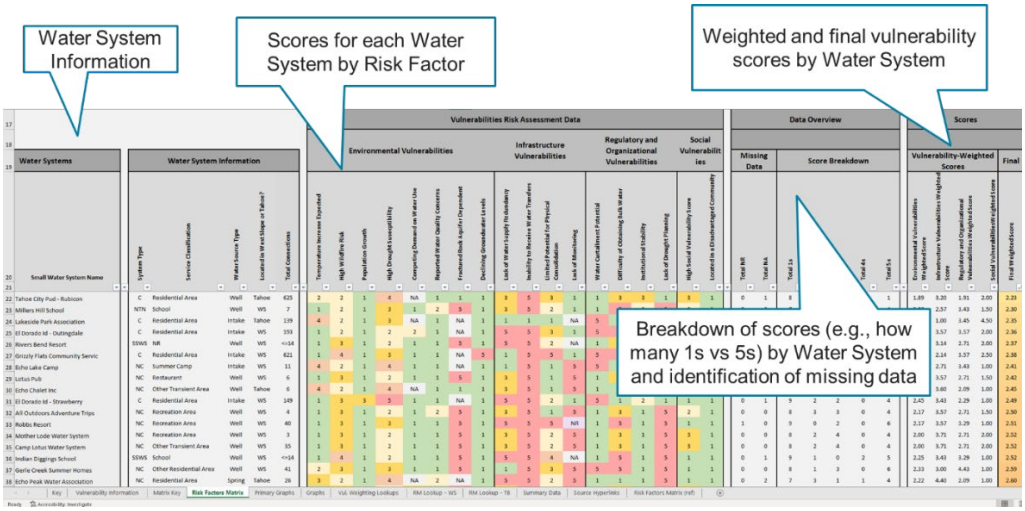

Figure 2-5. Risk assessment matrix with callouts for key components

The risk assessment matrix was used to analyze and identify which risk factors contribute to greater vulnerability across SWS in El Dorado County (high risk factors), understand differences between vulnerabilities in the West Slope and the Tahoe Basin, and identify patterns in what types of systems tend to have the same kind of vulnerabilities. This information was analyzed and is presented in the evaluation results in the next subsection. The organization of this information in the risk assessment matrix also provides an informational baseline to inform what types of actions are recommended for short- and long-term drought and water shortage resilience planning.

2.4.2 Evaluation Results

Results documented in the risk assessment matrix provide insight into which risk factors contribute to greater drought and water shortage vulnerability across the county. High risk factors were identified based on the percentage of total SWS with values of 4 or 5 as shown in Figure 2-6. However, High Wildfire Risk, Reported Water Quality Concerns, and Located in a Disadvantaged Community factors include values of 3 to better capture high risk systems (a high fire hazard safety zone was given a score of 3, SWS which currently have water quality issues with their secondary supply or is delinquent on water quality reporting/testing were also given a score of 3, and disadvantaged communities were given a score of 3). For more information, see Appendix D which lays out all the risk factors data and definitions of 1 through 5 values.

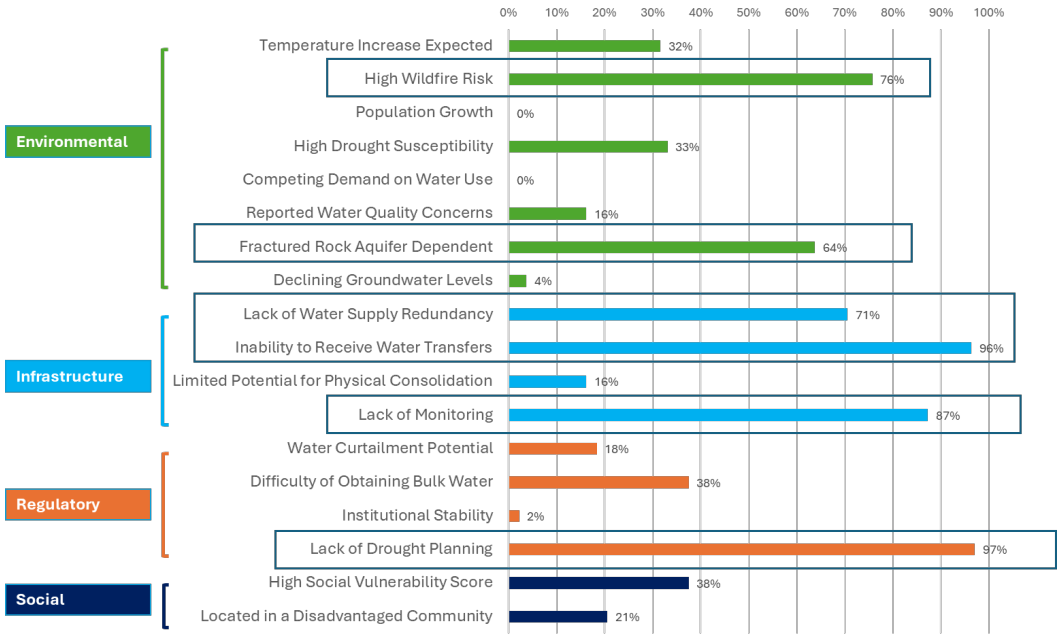

Figure 2-6. High risk factors based on percentages of higher value risk scores

The highest percentages of risk scores fall within the infrastructure risk factors, specifically the lack of water supply redundancy, inability to receive water transfers, and lack of monitoring/connection metering. These point to general issues of many systems across the County that rely on one water supply source with limited ability to receive water from other sources and limited ability to monitor supply reliability and consumption. The highest environmental risk factor is fractured rock aquifer dependency. This risk factor further highlights issues with water supply reliability, especially for those systems relying primarily or solely on groundwater from fractured rock aquifer areas.[5]

Within regulatory risk, the highest scores are found in the lack of drought planning, given how few systems already have a drought or water shortage plan in place. Although the High Social Vulnerability Score sits at just 38 percent of 4s or 5s, this translates to approximately 6,000 connections impacted. Sections 2.4.2.1 through 2.4.2.5 will delve into these high risk vulnerabilities, their impacts, and the considerations for potential actions.

[5] Fractured rock aquifers have limited storage capability and "[b]ecause of the complex distribution of fractures in almost every type of rock, no single method can unambiguously map fractures and their capacity for fluid movement" (USGS, 2002, p.1).

2.4.2.1 Environmental

Table 2-5 describes the environmental risk factors, impacts, and considerations for potential actions based on the results of the risk assessment.

Table 2-5. Environmental Risk Factor Results Summary

Risk Factors[a]	Impacts	Considerations for Potential Actions
Fractured Rock Aquifer Dependent	Uncertainty with availability of supply source	Impacting West Slope areas primarily
High Wildfire Risk	• Infrastructure damage and destruction • Water quality degradation • Power shutoffs for safety	• May need infrastructure replacement • All areas impacted • May need alternative power and/or emergency water supply
High Drought Susceptibility	• Springs and groundwater wells have run dry in past years and could again • SWRCB unprecedented curtailments and statewide mandatory conservation	Impacts 47 SWS including half of all SSWS (10 SSWS) in El Dorado County and a school
Temperature Increase Expected	Higher water demands	• Increases low to high from West to East (per WRDMP 2024, figure p. 21) • Incorporate impact into supply vs demand forecasting
Reported Water Quality Concerns	Wells down due to water quality issues	• Two residential NC and two SSWS have very high water quality risk (water quality issues affect primary supply and the SWS does not have a secondary supply). • 18 SWS have medium water quality risk (currently have water quality issues with their secondary supply or is delinquent on water quality reporting/testing) • 21 SWS previously had water quality issues but do not currently have issues (and received a score of 2 of 5). • 43 SWS with current or past water quality issues

[a]Declining Groundwater Levels, Competing Demands, and Population Growth are not listed because they had very low risk scores and few impacted connections.

Fractured Rock Aquifer Dependent

67 systems are fractured rock aquifer dependent, all of which are in the West Slope. Especially for these systems, it is important to consider that:

- There is uncertainty with the availability of this supply source, which is susceptible to running dry not just during drought.
- In the short term, the County will look into planning, improving, and expanding emergency water sources in preparation of drought events (e.g., trucked water, filling stations, and bottled water). See Section 3 Short-term Emergency Response Actions for more information.
- In the long-term, the planning and design to drill new wells can begin in the next five years, and implementation can begin over a longer period of time. Additionally, long-term acquisition of additional water rights is discussed in the 2024 WRDMP and, may be especially pertinent for West Slope areas, which are predominantly fractured rock aquifer dependent. Planning and evaluation documents can further explore the viability of drilling new wells, or injection wells, or other watershed wide improvements that could increase the reliability of the El Dorado County's groundwater resource, given 71 percent of SWS rely on a single water well.

High Wildfire Risk

All systems are in a moderately high fire risk or higher. Additionally, there are five SWS in the very high wildfire severity zone (all in the West Slope):

- Camp Chiquita Campground
- Bear State Water Works
- Stumpy Meadows Campground
- Lake Chiquita Mutual Water Company
- Forward Bible Conference

Potential wildfire and related water impacts include:

- Potential infrastructure damage and destruction
- Public safety power shutoffs (PSPS)
- Water quality degradation/contamination (e.g., turbidity spikes with first rain events following a fire and long-term impacts with increases in organics and nutrient loading)
- Erosion affecting water bodies

Planning for the short- and long-term should include public communication about potential water quality issues, precautions, and concerns and planning for emergency water supply during wildfire events. Devastating infrastructural damage and well site destruction from wildfire have and may continue to occur with future events. This includes damages well's wellhead and cap, well casing and case, pump, well screen, and distribution line, as well as damage to any above-ground tanks or distribution systems. Potential actions to reduce these impacts include:

- Fireproofing tanks where necessary and viable.
- For larger water systems, having a varied distribution of wells or tanks rather than one centralized location, which may be beneficial.
- Where applicable, having a portable power generator as a reliable power supply when PSPS need to occur.

- Having emergency carbon activated or other standby treatment modules or vessels ready when needed.
- Collaborating with the El Dorado County Office of Emergency Services and the El Dorado County Office of Wildfire Preparedness and Resilience on implementing the 2023 County of El Dorado Wildfire Strategy. Key collaboration areas include planning, data management sharing, and public outreach, as well as monitoring during fire and post-fire events, protocols on power shutoffs, and emergency water supply. Public communication topics may include potential water quality issues post-wildfire and taking necessary precautions after a wildfire to manage erosion and watershed sediment traps.

High Drought Susceptibility (i.e., number of dry years in the last 5 years)

Springs and groundwater resources have run dry in past drought years and may likely run dry again with current climate trends. Results from the assessment indicated 47 systems have had multiple (three or more) dry years in the past 5 years with a relatively even split between the Tahoe Basin and West Slope. This issue highlights a need for more well reliability data and basin contamination information of the basin to better inform more strategic installation of wells, improved groundwater stability, and alternative water supplies.

Available data also indicated that there have been SWRCB unprecedented curtailments and statewide mandatory conservation in recent years, which indicate a potential need for additional water rights, agreements, and water sources to protect against impacts from shortages due to curtailments or mandatory conservation.

Temperature Increase Expected

Greater temperatures are anticipated to result in greater water demands. According to the 2024 WRDMP (see WRDMP page 21), temperatures will continue to rise, especially on the east side of the county. Greater temperature increases can lead to greater water demands due to an increased amount of evapotranspiration, evaporation of exposed and or open water resources such as lakes and rivers, increased water demands for crops, and increased landscape water demands. This issue is further compounded by the limited water supplies especially in the fractured rock regions in the West Slope. These areas may encounter greater difficulty in keeping up with additional water demands. Efforts in both the short- and long-term to help remediate vulnerabilities may include acquiring more reliable well water and identifying alternative water supplies.

Reported Water Quality Concerns

Water quality concerns can result in unusable wells and the need for rehabilitation, treatment vessels, well redrilling, identification of new well sites, or well replacement.

Forty-three SWS have had water quality issues. Four of these systems, all in the Tahoe Basin, do not have a secondary supply. Twelve of these systems are SSWS. At the time data was collected for the CDRP, four SWS are most at risk (two residential NC and two SSWS) and are currently affected by water quality issues and do not have a secondary supply.

Having more well reliability data and basin contamination could better inform well installation, help improve groundwater stability, and support identification of alternative water supplies. If well reporting challenges can be worked around and well permitting application can be revised to include status and

contaminants, these efforts may improve well reliability and basin contamination data. Additionally, further sampling can also improve the understanding of basin contamination.

Lower Risk Factors for the Environmental Vulnerability Category

Results from the assessment indicated several risk factors that did not appear to be "high risk." These included:

- Population Growth: Growth appeared to be stable or steady in most areas during the time at which this factor was first assessed. However, a declining population trend has been observed in 2022.
- Declining Groundwater Levels: Only a small number of wells were deepened or redrilled since 2012, according to EMD records.
- Competing Demand on Water Use (based on competition with agricultural use): No SWS scored high (4) or very high (5) in this factor. However, 61 systems are missing information on whether their system is competing with agricultural water use.

2.4.2.2 Infrastructure

Nearly all risk factors in the infrastructure vulnerability category resulted in high risk scoring across all SWS.

Table 2-6 provides the infrastructure risk factors, impacts, and considerations for potential actions.

Table 2-6. Infrastructure Risk Factor Results Summary

Risk Factors[a]	Impacts	Considerations for Potential Actions
Lack of Water Supply Redundancy	Temporary loss of water services	County-wide impact 71% of SWS rely on a single water source
Inability to Receive Water Transfers	Temporary loss of water services	County-wide impact except City of Placerville in West Slope, three community and one NTNC Water Systems in Tahoe 96% of SWS do not have interties
Lack of Monitoring (percentage of metered connections)	Water loss due to distribution system leaks	87% of SWS have no or low metering coverage N/A to SSWS

[a]Limited Potential for Physical Consolidation removed.

Systems that scored a value of 5 in all infrastructure risk factors are NC system campgrounds except for one transient NC system (Mt. Aukum Square) in the West Slope:

- Silverfork Campground
- Capps Crossing Campground
- Mountain Camp II
- Loon Lake Campground
- Mt Aukum Square

Lack of Water Supply Redundancy

Many (99) SWS rely on one water supply and the majority of these rely on wells as their water source. These are nearly evenly located across both the West Slope and Tahoe Basin.

Inability to Receive Water Transfers

Only five systems have the ability to receive water transfers, which could support mitigating a shortage of water from their primary supplies.

Lack of Monitoring (percentage of metered connections)
Many of these systems (97 in total) do not have monitoring in place for their water supply, which accounts for 87 percent of all systems. For 21 SWS, there is not enough information available to determine whether monitoring is in place. All but one of these 21 systems are SSWS and the majority of these are in the Tahoe Basin.

Lower Risk Factors for the Infrastructure Vulnerability Category

Most infrastructure risk factors indicated areas of greater potential risk than other factors. However, the Limited Potential for Physical Consolidation was removed as a result of discussion with the Agency for practical and functional reasons. The substantial infrastructure needed for SWS to overcome difficult terrain and extensive distance to connect to a major public water purveyor is often cost prohibitive and long-term operational and maintenance costs are likely unaffordable for most SWS.

2.4.2.3 Regulatory

Table 2-7 provides the regulatory and organizational risk factors, impacts, and considerations for potential actions.

Table 2-7. Regulatory and Organizational Risk Factor Results Summary

Risk Factors[a]	Impacts	Considerations for Potential Actions
Water Curtailment Potential (whether supply is dependent on a water right)	May mean reduced availability of water supply	Consider supply planning and diversification of supply sources where possible Primarily impacting residential connections in West Slope
Difficulty of Obtaining Bulk Water (whether near a major transportation corridor)	Limited ability to receive emergency water supply.	Majority of systems impacted are wells in West Slope
Lack of Drought Planning (whether system has a drought preparedness or water shortage contingency plan)	Potential delays in actions taken during emergency May miss funding opportunities, risks of temporary loss of water supplies	Systems to leverage CDRP to fulfill the SB552 requirements as outlined in Section 1.2.2. Agency and County to conduct outreach and educate systems that fall under SB552 requirements.

[a]Institutional Stability removed. Generally low institutional barriers for operators.

Water Curtailment Potential

Results indicated there are 26 systems representing approximately 4500 connections that have a supply dependent on a water right. This is a relatively evenly split across both the Tahoe Basin and West Slope. Nearly 4000 of the approximately 4500 connections are in residential areas in the West Slope. This highlights a particularly vulnerable area and clusters of connections that are more susceptible to potential water curtailments.

Difficulty of Obtaining Bulk Water

53 systems are not located near a major transportation corridor and may have difficulty in obtaining bulk water. The majority of these rely on wells and are in the West Slope. This result identifies another water supply side vulnerability for the West Slope especially for SWS that are dependent on fractured rock aquifers.

Lack of Drought Planning

SB552 drought planning requirements are outlined in Section 1.2.2.

Most systems lack formalized drought preparedness elements in an emergency notification or response plan, or a system-specific drought and Water Shortage Contingency Plan. 4 SWS have a Water Shortage Contingency Plan:

- El Dorado Irrigation District (EID) Outingdale
- Grizzly Flats Community Service
- Lukins Brothers Water Company
- Quintette Service Corp Water

2.4.2.4 Social

Table 2-8 provides the social risk factors, impacts, and considerations for potential actions. These results are focused on two primary risk factors based on status of the community as disadvantaged or severely disadvantaged, and on their High Social Vulnerability Score as determined by the DWR Water Shortage Vulnerability Tool. As described in the meta data of the vulnerability tool, the social vulnerability score is determined by the percent of the population 65 and older, percent of households with no vehicles, and percent of population 25 and older without a high school diploma pulled from the 2017-2021 American Communities Survey and 2020 Census block groups.

Table 2-8. Social Risk Factor Results Summary

Risk Factors	Impacts (what should actions try to address)	Considerations for Potential Actions (location and system types)
Located in a Disadvantaged Community (whether located in a disadvantaged or severely disadvantaged community); based on annual median household income	Areas not having adequate financial resources to access or purchase alternative supplies or maintain current supply sources	Impacts approximately 6,000 connections 12 severely disadvantaged community systems, all located in Tahoe Basin
High Social Vulnerability Score; based on age, vehicles access, education	Areas with low vehicle access may have difficulty obtaining alternative water supplies Areas of impacted elderly population	Impacts to both West Slope and Tahoe Basin systems with many impacted wells in Tahoe Basin

Located in a Disadvantaged Community

There are 31 systems classified as being located in a disadvantaged area that represent approximately 6,000 connections. There are 12 systems in total classified as being located within a severely disadvantaged area, and all are within the Tahoe Basin.

High Social Vulnerability Scores

Scores for high social vulnerability are relatively evenly split between the Tahoe Basin and West Slope. Overall, there are higher average scores for social vulnerability compared to the disadvantaged community factor. Many of these systems are dependent upon wells, and of those systems, many are in the Tahoe Basin.

2.4.2.5 Tahoe Basin vs West Slope Vulnerabilities

Table 2-9 provides the common issues and strengths of the Tahoe Basin vs West Slope systems for each vulnerability category.

Table 2-9. Tahoe Basin and West Slope Common Issues and Strengths

Vulnerability Category	Common Issues	Common Strengths
Environmental	• High wildfire risk • Medium drought susceptibility	• Low population growth • Low reports on water quality concerns • Stable groundwater levels
Infrastructure	• Inability to receive water transfers • Low potential for consolidation • Lack of monitoring/metering	Not applicable
Regulatory and Organizational	• Lack of drought planning (especially for OCAs) • Larger urban water purveyors have drought planning documents but OCA do not	• Few systems susceptible to water curtailments • Few institutional barriers (i.e., certifications)
Social	• Both contain locations identified as disadvantaged	Not applicable

Across the county there is high wildfire risk and a medium drought susceptibility risk, which is coupled with several common issues related to existing infrastructure systems such as a lack of monitoring and metering. Although the low potential for consolidation and inability to receive transfers is a common issue across both the Tahoe Basin and West Slope according to the risk assessment results, careful consideration should be given to the feasibility of enabling transfers or implementing a consolidation effort for a given system. Implementing drought planning efforts, including carrying out this CDRP, will support the current lack of drought planning especially in the OCA. Planning efforts should also consider the presence and needs of disadvantaged communities that exist across the county.

In contrast, Table 2-10, provides the unique characteristics and differences of the Tahoe Basin vs West Slope systems by vulnerability category. Numbers provided follow the same risk score range of 1 (lowest) through 5 (highest).

Table 2-10. Unique Characteristics of Tahoe Basin and West Slope

Category	Tahoe	West Slope
Environmental	Not applicable	• Greater Fractured Rock Aquifer Dependency
Infrastructure	• Difficulty of obtaining bulk water =2.3 • Higher lack of water supply redundancy = 4.7 • 21 systems are missing information on monitoring; majority are in Tahoe Basin	• Greater difficulty of obtaining bulk water =3.3 • Lack of water supply redundancy = 4.0 • Most at risk systems (infrastructure-wise) with "5's" in all infrastructure factors are all in West Slope (four NC system campgrounds and one rural/rural-suburban commercial center)
Regulatory and Organizational	Not applicable	• More of the connections dependent on a water right are in the West Slope • Majority of the 53 systems not located near a major transportation corridor are in the West Slope; most of these rely on wells
Social	• Higher proportion of disadvantaged communities=2.1 • All 12 of the systems identified as located within a severely disadvantaged community are in Tahoe Basin	• Proportion of disadvantaged communities=1.3

Results indicate that fractured rock aquifer dependency has greater influence on drought and water shortage vulnerability in the West Slope. This area also contains the most at risk systems when it comes to infrastructure, although systems lacking information on monitoring are primarily in the Tahoe Basin. The Tahoe Basin has a higher number of disadvantaged communities, while more systems in the West Slope are susceptible to water right curtailments and many lack access to major transportation corridors that could be used to truck in water. Total risk score breakdowns for the Tahoe Basin and West Slope system are provided in Figure 2-7 and Figure 2-8, respectively. These figures demonstrate that there are no substantial differences between community, NC, and SSWS vulnerability scoring.

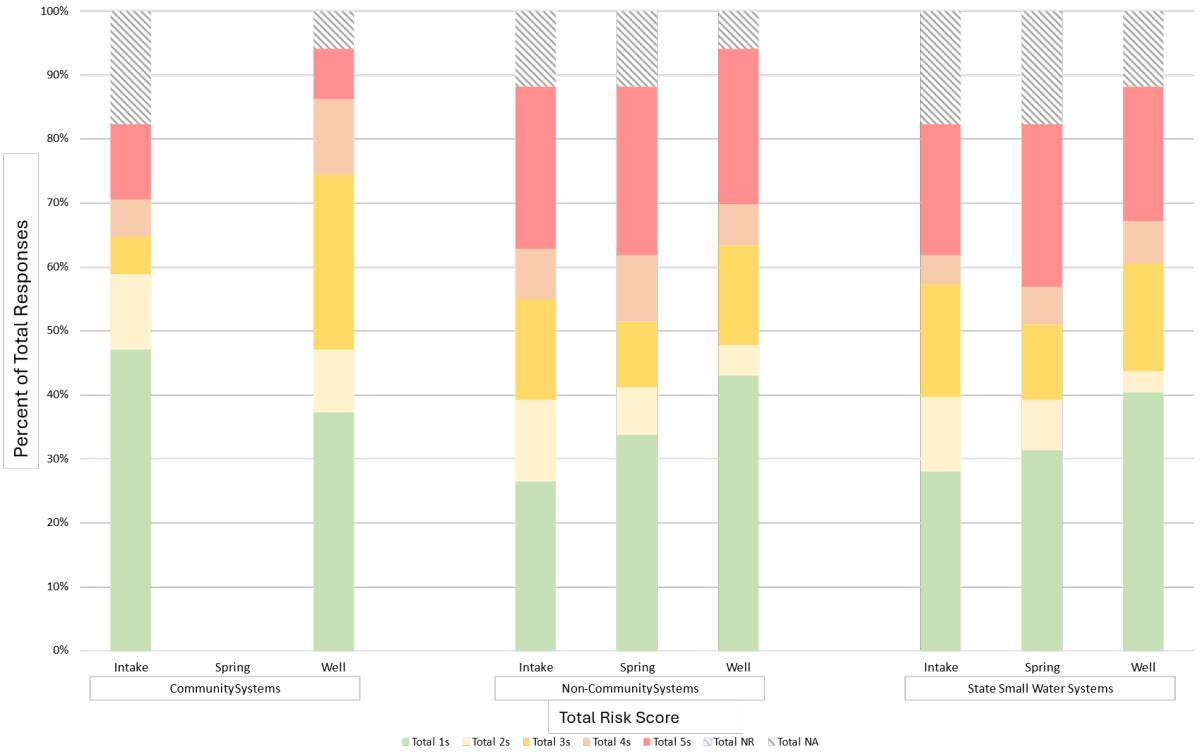

Figure 2-7. Score breakdown for Tahoe Basin systems

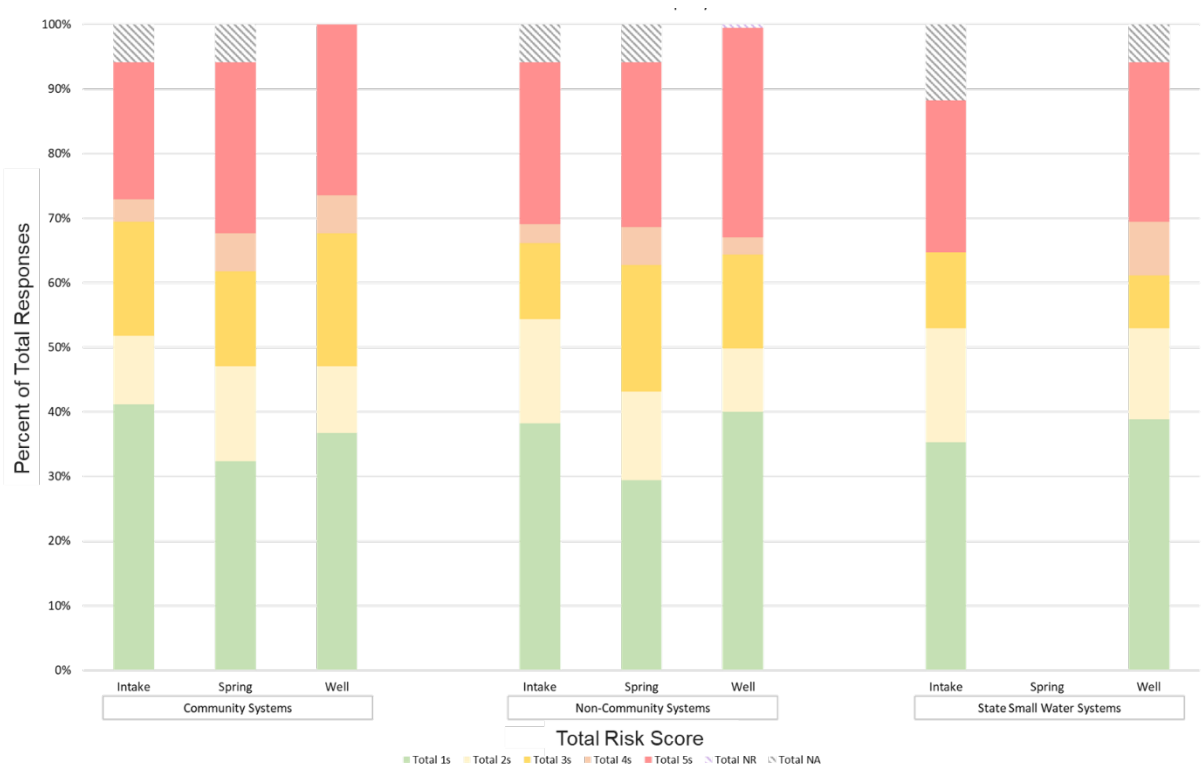

Figure 2-8. Score breakdown for West Slope systems

Figure 2-9 provides the Tahoe **Basin** vs West Slope vulnerability scores by category. The box represents the middle half of the data, from the 25th to the 75th percentile, the whiskers (lines extending past the box) show the minimum and maximum values, the "x" denotes the mean value, and the median is shown as a line. Note that the median line coincides with the 75th percentile for the Tahoe infrastructure vulnerability and the West Slope regulatory vulnerability.

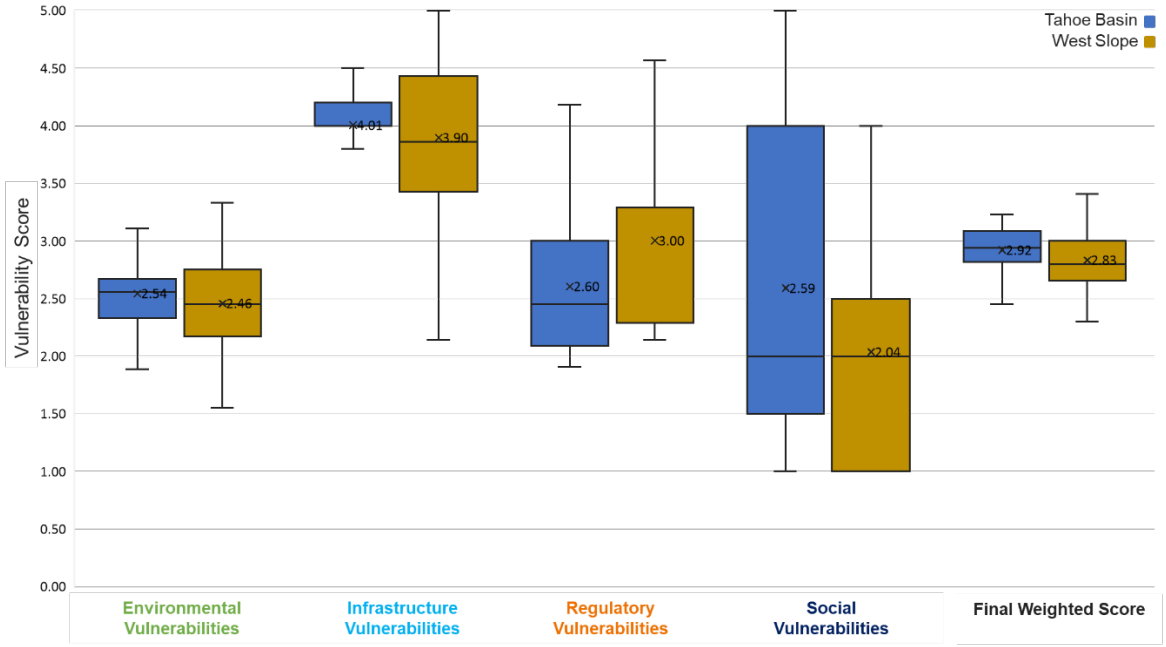

Figure 2-9. Tahoe Basin vs West Slope average vulnerability scores by vulnerability category

The Tahoe Basin and West Slope have comparable vulnerability scores across environmental, regulatory, and final weighted scores; however, the West Slope has a significantly wider infrastructure vulnerability range with a higher maximum (5 compared to 4.5 in Tahoe Basin) and a lower minimum (2.2 compared to 3.7 in Tahoe Basin). On the other hand, the Tahoe Basin has a significantly wider box for social vulnerability, including a higher maximum (5 compared to the 4 in West Slope).

2.4.2.6 Total Weighted SWS Risk Scores

Weights were applied to scores for each vulnerability category and a total average score was calculated (see risk score equation in subchapter 2.4.1). Weights were determined based on Task Force discussion and are identified in Table 2-11. Weights are greater for the environmental and infrastructure vulnerability categories, giving these categories greater influence over total risk scores for each system.

Table 2-11. Weights Assigned to Vulnerability Categories

Categorical Vulnerability Weights			
Environmental	**Infrastructure**	**Regulatory and Organizational**	**Social**
0.50	0.25	0.13	0.13

Table 2-12. provides the weighted scores and total risk scores for community water systems, while Table 2-13 provides these scores for SSWS.

Table 2-12. Weighted Risk Scores for Community Water Systems

Project Information		System Information			Weighted Scores				Total
SWS ID	Small Water System Name	Primary Water Source	Location	System Type	Environmental Vulnerabilities Weighted Score	Infrastructure Vulnerabilities Weighted Score	Regulatory and Organizational Vulnerabilities Weighted Score	Social Vulnerabilities Weighted Score	Total Score
CA0910019	Lakeside Park Association	Well	Tahoe	C	2.22	1.00	3.45	4.50	2.35
CA0910018	El Dorado Id - Outingdale	Intake	West Slope	C	1.55	3.57	3.57	2.00	2.36
CA0910006	Grizzly Flats Community Servic	Intake	West Slope	C	2.18	2.14	3.57	2.50	2.38
CA0910003	Placerville, City Of - Main	Intake	West Slope	C	1.82	3.00	3.71	4.00	2.62
CA0900404	Oaklane Mobile Village, Llc.	Well	West Slope	C	2.42	3.57	2.43	2.50	2.72
CA0901217	Bear State Water Works	Spring	West Slope	C	2.82	1.71	4.86	2.50	2.76
CA0910007	Lukins Brothers Water Company	Well	Tahoe	C	3.00	2.40	1.91	3.50	2.78
CA0900308	Quintette Service Corp Water	Spring	West Slope	C	2.27	3.71	3.43	2.50	2.80
CA0900112	Candlelight Village Mutual Water Co.	Well	West Slope	C	2.33	3.14	3.29	4.00	2.86
CA0910015	Tahoe Keys Water Company	Well	Tahoe	C	2.56	2.40	3.00	5.00	2.88
CA0900422	Crystal Caves Mhp	Well	West Slope	C	2.42	3.57	3.29	3.00	2.89
CA0900102	Gold Beach Park	Well	West Slope	C	2.17	4.14	3.14	3.50	2.95
CA0900300	Kyburz Mutual Water System	Intake	West Slope	C	3.18	3.00	3.57	2.00	3.04

Community water systems are used by year long residents or are regularly serving at least 25 yearlong residents. These systems are meant to provide continuous supply for their users throughout the year. Many community water systems with higher total risk scores rely on wells as their primary water source. These systems also tend to have lower infrastructure vulnerability scores in comparison to SSWS, although both system types have several systems with high risk scores in the social vulnerabilities category. This indicates that there are a few community systems that are located in disadvantaged areas and/or have very limited resources and, therefore, limited drought and water shortage resilience capacity. However, community systems with high risk scores in the social vulnerability category all have total risk scores of less than 3.3 and an average of 3 out of 5 (medium risk), which implies that there are other factors that may support adaptive capacity and reduced drought and water shortage risks for these systems.

Table 2-13. Weighted Risk Scores for SSWS

Project Information		System Information			Weighted Scores				Total
SWS ID	Small Water System Name	Primary Water Source	Location	System Type	Environmental Vulnerabilities Weighted Score	Infrastructure Vulnerabilities Weighted Score	Regulatory and Organizational Vulnerabilities Weighted Score	Social Vulnerabilities Weighted Score	Total Score
CA0900417	Rivers Bend Resort	Well	West Slope	SSWS	2.00	3.14	2.71	2.00	2.37
CA0900106	Indian Diggings School	Well	West Slope	SSWS	2.25	3.43	3.29	1.00	2.52
CA0900637	Huckleberry Ridge Estates Mutual Water	Well	West Slope	SSWS	2.58	3.29	2.14	2.00	2.63
CA0900663	South Echo Summit Tract Civic	Well	West Slope	SSWS	2.75	3.00	2.14	2.00	2.64
CA0900616	47 Milestone/Aspen Creek Tract	Well	West Slope	SSWS	2.75	3.29	2.14	2.00	2.72
CA0900313	Deer Crossing Camp	Intake	Tahoe	SSWS	2.11	4.25	3.91	1.00	2.73
CA0900117	Strawberry Trt 1-6, 36-38	Intake	Tahoe	SSWS	2.44	4.00	2.09	2.00	2.73
CA0900119	Rocky Creek Water System #2	Intake	West Slope	SSWS	2.73	3.00	3.29	2.00	2.78
CA0900672	Meadow Park Village	Well	Tahoe	SSWS	2.33	4.00	2.09	3.50	2.86
CA0900557	Watermarc	Well	Tahoe	SSWS	2.56	4.00	2.45	2.50	2.90
CA0900588	Heavenly Valley Trailer Park	Well	Tahoe	SSWS	2.78	4.00	2.09	2.50	2.96
CA0901281	30 Milestone # 1 Tract Red	Intake	Tahoe	SSWS	2.67	4.00	3.18	2.00	2.98
CA0901282	30 Milestone # 2 Tract Blue	Intake	Tahoe	SSWS	2.67	4.25	3.18	2.00	3.05
CA0901285	Upper 34 Milestone Tract	Spring	Tahoe	SSWS	2.78	4.75	2.09	2.00	3.09
CA0900669	2218 Lake Tahoe Blvd Llc	Well	Tahoe	SSWS	2.56	4.00	2.45	4.50	3.15
CA0900566	Hunter Water Supply System	Well	Tahoe	SSWS	2.67	4.00	2.09	4.50	3.16
CA0900595	Lower Emerald Bay Tract Ssws	Intake	Tahoe	SSWS	2.89	4.50	3.55	1.50	3.20
CA0900667	Pine Cone Trailer Park Ssws	Well	Tahoe	SSWS	2.67	4.00	2.45	4.50	3.20
CA0900559	Della Cella	Well	Tahoe	SSWS	2.78	4.00	2.09	4.50	3.21
CA0900615	Fallen Leaf Camp Assoc	Spring	Tahoe	SSWS	3.11	4.00	3.91	1.50	3.23

Note: C = community

SSWS systems are overall medium risk (2.87 total risk) and are comparable to county-wide average of 2.91. The small difference can be attributed to environmental scores being higher (2.6 vs 2.5), social scores being higher (2.5 vs 2.2), and having less regulatory risk (2.67 vs 2.86), and less infrastructure risk (3.85 vs 3.95).

The bulk of the system types across the county are represented by NC and NTNC systems. Table 2-14 provides the total risk scores for these systems.

Table 2-14. Weighted Risk Scores for NC and NTNC Systems

Project Information		System Information			Weighted Scores				Total
SWS ID	Small Water System Name	Primary Water Source	Location	System Type	Environmental Vulnerabilities Weighted Score	Infrastructure Vulnerabilities Weighted Score	Regulatory and Organizational Vulnerabilities Weighted Score	Social Vulnerabilities Weighted Score	Total Score
CA0900210	Millers Hill School	Well	West Slope	NTNC	2.08	2.57	3.43	1.50	2.30
CA0900650	Echo Lake Camp	Intake	West Slope	NC	2.36	2.71	3.43	1.00	2.41
CA0900411	Lotus Pub	Well	West Slope	NC	2.00	3.57	2.71	1.50	2.42
CA0900652	Echo Chalet Inc	Well	Tahoe	NC	2.33	3.60	2.09	1.00	2.45
CA0900219	All Outdoors Adventure Trips	Well	West Slope	NC	2.17	3.57	2.71	1.50	2.50
CA0900420	Robbs Resort	Well	West Slope	NC	2.17	3.57	3.29	1.00	2.51
CA0900205	Camp Lotus Water System	Well	West Slope	NC	2.00	3.71	2.71	2.00	2.52
CA0900116	Mother Lode Water System	Well	West Slope	NC	2.00	3.71	2.71	2.00	2.52
CA0901250	Gerle Creek Summer Homes	Well	West Slope	NC	2.33	3.00	4.43	1.00	2.59
CA0900419	Kiota Diggings Water System	Well	West Slope	NC	2.17	3.71	2.71	2.00	2.60
CA0900603	Echo Peak Water Association	Spring	Tahoe	NC	2.22	4.40	2.09	1.00	2.60
CA0900216	The Pub Water System	Well	West Slope	NC	2.17	3.00	3.29	3.00	2.62
CA0900303	Silverfork Water Association	Well	West Slope	NC	2.67	3.57	2.14	1.00	2.62
CA0900618	Bryant Creek/Fir Tracts Mwa	Well	West Slope	NC	2.75	3.00	2.14	2.00	2.64
CA0910300	Folsom Lake Sra - Peninsula Campground	Well	West Slope	NC	2.17	3.00	4.57	2.00	2.66
CA0900516	Camp Sacramento	Intake	West Slope	NC	2.55	2.86	3.43	2.00	2.67
CA0901228	Gerle Creek Campground	Well	West Slope	NC	2.33	3.86	3.29	1.00	2.67
CA0901223	Cleveland Corral Rest Area	Well	West Slope	NC	2.58	4.00	2.14	1.00	2.68
CA0900410	Latrobe Elementary School	Well	West Slope	NTNC	2.25	3.71	3.57	1.50	2.69
CA0900107	Gray'S Mart & Gas (Health)	Well	West Slope	NC	2.33	3.00	3.29	3.00	2.70
CA0900423	O.A.R.S., Inc #70	Well	West Slope	NC	2.00	4.43	2.71	2.00	2.70
CA0900654	Baldwin Beach	Well	Tahoe	NC	2.33	4.20	2.45	1.50	2.71
CA0900213	Pioneer Park Water System	Well	West Slope	NC	2.08	3.57	3.29	3.00	2.72
CA0901229	Ice House Campground	Well	West Slope	NC	2.17	4.43	3.29	1.00	2.73
CA0900576	Alpine Inn & Spa	Well	Tahoe	NC	2.22	4.20	2.09	2.50	2.73
CA0900212	Henningsen Lotus Park Water System	Well	West Slope	NC	2.08	4.43	2.71	2.00	2.74
CA0900665	Heavenly Gondola	Well	Tahoe	NC	2.44	3.80	2.64	2.00	2.75
CA0900553	Beverly Lodge	Well	Tahoe	NC	1.89	4.20	2.09	4.00	2.76
CA0901249	Wench Creek Campground	Well	West Slope	NC	2.17	4.57	3.29	1.00	2.76
CA0910024	Glenridge Water Company	Well	Tahoe	NC	2.33	4.40	2.45	1.50	2.76
CA0900304	Silverfork School (Health)	Well	West Slope	NTNC	2.83	3.86	2.14	1.00	2.77
CA0900529	Station House Inn	Well	Tahoe	NTNC	2.22	4.20	2.36	2.50	2.77
CA0900506	Spring Creek Tract Association	Well	Tahoe	NC	2.56	4.00	2.45	1.50	2.77
CA0900643	Mt Ralston Properties Assc Inc	Well	West Slope	NC	2.58	4.43	2.14	1.00	2.79
CA0900214	Wolf Creek Campground	Well	West Slope	NC	2.17	4.71	3.29	1.00	2.80
CA0901247	Yellow Jacket Campground	Well	West Slope	NC	2.17	4.71	3.29	1.00	2.80
CA0901246	Peninsula Recreation Area	Well	West Slope	NC	2.17	4.71	3.29	1.00	2.80
CA0900316	Smud Powerhouse (Health)	Well	West Slope	NC	2.17	4.71	3.29	1.00	2.80
CA0900314	Ice House Resort (Health)	Well	West Slope	NC	2.33	4.43	3.29	1.00	2.81
CA0900623	Tahoe Travel Inn	Well	Tahoe	NC	2.22	3.80	2.09	4.00	2.82
CA0900505	Camp Shelly	Well	Tahoe	NC	2.56	4.20	2.45	1.50	2.82
CA0910305	Ca State Parks - Emerald Bay, Boat Campg	Intake	Tahoe	NC	2.44	3.60	4.18	1.50	2.83
CA0900525	Echo Road Group Water Assoc	Spring	Tahoe	NC	2.78	4.20	2.09	1.00	2.83
CA0900204	Nugget Campground	Well	West Slope	NC	2.33	4.14	2.71	2.50	2.85
CA0900515	Angora Lakes Resort	Spring	Tahoe	NC	2.67	4.20	2.82	1.00	2.86
CA0900319	Mt Aukum Square	Well	West Slope	NC	2.17	5.00	3.29	1.00	2.87
CA0900651	Sierra Pines Camp	Well	West Slope	NC	2.75	4.43	2.14	1.00	2.88
CA0900631	Camp Concord	Well	Tahoe	NC	2.67	4.20	2.45	1.50	2.88
CA0900656	Rainbow Tract Water Assoc	Well	Tahoe	NC	2.56	4.20	2.45	2.00	2.89
CA0900307	Olson Tract Water Association	Spring	West Slope	NC	2.91	3.71	2.14	2.00	2.90
CA0900560	Fll Mutual	Well	Tahoe	NC	2.67	4.20	3.09	1.00	2.90

Project Information		System Information			Weighted Scores				Total
SWS ID	Small Water System Name	Primary Water Source	Location	System Type	Environmental Vulnerabilities Weighted Score	Infrastructure Vulnerabilities Weighted Score	Regulatory and Organizational Vulnerabilities Weighted Score	Social Vulnerabilities Weighted Score	Total Score
CA0900564	King'S Iv Condominiums	Well	Tahoe	NC	2.56	4.20	2.09	2.50	2.90
CA0900624	Villa Tahoe Condominiums	Well	Tahoe	NC	2.56	4.20	2.09	2.50	2.90
CA0900105	Somerset House Water System	Well	West Slope	NC	2.17	4.14	3.29	3.00	2.91
CA0900585	Ginger Mountain Lodge	Well	Tahoe	NC	2.22	4.20	2.09	4.00	2.92
CA0901230	Loon Lake Campground	Well	West Slope	NC	2.33	4.86	3.29	1.00	2.92
CA0910303	Ca State Parks - Emerald Bay, Eagle Poin	Intake	Tahoe	NC	2.33	4.40	3.82	1.50	2.93
CA0900104	Pioneer Bible Church	Well	West Slope	NC	2.08	4.43	3.29	3.00	2.93
CA0901248	Wrights Lake Campground, Pacific Ranger	Well	West Slope	NC	2.58	4.43	3.29	1.00	2.93
CA0910302	Ca State Parks - Emerald Bay, Vikingshol	Intake	Tahoe	NC	2.44	4.20	3.82	1.50	2.94
CA0900649	South Shore Recreation Area	Well	Tahoe	NTNC	3.00	3.40	2.73	2.00	2.94
CA0900578	Coyote Den	Well	Tahoe	NC	2.56	3.40	2.09	4.50	2.95
CA0900111	Pioneer Elementary School Edc	Well	West Slope	NTNC	2.42	3.57	3.29	3.50	2.95
CA0900592	Deerfield Lodge @ Heavenly	Well	Tahoe	NC	2.67	4.20	2.09	2.50	2.96
CA0900562	Heather Lake Road Tract	Well	Tahoe	NC	2.56	4.20	2.09	3.00	2.97
CA0900629	American Legion Tract Resort Assoc	Well	Tahoe	NC	2.56	4.20	2.09	3.00	2.97
CA0900591	North Echo Summit Water Association	Spring	West Slope	NC	2.55	4.71	2.14	2.00	2.97
CA0900582	The Jeffrey Hotel	Well	Tahoe	NC	2.22	4.20	2.09	4.50	2.98
CA0900523	Cascade Mutual Water Company	Well	Tahoe	NC	2.78	4.40	2.45	1.50	2.98
CA0900309	Mountain Creek School	Well	West Slope	NTNC	2.50	3.57	3.29	3.50	2.99
CA0900306	Forward Bible Conference	Well	West Slope	NC	2.67	3.71	3.29	2.50	2.99
CA0900317	Lake Chiquita Mutual Water Company	Well	West Slope	NC	2.75	3.57	3.29	2.50	2.99
CA0900502	Pyramid Creek Trailhead	Well	West Slope	NC	2.58	4.71	2.14	2.00	2.99
CA0900536	Econo Lodge Inn & Suites	Well	Tahoe	NC	2.56	3.60	2.09	4.50	3.00
CA0900621	Summit Pines Apartments	Well	Tahoe	NC	2.56	3.60	2.09	4.50	3.00
CA0900659	Sierra Tahoe Main Lodge	Well	West Slope	NTNC	2.92	4.00	2.29	2.00	3.00
CA0901239	Sand Flat Campground	Well	West Slope	NC	2.67	4.57	2.14	2.00	3.00
CA0900549	Tamarack Park Homeowners Assoc	Well	West Slope	NC	2.75	4.43	2.14	2.00	3.00
CA0901232	Red Fir Group Campground Water Syst	Well	West Slope	NC	2.50	4.86	3.29	1.00	3.00
CA0900206	Camp Chiquita Campground (Health)	Well	West Slope	NC	3.08	3.00	3.29	2.50	3.01
CA0900100	Camp Fleming --- Lodge	Well	West Slope	NC	2.50	3.71	3.29	3.50	3.03
CA0900311	Mountain Camp Ii	Well	West Slope	NC	2.50	5.00	3.29	1.00	3.04
CA0900120	Sciots Tract Water System	Intake	West Slope	NC	2.55	4.43	3.43	2.00	3.06
CA0900565	Tahoe Valley Lodge	Well	Tahoe	NC	2.56	4.20	2.45	3.50	3.07
CA0900301	Silverfork Mutual Water Sys.	Well	West Slope	NC	2.83	4.57	2.14	2.00	3.08
CA0900551	Alder Inn	Well	Tahoe	NC	2.56	4.20	2.09	4.00	3.09
CA0900660	Heavenly Ski Creek Station	Well	Tahoe	NTNC	2.78	4.60	2.36	2.00	3.09
CA0900664	Sierra Tahoe West Bowl	Well	West Slope	NC	2.92	4.43	2.29	2.00	3.10
CA0900658	Sierra Tahoe Grandview	Well	West Slope	NC	2.75	4.86	2.14	2.00	3.11
CA0910301	Ca State Parks - D.L. Bliss	Intake	Tahoe	NC	2.44	4.80	4.09	1.50	3.12
CA0900641	Fallen Leaf Mutual Water Co	Intake	Tahoe	NC	2.67	4.60	4.18	1.00	3.13
CA0900507	Stanford Sierra Camp	Intake	Tahoe	NC	2.67	4.40	4.18	1.50	3.15
CA0900535	Pinewood Inn	Well	Tahoe	NC	2.56	4.20	2.09	4.50	3.15
CA0900554	The Trailhead	Well	Tahoe	NC	2.56	4.20	2.09	4.50	3.15
CA0900511	Cathedral Water Association	Spring	Tahoe	NC	3.11	4.20	2.82	1.50	3.15
CA0901222	China Flat Campground	Well	West Slope	NC	3.33	3.86	2.14	2.00	3.15
CA0900103	Silverfork Store Water System	Well	West Slope	NC	3.00	4.57	2.14	2.00	3.16
CA0900587	Heavenly Ski Sky Deck	Well	Tahoe	NC	2.78	4.20	3.36	2.50	3.17
CA0900113	Leoni Meadows Camp	Well	West Slope	NC	2.67	4.14	3.29	3.50	3.22
CA0900401	Camp Fleming --- Campground	Well	West Slope	NC	2.50	4.57	3.29	3.50	3.24
CA0901260	Cody Water Association	Intake	West Slope	NC	2.91	4.43	3.57	2.00	3.26

Project Information		System Information			Weighted Scores				Total
SWS ID	Small Water System Name	Primary Water Source	Location	System Type	Environmental Vulnerabilities Weighted Score	Infrastructure Vulnerabilities Weighted Score	Regulatory and Organizational Vulnerabilities Weighted Score	Social Vulnerabilities Weighted Score	Total Score
CA0900208	Pipi Campground Water System	Well	West Slope	NC	2.75	4.14	3.29	3.50	3.26
CA0900109	Dru Barner Campground	Well	West Slope	NC	2.75	4.71	3.29	2.50	3.28
CA0901219	Capps Crossing Campground	Spring	West Slope	NC	2.45	5.00	3.29	3.50	3.32
CA0901244	Stumpy Meadows Campground	Well	West Slope	NC	2.75	4.43	3.29	3.50	3.33
CA0901243	Silverfork Campground	Well	West Slope	NC	3.00	5.00	3.29	2.00	3.41

Higher total risk scores for NC and NTNC are influenced by the heavier weights associated with the environmental vulnerability and infrastructure vulnerability scores. Although there are 10 NC or NTNC systems that have a risk score of 4 or greater for social vulnerability, these systems occur throughout the range of the total risk scores and are not limited to those systems with higher total risk. Many of the NC or NTNC systems rely on wells as their primary water sources. The next section delves more into domestic well vulnerabilities. The types of vulnerabilities described in this next section could also be considered applicable to SWS that are dependent on wells as their primary water source.

2.5 Domestic Well Vulnerabilities

Domestic well data was combined with existing vulnerability data to enable an analysis of vulnerabilities specific to domestic wells. This section provides an overview of general areas where domestic wells may be impacted by a number of risk factors. These risk factors are similar to the factors considered for the broader small systems vulnerability analysis. However, some factors have been added or adjusted to better reflect what factors are more relevant to domestic wells. The full list of factors considered for domestic wells in included in Table 2-15.

Table 2-15. Vulnerability Categories and Risk Factors for Domestic Wells

Vulnerability Category	Risk Factors
Environmental	Internal: • Fractured Rock Aquifer Dependent • Aquifer Water Quality Risk External: • Temperature Increase Expected • High Wildfire Risk • High Drought Susceptibility
Infrastructure	• Outside of Water Purveyor Service Area • Shallow Well
Social	• High Social Vulnerability Score • Located in a Disadvantaged Community

Data caveats and limitations. It is important to note that maps provided within this section were prepared based on available data from EMD and do not represent all the domestic wells in El Dorado County. Data presented might not be equivalent for the same factor between SWS and domestic wells. For example, some of the domestic well data reflects a different timeframe and should not be used in direct comparison to SWS data. It is also important to convey when considering whether wells are located within a purveyor service area. Even if a well owner is in a purveyor service area, it does not necessarily mean it is financially viable for the owner to connect to the system.

2.5.1 Environmental Vulnerabilities

Environmental vulnerability factors for domestic wells are organized by internal and external factors. Internal environmental risk factors reflect the characteristics of the county's water resources (aquifer) and the aquifer's current condition. External environmental factors represent those that are influential to and may impact these water resources and aquifers (e.g., increasing temperatures influencing natural and human demand for water resources). Internal environmental risk factors are shown on Figure 2-10.

The Internal Environmental Factor score is the average of the following individual aquifer factors:

- **Fractured Rock Aquifer Dependent.** This risk factor identifies which wells rely on fractured rock aquifers as their primary source of water supply. The nature of this water source may provide challenges for understanding storage and pumping capacity for well owners.
- **Aquifer Water Quality Risk.** Available data from the SWRCB 2024 Aquifer Risk Map (SWRCB, 2024) was leveraged to include a risk factor for aquifer water quality. There is limited data available for domestic wells in terms of location and water quality. The risk assessment results presented in the Aquifer Risk Map are based on a risk assessment that leverages modeled and estimated data from nearby wells of similar depth.[6] Water quality in this assessment is summarized by square-mile sections and is measured based on the average water quality over the last 20 years and by the highest recent sample in the past 5 years.

Together, these two risk factors create one internal environmental vulnerability score for domestic wells. Overall, El Dorado County is at moderate risk, with high-risk areas located in various clusters in the West Slope, as shown in Figure 2-10.

[6] The risk methodology for the SWRCB 2024 Aquifer Risk Map from which the Aquifer Water Quality risk factor is based can be viewed here: https://www.waterboards.ca.gov/water_issues/programs/gama/docs/armmethods25.pdf

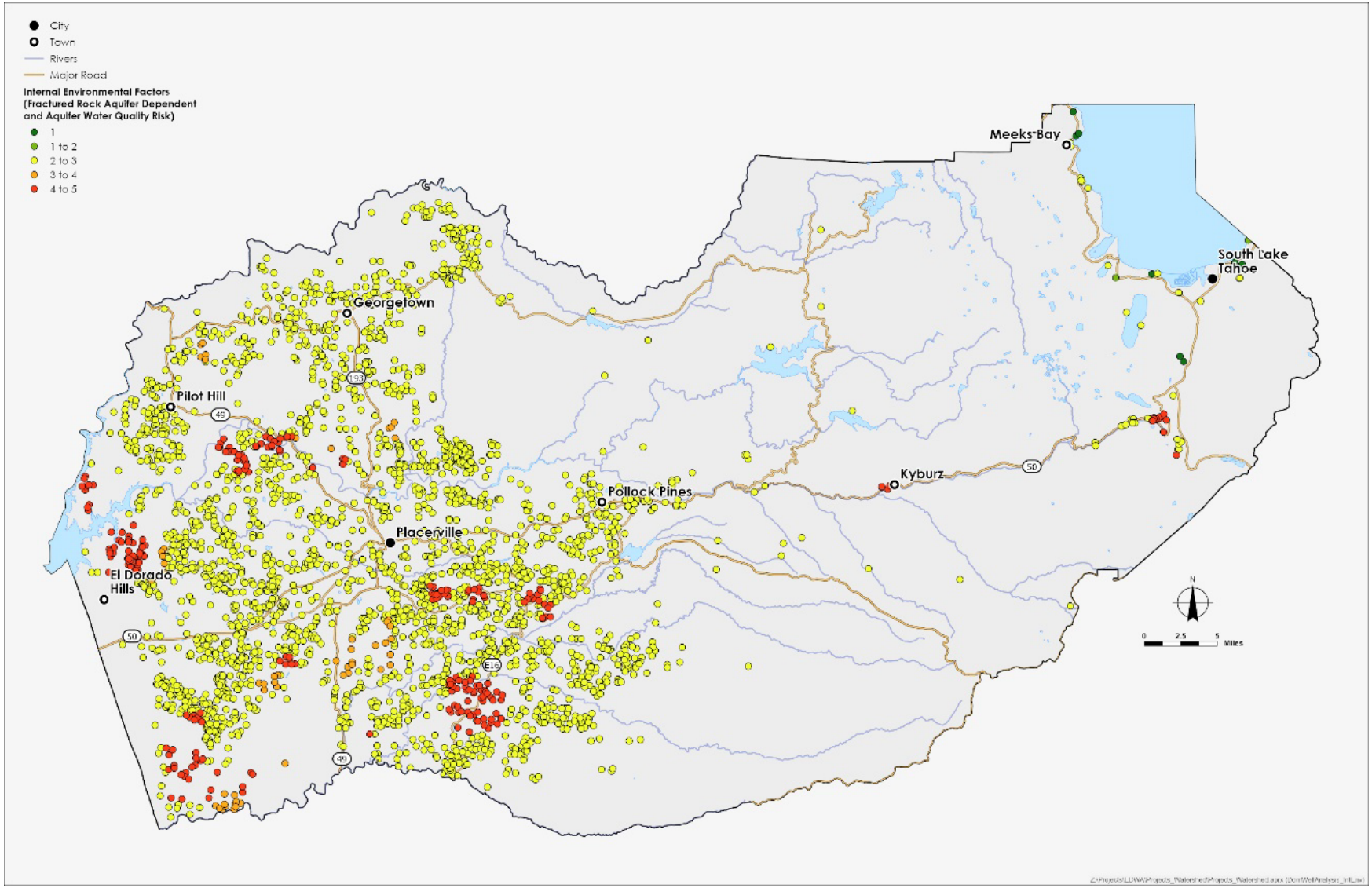

Figure 2-10. Internal environmental factors

External environmental factors are shown on Figure 2-11 and include:

- **Temperature Increase Expected.** This factor is measured using data from the American River Basin Study analysis. Increased temperatures can mean increased demand on local water resources, e.g., drawing more well water to meet demands in summer months. Temperature increases combined with a prolonged dry season may lower groundwater tables and present challenges for owners with shallow wells.
- **High Wildfire Risk.** Wildfire risk for this factor is measured by three data points: 1) the decadal wildfire probability, 2) whether the well is located in a moderate, high, or very high fire hazard severity zone, and 3) whether the well is located in a utilities fire threat area. Wildfire risk can present challenges in the form of physical damage to any above ground structures or equipment and can impact power supplies should a PSPS occur.
- **High Drought Susceptibility.** This factor is measured on a range of 0 to 5 dry years according to data from the California Water Watch DWR Vulnerability Tool.

The combination of these risk factors helps explain the external environmental. Overall, domestic wells in the county are at moderate risk, with some moderate-high risk systems near Georgetown.

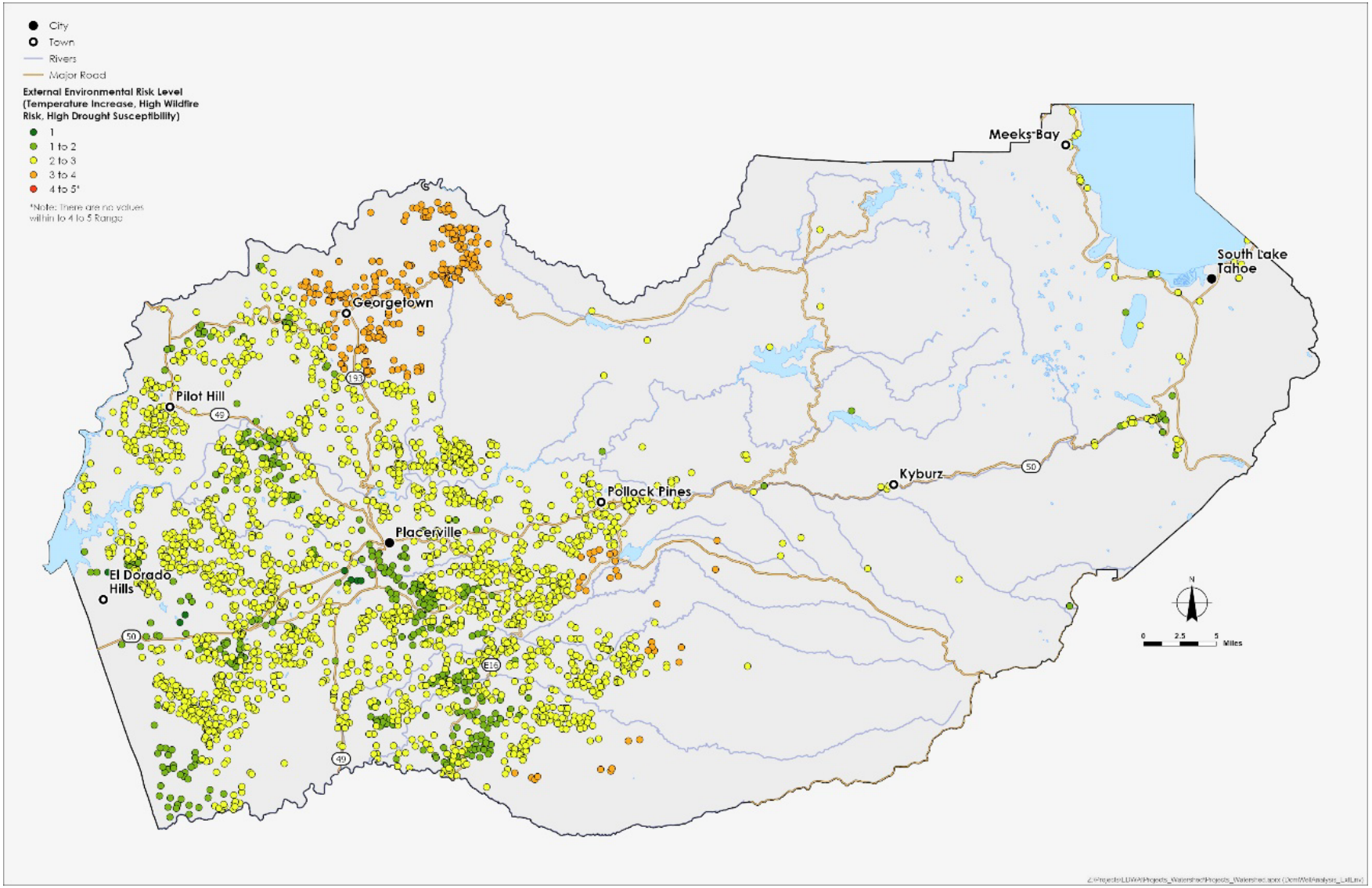

Figure 2-11. External environmental risk factors

2.5.2 Infrastructure Vulnerabilities

Risk factors for domestic well infrastructure vulnerabilities are shown on Figure 2-12 and include:

- **Outside of Water Purveyor Service Area.** This risk factor is based on data collected from EMD and water service purveyor boundaries. Wells within a purveyor boundary score a 1; wells outside a purveyor boundary score a 5.
- **Shallow Well.** Shallow wells present a risk factor because they are more susceptible to variations in water quality and groundwater supply availability. Data for this factor is also based on data from EMD and includes values for moderate depth (>100ft), moderately shallow depth (50 to 100 ft), and shallow depth (<50 ft).

Overall, infrastructure vulnerabilities based on the combination of these factors indicate generally low to moderate risk across the county.

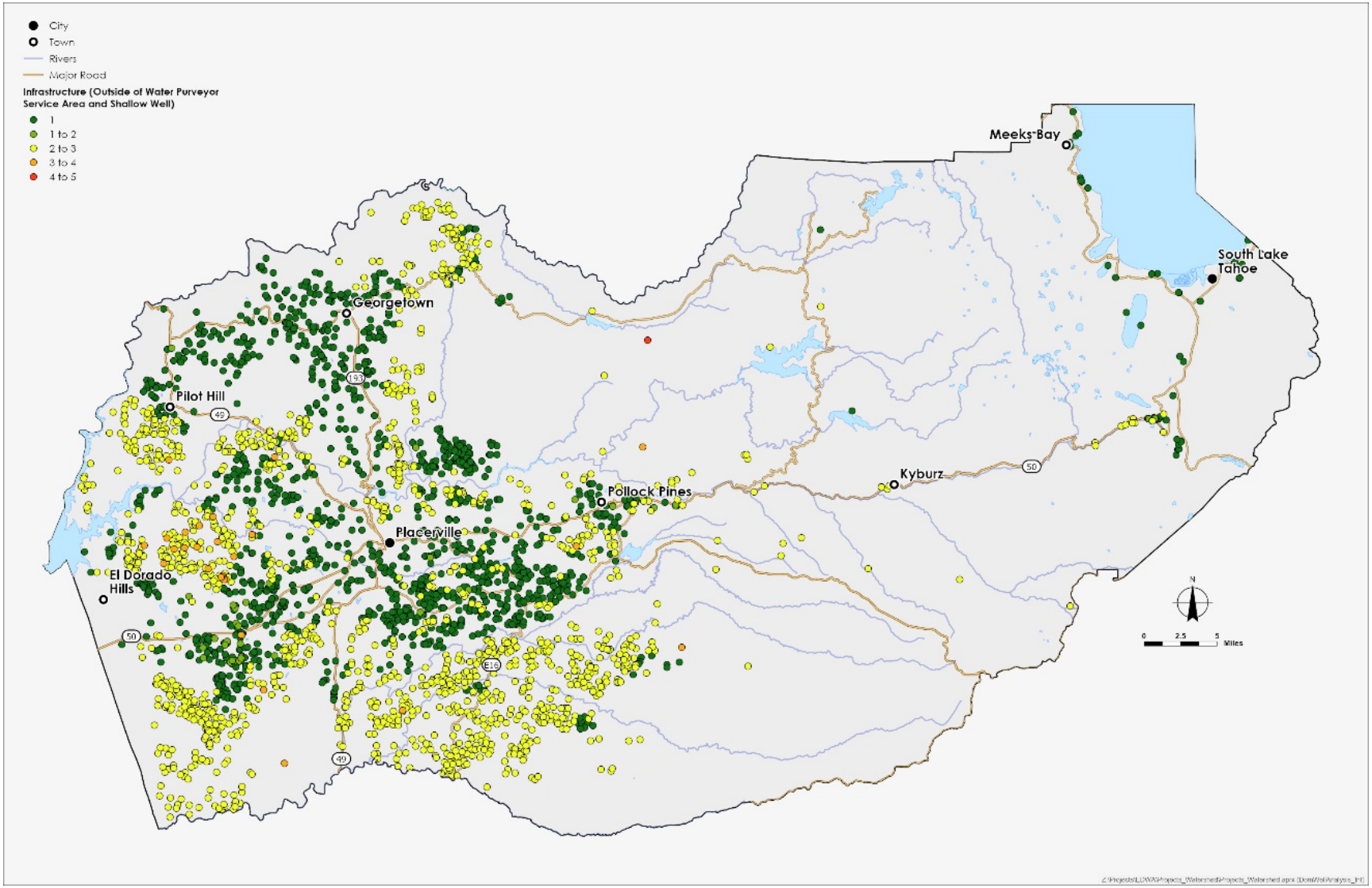

Figure 2-12. Infrastructure risk factors

2.5.3 Regulatory Vulnerabilities

Data presented on Figure 2-13 demonstrate a high-level view of the regulatory and organizational risk factor for domestic wells. Only one risk factor was included in this analysis: Difficulty of Obtaining Bulk Water. This is the same factor used in the SWS vulnerability analysis and is similarly measured by the distance between the domestic well location and a bulk water station or major roadway.

Results for the regulatory and organizational risk factor indicate general clusters of areas that are in closer proximity to major roadways (e.g., wells near the US 50) versus those farther away that may have greater difficulty in obtaining bulk water supplies should well owners need additional supply beyond what their domestic wells provide.

Another issue was revealed in discussions with the County Code Enforcement Division related to the lack of information on domestic wells and potential under-reporting of domestic well issues. Dry wells are not currently reported to EMD, and there can be a general hesitation in reporting this information to the County due to potential implications for property owners. In practice, County Code Enforcement operate on a complaint basis and complaints for non-functioning or dry wells would more commonly come from renter tenants (per communication with County Code Enforcement on January 8, 2025). It is important to note that according to the County Ordinance Code Sec. 9.02.510. - Substandard housing enforcement, which refers to the California Health & Safety Code Sec. 17920.3, the relevant County Ordinance and California Health & Safety Code is not limited to rental properties. If County Code Enforcement became aware of and confirmed a lack of water supply at any residence, they would deem the home substandard and charge daily violation fees. According to the Health & Safety Code Sec. 17970.7, which is for inspections and also refers to Sec. 17920.3., property owners of single-family dwellings would not be subject to regular inspections, but their property could still be deemed uninhabitable if County Code Enforcement was otherwise made aware of the issue.

Based on these discussions and in reviewing relevant code language, it became evident that in adhering to the County Ordinance and California Health & Safety Code a property is deemed uninhabitable once a declaration is made that the property does not meet required hot and cold running water standards. There is no buffer time for well owners who might report a dry or non-functioning domestic well to seek interim solutions before their parcels are deemed uninhabitable. This can result in a lack of reporting and at a minimum under-reporting well issues and ultimately can result in a hesitation and barrier to seeking aid.

The relevant County Ordinance Code is provided as follows for reference:

Title 9 - PUBLIC PEACE, MORALS AND WELFARE, CHAPTER 9.02. - CODE ENFORCEMENT, Sec. 9.02.510. - Substandard housing enforcement

Any building or portion thereof including any dwelling unit, guestroom or suite of rooms, or the premises on which the same is located, in which there exists any of the conditions enumerated in California Health and Safety Code § 17920.3 to an extent that endangers the life, limb, health, property, safety, or welfare of the public or the occupants thereof shall be deemed and hereby is declared to be a substandard building.

The relevant California Health & Safety Code language is provided as follows for reference:

Health and Safety Code - HSC, DIVISION 13. HOUSING, PART 1.5. REGULATION OF BUILDINGS USED FOR HUMAN HABITATION, CHAPTER 2. Rules and Regulations, 17920.3

Any building or portion thereof, regardless of zoning designation or approved uses of the building, including any dwelling unit, guestroom or suite of rooms, or the premises on which the same is located, in which there exists any of the following listed conditions to an extent that endangers the life, limb, health, property, safety, or welfare of the occupants of the building, nearby residents, or the public shall be deemed and hereby is declared to be a substandard building:

(a) Inadequate sanitation shall include, but not be limited to, the following:

…(5) Lack of hot and cold running water to plumbing fixtures in a dwelling unit.

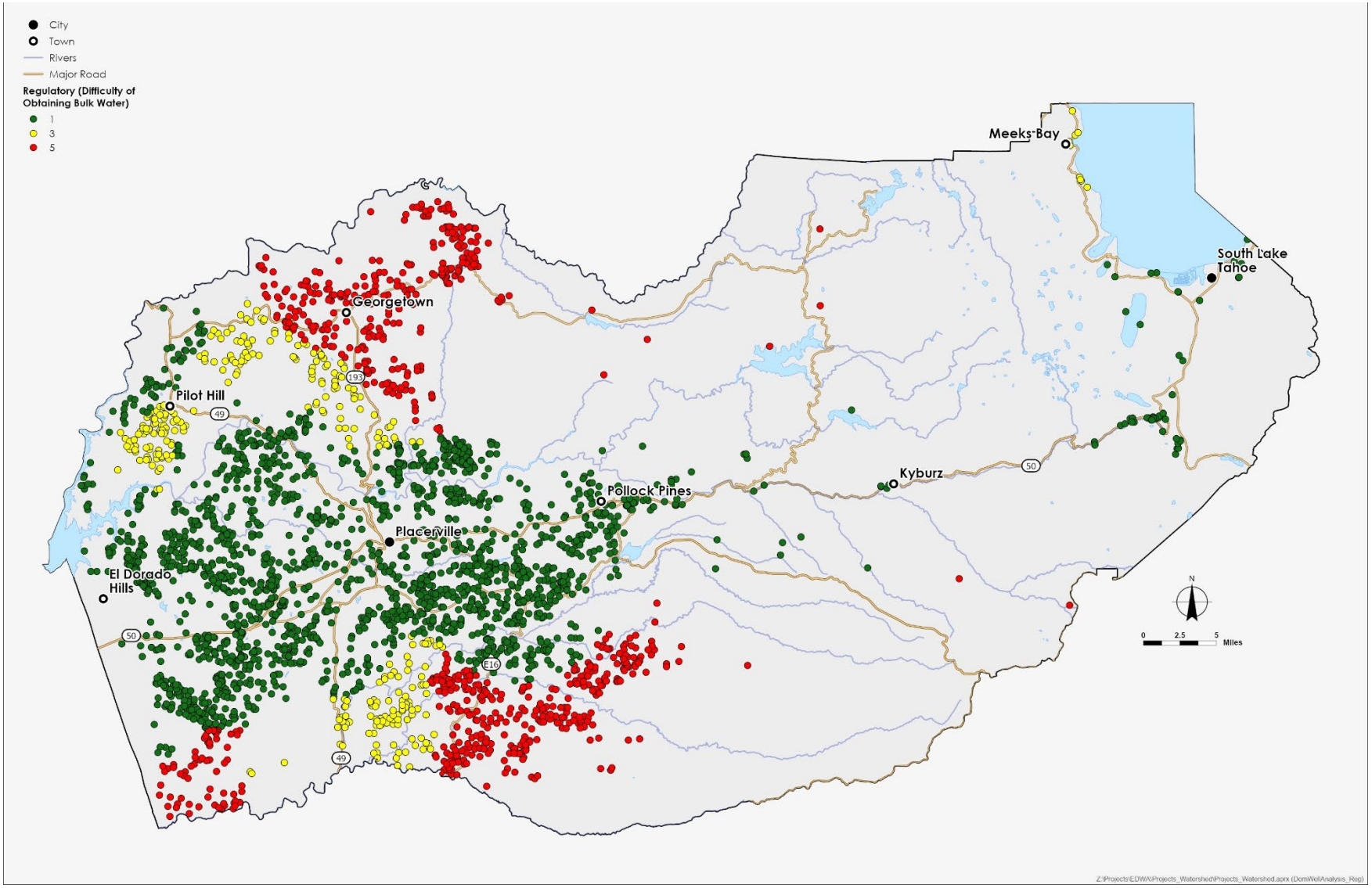

Figure 2-13. Regulatory and Organizational risk factor

2.5.4 Social Vulnerabilities

The data leveraged for social vulnerability risk factors draw from the same data sources as the SWS vulnerability analysis. Domestic well locations mapped with this data provide the visual representation on Figure 2-14. The risk factors that have been combined and featured in this figure include:

- **High Social Vulnerability Score.** This risk factor is based on the maximum social vulnerability score as indicated by spatial data provided by the DWR Water Shortage Vulnerability Tool.
- **Located in a Disadvantaged Community.** Data used for this factor relies on whether the domestic well is located within a disadvantaged or severely disadvantaged community.

As shown on Figure 2-14, data used to understand social vulnerabilities for domestic wells in the county indicate a low to moderate risk, with a couple of minor clusters of moderate risk around South Lake Tahoe and in an area west of Pollock Pines.

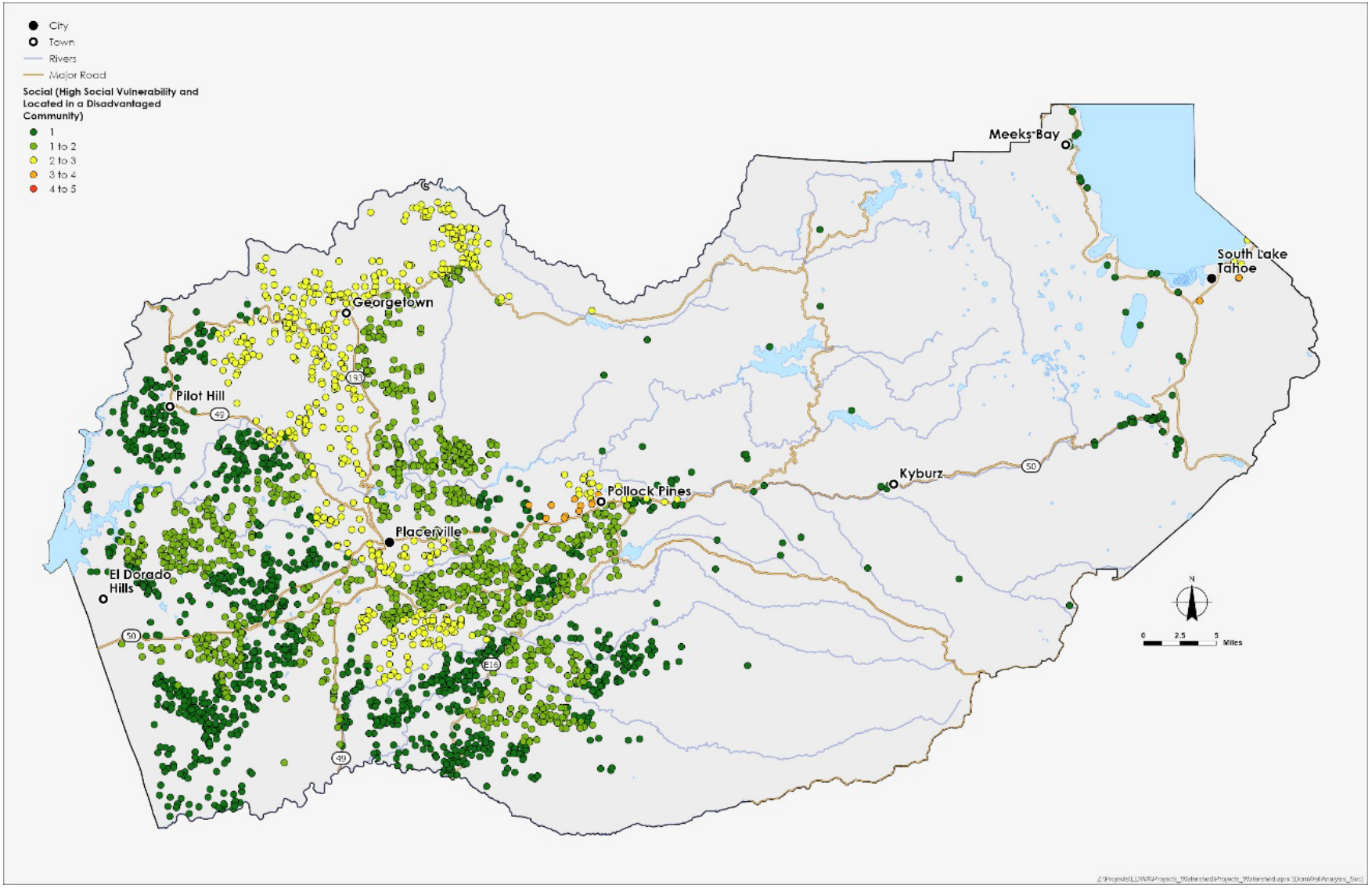

Figure 2-14. Social risk factors

2.6 Vulnerability Assessment Key Takeaways

A summary of the Drought and Water Shortage Risk Assessment results are presented in Table 2-16. The table identifies the high risk factors for SWS, those factors that cut across both the Tahoe Basin and West Slope, and takeaways from the high level domestic well data analysis.

Table 2-16. Risk Assessment Findings Summary by Vulnerability Category

Category	Consideration for developing mitigation measures	Issues Present in both Tahoe and West Slope	Domestic Well Analysis (average of 3,357 wells with available data)
Environmental	• Fractured rock aquifers • High wildfire risk • High drought susceptibility (number of dry years in the last 5 years) • 61 systems are missing information on whether the system is competing for agriculture • 22 SWS (including 6 SSWS) with current water quality issues and several have no secondary supply (including 2 SSWS). • 21 SWS previously had water quality issues but do not currently have issues.	• Fractured rock aquifer dependency • High wildfire risk • Medium drought susceptibility risk	• Overall environmental score is low-moderate (2.9) • High Fractured rock dependency scored 4.97 • High wildfire risk scored 4.1
Infrastructure	• High lack of water supply redundancy (99 systems) • Many rely on one source (majority of these are wells) • Inability to receive water transfers (only 5 SWS have this ability) • Lack of monitoring/connection metering (97) • 21 systems have missing information; all but one of these are SSWS and majority are in the Tahoe Basin	• Inability to receive water transfers • Low potential for consolidation • Lack of monitoring/metering	• Overall low infrastructure risk, with low shallow well risk and moderate Outside of Water Purveyor Service Area risk

Category	Consideration for developing mitigation measures	Issues Present in both Tahoe and West Slope	Domestic Well Analysis (average of 3,357 wells with available data)
Regulatory	• Lack of drought planning (especially for the OCA except EID, Grizzly Flats, Lukins systems) • ~4,500 connections have supply dependent on a water right • ~4,000 out of these 4,500 connections are in residential areas in the West Slope • 53 systems are not located near a major transportation corridor and may have difficulty obtaining bulk water • Majority of these rely on wells and are in the West Slope	Lack of drought planning for the OCA, with the exception of EID, Grizzly Flats, and Lukins systems	• Low average risk in difficulty obtaining bulk water, especially along US 50 and within 10 miles of US 50. However, there are moderate and very high risk areas in certain parts of West Slope (parts of Pilot Hill, Georgetown), in the north part of West Slope and in parts south of El Dorado County Route E16 in the south area of the West Slope.
Social	• 31 systems, made up of 6,000 connections, are in a disadvantaged area • 12 systems are severely disadvantaged (all in the Tahoe Basin)	High number of connections located in disadvantaged areas	Overall low social vulnerability score, with 15 moderate risk systems (12 systems west of Pollock Pines, and three systems in South Lake Tahoe)

Sections 2.4 through 2.6 described how high risk factors were determined, i.e., by analyzing data trends from existing SWS data, aggregating interview results, and analyzing the domestic well database. The CDRP also identifies actions to foster alignment with the 2024 WRDMP. Section 3 of the CDRP describes the emergency, interim, and long-term drinking water solutions needed to address the county's high risk factors, along with strategies described in the 2024 WRDMP.

3 Short- and Long-term Actions

The risk and vulnerability assessment results inform CDRP short- and long-term actions. Figure 3-1 highlights the process for considering these results when identifying actions that are relevant for addressing drought and water shortage risks in El Dorado County communities.

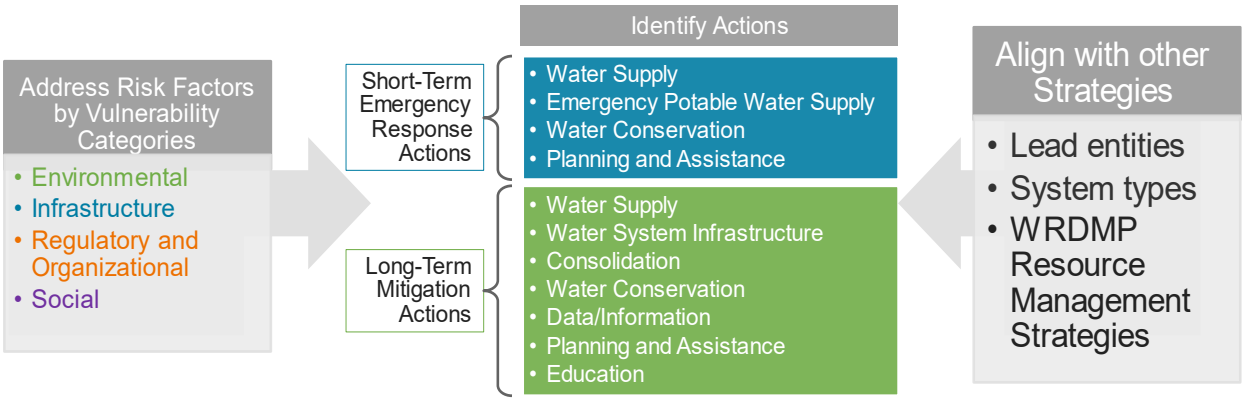

Figure 3-1. Connection between vulnerability assessment and drought and water shortage actions

The identification of short-term emergency response and long-term mitigation actions was informed by a range of sources.

First, a review of previous drought and water shortage planning work provided valuable insights into effective strategies and actions that can be implemented in response to drought or water shortage conditions, including:

- DWR County Drought Plan Guidebook
- County Drought Advisory Group's Small Water Systems and Rural Communities Drought and Water Shortage Contingency Planning and Risk Assessment report (DWR, 2021)
- Upper American River Basin Regional Drought Contingency Plan (Agency, 2020a)
- Regional Water Authority Regional Water Reliability Plan (Stantec, 2019)
- 2024 WRDMP. RMS within the WRDMP were reviewed to determine whether these strategies could be included within the short- and long-term mitigation actions.

In addition, SWS interviews (see subchapter 2.2.3) were conducted to gather information on the specific challenges and vulnerabilities of SWS in El Dorado County. These interviews provided a better understanding of the unique needs and constraints faced by SWS in the region and helped to identify appropriate short-term solutions during a water supply-related emergency event. Results from the vulnerability assessment also provided valuable information in understanding existing vulnerabilities that contribute to higher risk in the case of drought or water shortage.

An initial list of both short- and long-term actions based on the data review and analysis were presented during the Task Force meeting on November 19, 2024. Feedback was requested on which actions resonated and will be impactful, whether any actions should be removed or changed, and whether any actions that were missing. Feedback received and input from the Agency helped prioritize actions, after which this initial list of actions was edited for greater local relevance. The results and final list of short-term and long-term actions are provided in this chapter.

The Agency is working on a Disaster Playbook in parallel with the CDRP. It is important to note that the Disaster Playbook focuses on a range of disasters (including wildfire, drought, and flood), and actions for disaster risk management.

3.1 Short-term Emergency Response Actions

Short-term emergency response actions are critical components of drought and water shortage resilience planning. Emergency response actions are measures taken to address the immediate impacts of drought, such as water shortage or quality issues. The lack of established response actions was experienced by some SWS during the 2012 to 2016 drought when domestic and agricultural supply wells ran dry and water had to be trucked in or obtained from a water station. The response actions identified here also help support the CDAG recommendations described in their 2021 report.

These short-term emergency response actions are grouped into four categories: water supply, emergency potable water supply, water conservation, and planning and assistance. Table 3-1 provides a description for each of the identified actions and indicates which agency or office could serve as the lead entity for implementing these actions. The prioritized short-term emergency response actions (bold text) identified in this chapter and prioritized long-term mitigation actions in the next chapter (bold text) are used to support the Implementation Plan in Chapter 4. The suggested primary lead agencies are also identified in bold text.

Table 3-1. Short-term Emergency Response Actions for SWS in El Dorado County

Short-term Response Action Category	ID	Action	Description	Lead Entity(ies)
Structural				
 Water Supply	S1	Treat available water from non-regular sources[a]	Short-term chemical treatment could provide SWS with an emergency source of supply during disruptions. The State Drinking Water Program or County Health Department must approve the water source and/or treatment unit to ensure that the treatment is sufficient to deal with the level of source water contamination.	SWS
 Emergency Potable Water Supply	**S2**[b]	**Maintain (and possibly expand) water filling station locations**	**Water filling stations provide residents with an additional supply source in the case of a drought or water shortage event. These stations should be strategically located in areas where water scarcity is more acute and can be operated by local government agencies or public water agencies, such as EID. Additionally, gathering information about who is using these fill stations (and for what intended use) will provide a baseline for future water shortage planning.**	**EID, GDPUD, Agency**
	S3[b]	**Water trucking and bulk water hauling**	**Bulk potable water can be procured from other SWS, a larger PWA, or a licensed water hauler. The California Department of Public Health maintains a list of licensed water haulers (Appendix E) that can be contacted during water shortage events. However, water trucking and bulk water hauling is a short-term solution that can often be cost-prohibitive; alternate supplies should be sourced as soon as possible.**	**SWS**
	S4[b]	**Purchase packaged or bottled water**	**Purchasing bottled water can provide SWS with a source of potable water during water shortage events. This is a short-term solution for meeting essential drinking water needs, but is not a sustainable or cost-effective long-term solution.**	**SWS, Domestic Well Owners**
Non-structural				

Short-term Response Action Category	ID	Action	Description	Lead Entity(ies)
Structural				
 Water Conservation	S5	Enact water rationing	Water rationing can be implemented by local government agencies or SSWS. Allocation amounts should be based on factors such as household/business size, number of people living/working there, and type of activities that require water use. Monitoring devices, such as water meters, can help track usage. Penalties or fines can be imposed for those that exceed their allocated water use. *(Closely related to the 2024 WRDMP RMS2 "Develop and Implement Demand Management")*	SWS
 Planning and Assistance	S6	Use mutual aid agreement with PWA	Cooperation among different agencies and systems to share resources during drought or water shortage events can provide an additional source of supply for some SWS. These agreements can take many forms and may include sharing water resources, collaborating for emergency response efforts, providing technical assistance or expertise, or facilitating communication and information sharing. The specific arrangements included in the mutual aid agreements will vary based on a SWS limitations and needs. *(Closely related to the 2024 WRDMP RMS1 "Secure Surface Water Supply Entitlements")*	Agency, County, SWS
	S7[b]	**Implement streamlined well permitting system during drought or water shortage events**	**Developing emergency protocols to streamline permitting during drought or water shortage events would ensure that SWS at risk of delivery disruptions are able to address any emerging issues as quickly as possible by reducing the time and cost associated with obtaining permits for different mitigation actions, such as drilling wells.**	**County**
	S8[b]	**More frequent County Drought and Water Shortage Task Force coordination**	**Convening the Task Force more frequently will allow the Agency and County to proactively identify challenges, develop solutions, and implement response measures quickly and**	**Agency, County**

Short-term Response Action Category	ID	Action	Description	Lead Entity(ies)
Structural				
			efficiently. This can help ensure that water supplies are used as efficiently as possible and that essential needs are met during drought or water shortage events. ***(Closely related to the 2024 WRDMP RMS7 "Improve Drought Preparedness and Responses")***	
	S9[b]	**Support and assist with funding opportunities for emergency water supply**	**SWS may find it cost-prohibitive to implement short-term response actions, and navigating different funding mechanisms can often be challenging, especially for SWS that may have limited resources and/or may be located within a disadvantaged area. There is a county-wide need for drought and water shortage planning, which can include setting aside funds for emergency water supplies. The Agency and County can help connect SWS with state and federal funding assistance programs, e.g., through Rural Community Assistance Corporation (RCAC).** ***(Closely related to the 2024 WRDMP RMS8 "Ensure All Residents Have Water Accessibility and Affordable Water")***	**Agency, County**
	S10[b]	**Distribute emergency communication templates**	**Emergency communication templates help convey a dire situation, best water conservation practices, and available resources for project implementation/drilling new wells/where to get emergency water supply. This action would include preparing these templates, developing common language to be used, and dissemination in coordination with the County.** ***(Closely related to the 2024 WRDMP RMS7 "Improve Drought Preparedness and Responses")***	**Agency, County**

GDPUD = Georgetown Divide Public Utility District

[a] When regular sources of water become scarce, residents may suggest the use of alternate water supplies that may have been rejected for use in the past or new water supplies that residents secure on a short-term basis. State Water Board or County Public Health Officer approval is needed to use as an alternative supply for domestic use. (DWR County Drought Resilience Plan Guidebook, Section 4-7).

[b] Priority actions identified based on feedback from the Agency and Task Force discussions. Priority actions are in bold font.

3.2 Long-term Mitigation Actions

Long-term mitigation actions are projects, activities, or processes taken to reduce or eliminate long-term impacts from drought and water shortage conditions. These are typically focused on prevention and reduction of future drought and/or water shortage impacts. As described in Section 3.1, an initial list of long-term mitigation actions was created based on a review of existing, relevant planning documents.

In addition, many long-term mitigation actions were identified through review of the 2024 WRDMP.

The CDPR leveraged existing plans and resources to identify long-term mitigation actions. These mitigation actions were grouped into seven categories: water supply, water system infrastructure, consolidation, water conservation, data/information, planning and assistance, and education. The identified actions are presented in Table 3-2. Priority actions, presented in bold text in Table 3-2, were identified based on Agency and Task Force feedback.

When considering the feasibility and viability of these actions, it is important to note that consolidation may be more challenging to pursue in areas where systems are far apart and small in size, like the West Slope. These mitigation actions also reflect collaboration opportunities, such as with the County Hazard Mitigation Plan. Another opportunity for collaboration that should be considered is the next update of the El Dorado County Climate Vulnerability Assessment. This collaboration can help support more holistically informed planning across the County in the future.

Table 3-2. Long-term Mitigation Actions for SWS in El Dorado County

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
Structural				
 Water Supply	**L1**[a]	**Secure Surface Water Entitlements**	**Long-term acquisition of additional water rights is discussed in the 2024 WRDMP and may be especially pertinent for West Slope areas which are predominantly fractured rock aquifer dependent.**	**Agency**
	L2[a]	**Drill new wells or deepen existing ones**	**Providing an additional water source would increase supply redundancy, improve system capacity, and reduce the likelihood of delivery disruptions. New wells should not be established in areas that have historically had issues such as water quality impairments or wells running dry.**	**SWS, Domestic Well Owners**
	L3	Install water treatment facilities	Installing water treatment facilities would allow SWS to use previously unusable water sources and would provide water supply redundancy. *(Closely related to the 2024 WRDMP RMS10 "Prevent Contamination of Surface Water and Groundwater Resources")*	SWS

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
 Water System Infrastructure	**L4**[a]	**Install reserve tanks**	**Reserve tanks would increase supply redundancy and allow the SWS or domestic well owners to continue using water if their primary/secondary source of supply is disrupted. This is important for domestic well owners as household tank systems are needed to receive bulk water deliveries.** ***(Closely related to the 2024 WRDMP RMS5 "Secure Water Infrastructure")***	**SWS, Domestic Well Owners**
	L5	Install emergency intertie with neighboring SWS	Emergency interties can provide SWS with an additional supply source transferring water to it from a system with a supply surplus. Establishing interties will require identifying potential sources, assessing the capacity and feasibility of interconnections, and installing the necessary transfer infrastructure. *(Closely related to the 2024 WRDMP RMS5 "Secure Water Infrastructure")*	SWS
	L6[a]	**Update water system infrastructure**	**Infrastructure upgrades can improve the reliability of a SWS' delivery system and reduce system losses. This effort could include managing system water pressure, repairing aging pipelines, replacing outdated meters, etc. Updating infrastructure not only improves water supply reliability and**	**SWS**

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			efficiency but increases the likelihood that a PWA would consolidate with a smaller system. ***(Closely related to the 2024 WRDMP RMS5 "Secure Water Infrastructure")***	
	L7	Line/coat canals or other conveyance infrastructure	Lining or coating the surface of canals or other conveyance infrastructure can reduce water loss from seepage. Lining/coating can be done using concrete, asphalt, or synthetic materials such as high-density polyethylene (HDPE). Material type will depend on factors such as soil type, water chemistry, and the expected lifespan of the lining/coating. *(Closely related to the 2024 WRDMP RMS5 "Secure Water Infrastructure")*	SWS
	L8[a]	**Install standby generators**	**SWS that are able to provide auxiliary power for multiple days during a power outage can ensure the continuous operation of critical systems/infrastructure and minimize the likelihood of delivery disruptions.** ***(Closely related to the 2024 WRDMP RMS5 "Secure Water Infrastructure")***	**SWS, Domestic Well Owners**

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
 Consolidation	L9	Pursue physical consolidation	Physical consolidation with another SWS or a larger public water agency could minimize disruptions to supply and provide a SWS with additional resources (such as managerial staff or water system operators, funding) and supply/infrastructure redundancies. *(Closely related to the 2024 WRDMP RMS8 "Ensure All Residents Have Water Accessibility and Affordable Water")*	SWS
	L10	Pursue managerial consolidation	Managerial consolidation can streamline decision-making among SWS/PWA and lead to more effective and efficient water supply planning and management. Managerial consolidation could improve coordination, increase accountability by simplifying the governance structure, and increase financial efficiency by reducing administrative costs and improving economies of scale. *(Closely related to the 2024 WRDMP RMS8 "Ensure All Residents Have Water Accessibility and Affordable Water")*	SWS

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
Non-structural				
 Water Conservation	**L11**[a]	**Encourage and implement water conservation measures**	**Water conservation measures are designed to promote responsible water use and encourage individuals, businesses, and communities to reduce water consumption. Measures may include behavioral changes (e.g., shorter showers), high efficiency appliances (e.g., toilets), landscape water conservation practices, or water pricing strategies (e.g., tiered rate structures that charge higher rates for higher levels of water use). Effective public participation will require education and outreach through social media, direct mailings, etc. Other incentives, such as rebates for households that have reduced their water use, could also increase participation. The entities should coordinate messaging and common language on implementing conservation measures where applicable.** ***(Closely related to the 2024 WRDMP RMS2 "Develop and Implement Demand Management")***	**SWS, County, Domestic Well Owners, Agency, EID, GDPUD**
	L12	Install flow meters	Water monitoring devices such as flow meter improve a SWS's ability to track water use, detect unusual use patterns,	SWS

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			identify leaks, and optimize water distribution. Ultimately, monitoring devices can help conserve water and increase use efficiency. *(Closely related to the 2024 WRDMP RMS2 "Develop and Implement Demand Management")*	
	L13	Improve leak reporting and response programs	These programs can help reduce water loss due to leaks in the supply system, which can help conserve water during drought. By identifying and repairing leaks quickly, SWS can make use of these programs can help prevent further damage to infrastructure and reduce the cost of repairs over time. *(Closely related to the 2024 WRDMP RMS2 "Develop and Implement Demand Management")*	SWS
	L14	Conduct water loss audits	Audits can help identify where water is being lost. Developing strategies to reduce this loss can help conserve water during drought and reduce the impact of drought on the local community. Audits include identifying water losses, measuring water loss, developing strategies to reduce water loss, implementing these measures, and instigating regular monitoring to ensure the measures are effective.	SWS

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			(Closely related to the 2024 WRDMP RMS2 "Develop and Implement Demand Management")	
	L15	Improve efficiency of existing irrigation systems	Improving irrigation system efficiency for lawns, small agriculture plots, and/or orchards can help reduce water use and decrease demand. Installing the appropriate irrigation system type can reduce evaporation, percolation, and runoff. *(Closely related to the 2024 WRDMP RMS2 "Develop and Implement Demand Management")*	SWS, Domestic Well Owners
	L16	Implement volumetric rate structure	SWS with a rate structure other than flat base rates (such as a rate structure based on use volume) are considered to have a higher capacity to cope during dry or drought periods by providing a financial incentive to reduce water usage. A volumetric rate structure helps minimize overconsumption and reduces demand. *(Closely related to the 2024 WRDMP RMS2 "Develop and Implement Demand Management")*	SWS
 Data/Information	L17	Install groundwater level monitoring devices	Monitoring groundwater levels provides important information about changes in groundwater resources over time. This data can be used to develop strategies to	SWS, Domestic

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			reduce depletion or to enhance recharge, which can help ensure the sustainability of groundwater resources during periods of drought. Moreover, if groundwater levels reach critical levels, SWS can begin identifying alternate sources of supply prior to the well running dry. *(Closely related to the 2024 WRDMP RMS3 "Implement Sustainable Groundwater Management")*	Well Owners
	L18	Establish a well monitoring network in the West Slope	A well monitoring network provides current groundwater conditions and a source of data that can be used to refine a County's Drought and Water Shortage Risk Assessment to better prepare counties for future drought or water shortage events. A well monitoring network allows the County and Agency to track where wells are running dry, have had water quality impairments (using advanced technologies like remote sensing), or have had issues. The information obtained can be used to advise against putting a well at a particular problem-prone location. A well monitoring network could be integrated with an existing network, such as the one implemented by South Tahoe Public Utility District.	Agency, County

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			(Closely related to the 2024 WRDMP RMS3 "Implement Sustainable Groundwater Management," RMS 7 "Improve Drought Preparedness and Response," and RMS9 "Improve Watershed Management for Water Resource-Related Benefits")	
	L19	Reduce barriers to cooperation between County and Domestic Well Owners	A review and revision of existing code language as well as efforts to modify processes and potential ordinances to reduce potential code enforcement conflicts and create avenues for improved outreach efforts. This can support and enable better use of the DWR established dry well reporting system, especially given that under current code conditions well owners may be hesitant to report dry wells to the state due to concerns about citations/sanctions. *(Closely related to the 2024 WRDMP RMS 7 "Improve Drought Preparedness and Response")*	County, Agency
	L20[a]	**Update the County website with drought resources**	**Providing the public access to a webpage with drought information and resources will increase public awareness and reduce the impact of drought and water shortage events on the community. The information and resources presented could include up-to-date drought conditions and**	**County**

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			monitoring tools, drought and water shortage planning documents, water conservation tips, agencies/departments to contact during water shortage emergencies, a list of licensed water haulers, a dry well reporting system, and financial assistance opportunities during emergencies. ***(Closely related to the 2024 WRDMP RMS 7 "Improve Drought Preparedness and Response")***	
	L21	Update the Agency's online mapping and data portal	The Agency's Online Mapping and Data Portal streamlines access to information/data pertinent to water management in El Dorado County for partners, interested parties, and the public. The application includes a tool that summarizes current water conditions in El Dorado County, as well as a specific drought monitoring tool to provide up-to-date drought conditions. By integrating land use data from the County's Planning and Building Department with well permit data from EMD, the tool will facilitate more accurate drought and water shortage planning in the future.	Agency, County

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			(Closely related to the 2024 WRDMP RMS9 "Improve Watershed Management for Water Resource-Related Benefits")	
	L22	Maintain accurate SWS service area boundaries	Collecting, standardizing, updating, and publishing service areas boundaries for all water suppliers is a critical step toward having the necessary tools to assess risk to drought and water shortage, and to encourage water system consolidations and regional partnerships. Water service area boundaries are also important geospatial datasets for estimating and projecting utility populations and water demand for water supply planning. *(Closely related to the 2024 WRDMP RMS9 "Improve Watershed Management for Water Resource-Related Benefits")*	SWS
	L23	Update County permits/forms to collect relevant water- and system-related data	Often, the data required to effectively plan for and mitigate the impacts of drought and water shortage events are not readily available. Updating the type of information requested on permits can be used to gather additional data on SWS and establish a baseline for future planning. This information may include data related to aging infrastructure, water right curtailments, rate structure, etc.	County

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			(Closely related to the 2024 WRDMP RMS3 "Implement Sustainable Groundwater Management")	
 Planning and Assistance	**L24**[a]	**Develop and maintain drought preparedness or Water Shortage Contingency Plans**	**Drought preparedness and Water Shortage Contingency Plans help SWS and rural communities better prepare for drought events by assessing drought vulnerability, identifying actions to reduce drought vulnerability, establishing drought response triggers, and developing a staged demand-reduction program. SWS will be the lead entity, but the Agency and County should work together to make guidance and resources more widely available.** **This action is particularly important for local schools that are required to have a Water Shortage Contingency Plan in place. An example template for this plan is provided in Appendix G.** ***(Closely related to the 2024 WRDMP RMS 7 "Improve Drought Preparedness and Response")***	**SWS, Agency, County**
	L25	Foster regional collaboration with neighboring counties	Collaboration with neighboring counties supports knowledge sharing and potential cross-county resource sharing in times of need. This can include agreements for mutual support in the case of drought or water shortage and	Agency, County

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			could focus on water resource planning, jointly pursuing funding through state and federal programs, and collaborating on emergency management actions and programs. *(Closely related to the 2024 WRDMP RMS9 "Improve Watershed Management for Water Resource-Related Benefits")*	
	L26	Develop and maintain emergency response or drinking water distribution plan	An emergency response or drinking water distribution plan is a document that outlines the procedures and protocols for responding to water supply emergencies, such as drought or water shortage events. This plan typically includes strategies for maintaining and distributing a safe and reliable supply of drinking water to the affected population/community during an emergency situation. *(Closely related to the 2024 WRDMP RMS 7 "Improve Drought Preparedness and Response")*	SWS
	L27	Update the County's MJHMP	The County's MJHMP includes information that reduces or eliminates long-term risk to people and property from hazards. Updating the MJHMP to incorporate information presented in the	County

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			Upper American River Basin Regional Drought Contingency Plan and the County Drought Resilience Plan will help ensure that emergency services are prepared to address future drought events. *(Closely related to the 2024 WRDMP RMS 7 "Improve Drought Preparedness and Response")*	
	L28	Perform an annual drought supply evaluation	This evaluation helps the County, Agency, and water system operators identify potential risks and vulnerabilities associated with water supply during drought conditions. It typically includes several components, including the assessment of water supply sources, demand and use, and management practices. *(Closely related to the 2024 WRDMP RMS 7 "Improve Drought Preparedness and Response")*	SWS
	L29	Provide technical assistance for SB 552 compliance	Drought preparation and planning can often be prohibitively expensive and time-consuming—particularly for SWS with fewer resources. The Agency has limited capacity to provide technical assistance. However, this technical assistance and additional resources to help navigate many of these drought	Agency, County (RCAC)

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			and/or water shortage planning efforts can be routed through RCAC opportunities. *(Closely related to the 2024 WRDMP RMS 7 "Improve Drought Preparedness and Response")*	
	L30	Technical assistance support (including state and federal resources)	Similarly to L27, SWS may have fewer resources and limited technical ability to plan and prepare for drought and water shortages. Technical assistance and additional resources to help navigate many of these drought and/or water shortage planning efforts can be routed through RCAC opportunities. *(Closely related to the 2024 WRDMP RMS8 "Ensure All Residents Have Water Accessibility and Affordable Water")*	Agency, County (RCAC)
	L31	Support and assist with funding opportunities	SWS may find it cost-prohibitive to implement short-term response actions and long-term mitigation actions, and navigating different funding mechanisms can often be challenging. However, with assistance from programs through RCAC, SWS and well owners can identify and pursue funding opportunities available at the State and federal level to more quickly receive monies for infrastructure	Agency, County (RCAC)

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			repairs, improvements, and other necessary measures. *(Closely related to the 2024 WRDMP RMS8 "Ensure All Residents Have Water Accessibility and Affordable Water")*	
	L32	Develop mutual aid agreement	Cooperation among different agencies and systems to share resources during drought or water shortage events can provide an additional source of supply for some SWS. These agreements can take many forms and may include sharing water resources, collaborating on emergency response efforts, providing technical assistance or expertise, or facilitating communication and information sharing. The specific arrangements included in the mutual aid agreements will vary based on a SWS limitations and needs. Negotiating and developing mutual aid agreements can take time; therefore, developing these agreements in advance is beneficial as it establishes agreed upon aid actions that can be quickly implemented when a drought or water shortage occurs.	SWS, Agency, County
	L33[a]	**Develop streamlined well permitting system**	**Developing emergency protocols to streamline permitting during drought or**	**County**

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			water shortage events would enable SWS at risk of delivery disruptions to address emerging well issues as quickly as possible by reducing the time and potential cost associated with obtaining permits for different mitigation actions, such as drilling wells.	
	L34	Annual tracking and reporting for CDRP implementation	Implementation of CDRP priority actions could be monitored and evaluated on an annual basis to track and summarize in a brief report.	Agency
 Education	L35	Collaborate with SAFER's Water Partnership Training Program	Periodically, SAFER hosts Water Partnership Trainings to inform SWS of the support it can provide (e.g., technical, financial, managerial assistance) and to bring awareness to the various types of partnerships and consolidations they can use. By collaborating with SAFER and supporting their Water Partnership Trainings, the Agency can help raise awareness about potential opportunities for support and/or consolidation.	Agency
	L36	**Collaborate with RCAC's training and workshops**	**RCAC provides workshops and training programs, such as the California Drinking Water Workshops, to provide information that helps small, rural water systems deliver safe, reliable drinking water to their customers and**	**Agency**

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
			to demonstrate how to properly manage a water system for long-term viability. By collaborating with and supporting RCAC workshops and training programs, the Agency can encourage the sustainable management of SWS in El Dorado County, particularly during drought or water shortage events.	
	L37	Educate residents about water conservation	Educating the public about water conservation promotes sustainable water use, reduces demand, and enhances the community's resilience during drought or water shortage events by encouraging residents to adopt water saving behaviors and providing them with the information they need to make informed decisions about their water use. This information can be disseminated through the Agency/County website, social media, outreach events, direct mailings, etc. *(Closely related to the 2024 WRDMP RMS2 "Develop and Implement Demand Management")*	Agency, County, SWS

Response or Mitigation Action Category	ID	Action	Description	Lead Entity(ies)
	L38	**Educate customers about the resources available during drought or water shortage events**	**Education will improve emergency response times, minimize supply disruptions, and improve overall resiliency. This information can be disseminated through social media, outreach events, direct mailings, etc.** ***(Closely related to the 2024 WRDMP RMS 7 "Improve Drought Preparedness and Response")***	**Agency, County**

GDPUD = Georgetown Divide Public Utility District; OES = El Dorado County Office of Emergency Services; SAFER = SWRCB's Safe and Affordable Funding for Equity and Resilience

[a] Priority actions identified based on feedback from the Agency and Task Force discussions. Priority actions are in bold font.

4 Implementation Plan

Based on the wide range of environmental, infrastructure, regulatory and organizational, and social vulnerabilities, there are many short- and long-term actions that are recommended for implementation to improve overall reliability for drought and water shortage events. Recommended activities include both structural and non-structural actions in the short- and long-term. The implementation plan and monitoring and evaluation sections of this chapter bring together these actions, demonstrate the suggested sequencing of implementation, and provide guidance on how to monitor and evaluate their implementation over time.

4.1 Implementation Plan

The workflow diagram shown in Figure 4-1 shows the sequence of activities required to implement the prioritized (bold text) short- and long-term actions described in detail in Chapter 3. The workflow diagram identifies the entities who own these activities in the horizontal rows (County, Agency, EID, GDPUD, SWS, and domestic well owners), and the key planning horizons across the columns. The grey activity boxes are the prioritized strategies identified in Chapter 3. Red activity boxes are prioritized strategies that are also low regret / low hanging fruit activities that are recommended to be implemented in the immediate future. The light orange ovals represent activities that are activated based on drought and water shortage triggers discussed in Table 4-1.

4.2 Drought Stages and Triggers

Drought stages are triggered by changes to existing regulations, social or community changes, and changes in environmental conditions. Per the Upper American River Basin Regional Drought Contingency Plan, which lists the drought stages and response actions and objectives for three major water purveyors in the West Slope, the typical drought and water shortage stages with respect to water supply condition are as listed below and summarized in Table 4-1:

- Stage 1 = up to 15 percent restrictions
- Stage 2 = up to 25-30 percent restrictions
- Stage 3 = up to 50 percent restriction
- Stage 4 = above 50 percent restriction

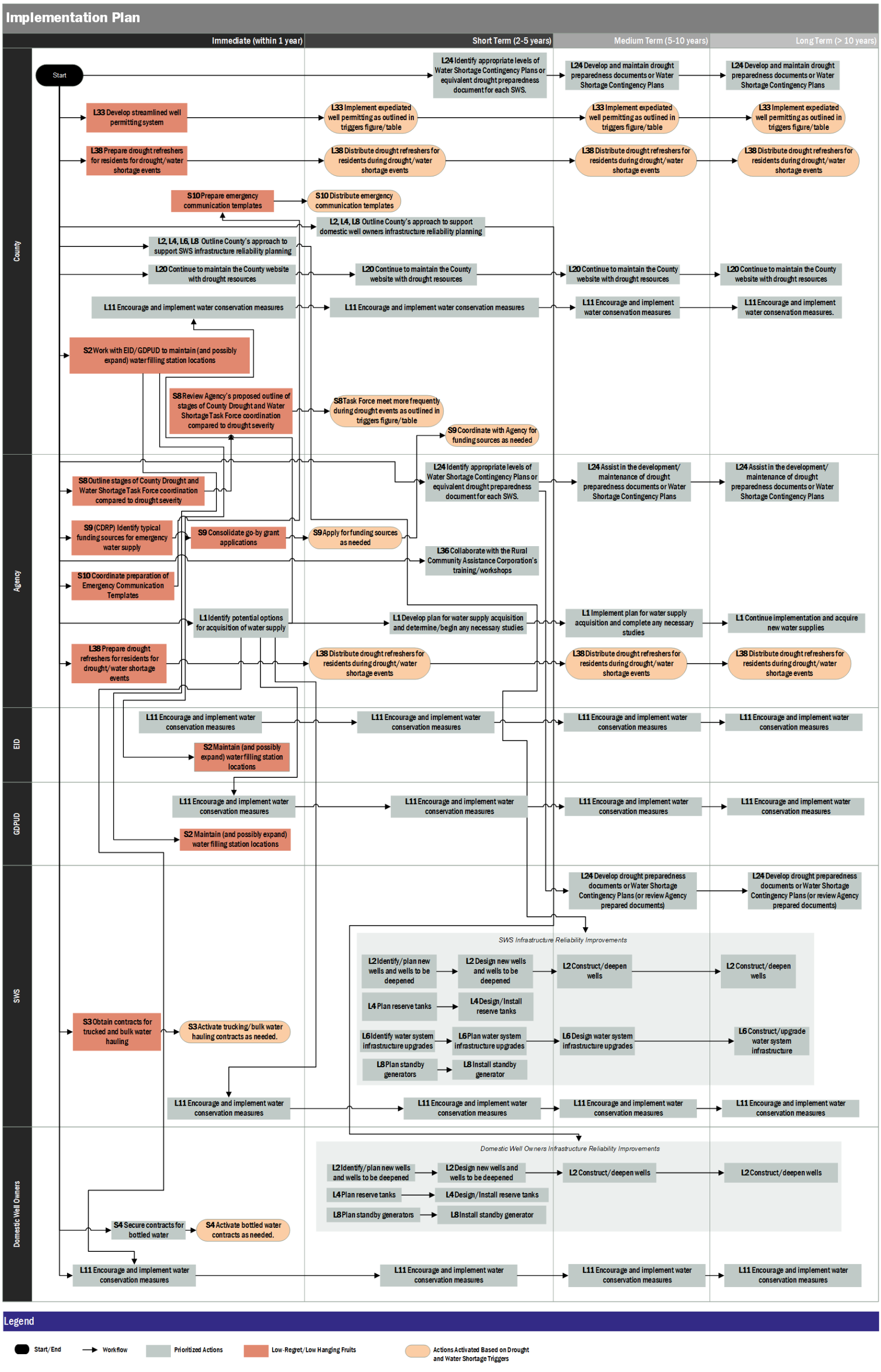

Figure 4-1. Implementation plan

Table 4-1. Drought Stages and Water Shortage Triggers

Drought and Water Shortage Stage	Water Supply Condition Triggers	Response Actions (potential triggered implementation activities from Implementation Plan [Figure 4-1])
None – ongoing water conservation and enforcement of water waste prohibition	Normal Water Supply	Public outreach and education for ongoing water efficiency practices and the prohibition of water waste
Stage 1 – Introductory stage with voluntary reductions in use	Slightly Restricted Water Supplies Up to 15% Supply Reduction	Encourage voluntary conservation measures to achieve up to a 15% demand reduction • **(L25)** Distribute drought refreshers to residents
Stage 2 – Voluntary and mandatory water use reductions	Moderately Restricted Water Supplies Up to 30% Supply Reduction	Voluntary conservation measures are continued, with the addition of some mandatory measures to achieve up to a 30% demand reduction. • **(L25)** Distribute drought refreshers to residents • **(S8)** More frequent Task Force coordination (once a month) • **(S9)** Support and assist with funding opportunities for emergency water supply • **(L36)** Implement streamlined well permitting system • **(S2)** Maintain (and possibly expand) water filling station locations as needed
Stage 3 – Mandatory reductions in water use	Severely Restricted Water Supplies Up to 50% Supply Reduction	Enforce mandatory measures to achieve up to a 50% demand reduction • **(L25)** Distribute drought refreshers to residents • **(S8)** More frequent Task Force coordination (twice a month) • **(S9)** Support and assist with funding opportunities for emergency water supply • **(L36)** Implement streamlined well permitting system • **(S2)** Maintain (and possibly expand) water filling station locations as needed • **(S3)** Obtain contracts for water trucking and bulk water hauling • **(S4)** Purchase packaged or bottled water • **(S10)** Distribute emergency communication templates

Drought and Water Shortage Stage	Water Supply Condition Triggers	Response Actions (potential triggered implementation activities from Implementation Plan [Figure 4-1])
Stage 4 – Water rationing for health and safety purposes	Extremely Restricted Water Supplies Greater than 50% Supply Reduction	Enforce mandatory measures to achieve greater than 50% demand reduction • **(L25)** Distribute drought refreshers to residents • **(S8)** More frequent Task Force coordination (twice a month) • **(S9)** Support and assist with funding opportunities for emergency water supply • **(L36)** Implement streamlined well permitting system • **(S2)** Maintain (and possibly expand) water filling station locations as needed • **(S3)** Obtain contracts for water trucking and bulk water hauling • **(S4)** Purchase packaged or bottled water • **(S10)** Distribute emergency communication templates Recommended additional actions (not identified as priority actions but listed as potential actions within Chapter 3): • **(S1)** Treat available water from non-regular sources • **(S5)** Use mutual aid agreement with PWA • **(S6)** Enact water rationing

4.3 Implementation Plan Monitoring and Evaluation Approach

The implementation plan activities on Figure 4-1 are complemented by routine monitoring and evaluation of the implementation plan. This routine monitoring and evaluation will indicate what activities should be updated or adjusted, the frequency of that update, and the role of the Agency, Task Force, and other entities in those updates. Monitoring and evaluation will occur through multiple touchpoints including annual status reports and five-year evaluations for CDRP updates. The lead agency for ensuring that monitoring and evaluation occur is described below.

4.3.1 Annual Status Reports and Five-Year Plan Evaluation

To ensure a continued and proactive approach to drought and water shortage resilience planning, the implementation actions outlined in Figure 4-1 are to be monitored and evaluated on an annual basis to track completion of the priority actions, especially the low-regret actions detailed in Figure 4-1 and recommended for immediate implementation. Thereafter, the CDRP is to be monitored by convening the Task Force on an annual basis and a brief one- or two-page annual report shall be created with the Task Force to track the status and viability of action items. The assumed start year (year 1) is 2026. This tracking and reporting process can be led by the Agency as a long-term mitigation action.

Similar to the UARB RDCP, a plan update "needs evaluation" will be performed to determine the necessity of a comprehensive update of the CDRP every five years. If the evaluation demonstrates a need to update the CDRP, it will be updated through close coordination with the Task Force. Initiation and completion of implementation and update activities will be contingent on the availability of sufficient funding. The vulnerability assessment and corresponding action items should be assessed every 5 years (years ending in 5 and 0) in alignment/accordance with the WRDMP (years ending in 4 and 9) and PWP (years ending in 3 and 8). A complete CDRP update is not always necessary. CDRP update considerations should:

- Include a check to determine if updated or new data has resulted in significant changes that would be pertinent to ensure the vulnerabilities and actions are still feasible, relevant, and prioritized correctly.
- Incorporate relevant water resource actions from related plans, such as the County of El Dorado Wildfire Strategy (County, 2023b) and Disaster Playbook.
- Consider legislature changes such as updates to SB 552 or related legislature that would affect county or SWS drought planning. The CDRP will be updated within 1 to 2 years of the new legislature or as required by the law.

4.3.2 Lead Entity and Collaboration

The Agency will lead the monitoring and evaluation of the implementation plan by coordinating with task owners shown on Figure 4-1.

At the specified review interval, the Agency will consult with the Task Force on matters such as streamlined well permitting, emergency communication templates, determining appropriate levels of support for drought planning for each SWS; and/or sharing of best practices (water conservation measures, and infrastructure identification, planning, design, and construction).

Additionally, the Agency will seek Task Force input on review of the annual reports as well as the CDRP update before finalizing these documents.

5 Technical and Financial Assistance

Technical and financial assistance resources are provided to facilitate the implementation of drought and water shortage resilience projects.

5.1 Technical Assistance

Technical assistance resources for the implementation of drought and water shortage resilience projects are provided in Appendix F. In summary, the relevant resources for technical assistance include:

- State Water Board Technical Assistance – in addition to assistance from the County and Agency, SWS and domestic wells can seek technical assistance from the State Water Board.
- EPA's Drought Response and Recovery Projects – EPA's map provides success stories of lower-income rural communities in combating drought.
- EPA's WaterTA Engineering Support program:
    - Identifying water challenges such as aging infrastructure, water quality concerns, climate resilience, source water protection, emerging contaminants
    - Providing technical/managerial support
    - Community engagement
    - Assisting in the development of preliminary solutions plan (technical recommendations, costs and funding avenues, implementation roadmap)
    - Funding support (identification and application support, planning and design development)
    - Long-term capacity assistance (operations and maintenance, training, on-the-ground support).
- RCAC Drought Resources – RCAC provides drought preparedness and response strategies
- RCAC Free Drinking Water Well Assessment
- RCAC Well Owner Workshops
- RCAC Environmental Infrastructure Loan Program Summary, template, criteria, and contact information
- Private Well Class – The Private Well Class program offers free webinars for well owners on topics such as finding local information, outreach strategies, and water quality best practices.

All SWS are recommended to complete at the minimum the State Water Board technical assistance request form. For limited technical assistance projects (up to 80 hours), there are multiple funding sources from state funding initiatives. If a SWS is in need of technical assistance but does not meet eligibility requirements, they may be able to hire RCAC to perform the work at an affordable rate, which may be lower than a typical consultant fee.

5.2 Financial Assistance

There are a variety of local, state, and federal funding sources available to implement short- and long-term drought and water shortage actions. These sources are listed in Table 5-1., which includes a description of the funding opportunity and type, including the types of eligible projects, a list of who is eligible to apply for this funding, and schedule of availability.

Table 5-1. Funding Opportunities

Funding Source	Description of Funding Opportunity	Eligible Entities	Schedule (As of January 2025)	Funding Type
Drinking Water State Revolving Fund (DWSRF)	**Loan eligibility:** Assistance for planning, design, and construction of drinking water infrastructure projects needed to achieve or maintain compliance with federal and state drinking water statutes and regulations. Funds projects for water sources, water storage facilities, treatment systems, distribution systems, interconnections, consolidations, and waterline extensions **Grant eligibility:** eligibility is more limited for grants. The project must benefit a small DAC.	Counties, cities and districts For-profit water utilities Non-profit mutual water companies Public school districts	OPEN	Low interest loans Grants
U.S. Department of Agriculture (USDA), Rural Development: Water and Waste Disposal (WWD) Loan and Grant Program	Funds may be used to finance the acquisition, construction or improvement of: • Drinking water sourcing, treatment, storage and distribution • Various waste disposal, collection, and treatment projects. In some cases, funding may also be available for related activities such as: • Legal and engineering fees • Land acquisition, water and land rights, permits and equipment • Start-up operations and maintenance • Interest incurred during construction • Purchase of facilities to improve service or prevent loss of service • Other costs determined to be necessary for project completion • See 7 Code of Federal Regulations (CFR) Part 1780.7 and 1780.9 for a complete list (Above primarily verbatim from USDA website)	Within rural areas with populations of 10,000 or less: State and local governmental entities Private non-profits Federally-recognized tribes	OPEN	Long-term, low-interest loans

Funding Source	Description of Funding Opportunity	Eligible Entities	Schedule (As of January 2025)	Funding Type
USDA, Rural Development: Community Facilities Loan and Grant Program	Per USDA website, funds can be used to purchase, construct, and / or improve essential community facilities, purchase equipment and pay for related project expenses. Essential community facilities include: • Health care facilities such as hospitals, medical clinics, dental clinics, nursing homes, or assisted living facilities • Public facilities such as town halls, courthouses, airport hangars or street improvements • Community support services such as child care centers, community centers, fairgrounds or transitional housing • Public safety services such as fire departments, police stations, prisons, police vehicles, fire trucks, public works vehicles or equipment • Educational services such as museums, libraries or private schools • Utility services such as telemedicine or distance learning equipment • Local food systems such as community gardens, food pantries, community kitchens, food banks, food hubs, or greenhouses For a complete list see Code of Federal Regulations 7 CFR, Part 1942.17(d) for loans; 7 CFR, Part 3570.62 for grants.	Within rural areas with populations of 20,000 or less: Public bodies Community-based non-profit corporations Federally recognized Tribes	Open Year Round	Low interest direct loans Grants A combination of the two, as well as USDA's loan guarantee program. These may be combined with commercial financing to finance one project if all eligibility and feasibility requirements are met.

Funding Source	Description of Funding Opportunity	Eligible Entities	Schedule (As of January 2025)	Funding Type
USDA, Rural Development: Emergency Community Water Assistance Grants in California	Per the USDA website, Applicants must show that a major decline or imminent decline in quantity or quality of water occurred within two years of the date of the application. Eligible projects: • Water transmission line grants up to $150,000 to construct waterline extensions, repair breaks or leaks in existing water distribution lines, and address related maintenance necessary to replenish the water supply • Water source grants up to $1,000,000 for the construction of new wells, reservoirs, transmission lines, treatment plants, and/or other sources of water (water source up to and including the treatment plant) Events that qualify for an emergency: • Drought or flood • Earthquake • Tornado or hurricane • Disease outbreak • Chemical spill, leak or seepage • Other disasters	Within rural areas with populations of 10,000 or less and a median household income below the state's median: Public bodies Nonprofit organizations Federally recognized tribes	OPEN	Grants

Funding Source	Description of Funding Opportunity	Eligible Entities	Schedule (As of January 2025)	Funding Type
Lake Tahoe Restoration Act (LTRA)	Eligible projects per Tahoe Regional Planning Agency website include: • Forest health (fuels treatment) • Water infrastructure to fight fire (upgrading aging and undersized water systems to protect communities from fire) • Watershed restoration (complete large-scale projects underway to restore meadows and wetlands and protect biodiversity; reduce stormwater pollution)	Lake Tahoe Community Only: Local governmental entities Private nonprofits Federally recognized Tribes	OPEN	Various grants and funds
RCAC Loan Fund Programs Individual Water Well and Septic Systems Program	Repair or replace water well/septic system For a complete list of Loan Fund Programs, including non-water related programs, see the RCAC website Additionally, per the individual well program website: Free drinking water well assessments are offered for private well owners to inspect and identify potential well vulnerabilities, potential well contamination sources, well construction inspection, water quality screening, and an assessment report with recommendations of possible needed repairs and water treatment options. Well owner workshops are also available and will be discussed in the technical assistance section.	Individual property owner	OPEN	Low interest loans Grants possible
RCAC Agua4All Bottled Water for Schools and Communities	Install water bottle filling stations and provide reusable water bottles.	Schools, rural communities, and tribal communities	OPEN	Low interest loans Grants possible

Funding Source	Description of Funding Opportunity	Eligible Entities	Schedule (As of January 2025)	Funding Type
RCAC Household Water Well and Septic System Loan/Grant Programs	Construct, refurbish, or replace individual water well and septic systems New home and small water system construction is not eligible Up to $60,000 available for individual wells and up to $100,000 for SWS Residence must be in a rural area, town or community in RCAC's 13 state service area with a population not exceeding 50,000	Owners of individual households and SWS (serving at least two but fewer than 15 service connections and is not a Public Water System). Household income may not exceed $67,278. For small water systems, income is based on the average household income of the stakeholders/owners.	CLOSED Per RCAC website	Low interest loans Grants
SWRCB CAA Urgent Water Needs	Per the State Water Board's website, eligible projects include, but are not limited to: • Provision of interim alternate water supplies, such as bottled or hauled water. • Emergency improvements or repairs to existing water systems as necessary to provide an adequate supply of domestic water. Improvements or repairs will typically only be funded if shown to be a more cost-effective interim solution than provision of interim alternate water supplies. Eligible improvements or repairs include but are not limited to: ○ Well rehabilitation or replacement; ○ Emergency interties, extension of service, or consolidation projects; ○ Treatment systems; ○ Rented, borrowed or purchased equipment; ○ Design, installation and initial startup costs;			

Funding Source	Description of Funding Opportunity	Eligible Entities	Schedule (As of January 2025)	Funding Type

	• Certain construction projects that meet all the following criteria:
	  ○ Project cost is less than $500,000
	  ○ Project will serve a small DAC, primarily low-income households, or a school
	  ○ Water system is out of compliance or at-risk and project is urgent in nature
	  ○ Addresses an immediate health risk, untreated or at-risk water sources, or chronic compliance or water shortage problems
	  ○ Project does not include an extensive planning component or legal complexities and is ready-to-proceed
	Environmental work (California Environmental Quality Act [CEQA]) has been completed or project has been deemed CEQA-exempt			

6 Conclusion

The CDRP fulfills and goes beyond the requirements under SB 552 to reflect the unique needs and characteristics of SWS and domestic wells in El Dorado County. This CDRP supports achieving greater drought and water shortage resilience across El Dorado County. This includes improving the understanding of drought and water shortage vulnerabilities for SWS and domestic wells based on existing data, identifying data gaps, and identifying high risk areas. Identifying how these systems and domestic wells are vulnerable informs what actions in the short- and long-term should be implemented to build drought and water shortage preparedness.

Greater resilience to drought and water shortage while addressing the unique needs of the El Dorado County communities supports the County General Plan vision, especially maintaining El Dorado County's rural character and balancing both environmental needs and community growth while maintaining quality of life and adequate infrastructure and conserving lands and natural resources. The details of the CDRP support implementing proactive drought planning and help El Dorado communities relying on SWS and domestic wells to be better prepared for future water shortage events and dry years.

6.1 SWS and Domestic Well Vulnerabilities

SWS and domestic well vulnerabilities are identified in the CDRP by system type and risk factors. For environmental vulnerability, the most prevalent drought and water shortage risks and data gaps included:

- Fractured rock aquifer groundwater resources presenting water supply reliability risks for many West Slope SWS and domestic wells.
- High wildfire risks, identified across the county.
- Limited data on whether systems are competing for use of their water source with agriculture, which is a challenge in understanding shared water stress issues.
- Many recent drought years.
- Limited water supply alternatives, which are pertinent for SWS that have had previous or have current water quality concerns, especially for the SSWS that have no secondary supply.

When considering infrastructure vulnerabilities, high risk factors and data gaps included:

- SWS that have no water supply redundancy; and most of these rely on one primary supply.
- Very few systems that are able to receive water transfers.
- Many systems that lack monitoring or connection metering.
- SWS that are missing information; and all but one of these are a SSWS with many of these systems located in the Tahoe Basin.

Infrastructure was not as high a risk factor for domestic wells, although moderate risk was indicated for wells located outside a Water Purveyor Service Area.

Regulatory and organizational vulnerability findings can be summarized by the following risks:

- As many as 4,500 SWS connections have a supply dependent on a water right, which may be susceptible to water curtailments.
- Many SWS are not located near a major transportation corridor and may have difficulty in obtaining bulk water; the majority of these SWS rely on wells and are in the West Slope.
- Pockets of domestic wells have a moderate to high risk in their ability to obtain bulk water.

Findings for social vulnerability are summarized by the following:

- While there are only 31 SWS systems located in an area categorized as disadvantaged or severely disadvantaged, these systems represent 6,000 connections.
- Out of the 31 systems, 12 of these systems are in severely disadvantaged areas in the Tahoe Basin.

6.2 Priority Actions

Assessment findings support and inform actions for the short- and long-term. They also provide context to help guide action implementation, including how these actions may require coordination among Agency, County, and SWS and domestic well owners. The CDRP identifies priority actions for the short-term for both SWS and domestic wells. In the short-term, these priority actions include a focus on securing emergency supplies and providing planning and funding assistance as follows:

- Maintaining (and possibly expanding) water filling station locations.
- Supporting water trucking and bulk water hauling.
- Purchasing packaged or bottled water.
- Implementing a streamlined well permitting system during drought or water shortage events.
- Conducting more frequent Task Force coordination.
- Supporting and assisting with funding opportunities for emergency water supply and distributing emergency communication templates.

For the long-term, prioritized actions focus on securing or expanding existing water supplies and addressing infrastructure updates and backups, as well as encouraging conservation measures while informing and better preparing SWS and domestic well owners. These actions include:

- Drilling new wells or deepen existing ones.
- Installing reserve tanks, updating water system infrastructure, and installing standby generators.
- Encouraging and implementing water conservation measures.
- Updating the County website with drought resources.
- Developing and maintaining drought preparedness or Water Shortage Contingency Plans.
- Developing a streamlined well permitting system (to support use both during period of water stress and normal water supply conditions).

6.3 Implementation

These actions are mapped across immediate, short-, mid-, and long-term planning horizons in the CDRP implementation plan. The sequence of these priority actions identifies which actions are low or no-regrets actions that should be implemented in the immediate future, which actions have phases of completion over time, and which entities should collaborate on their implementation. The implementation plan also identifies which of these actions are activated by drought and water shortage triggers. The implementation plan is complemented by guidance on a monitoring and evaluation schedule, that indicates what should be updated, the update frequency, and the role of the Agency, Task Force, and other entities.

6.4 Funding Mechanisms and Programs

The CDRP also provides informational resources on funding mechanisms and programs available and relevant to support action implementation. However, several discussions and communications with RCAC revealed a potential gap in available funding opportunities. State financial and technical assistance for schools have typically been made available only for water quality issues, but not water supply issues. Programs such as the Drinking Water for Schools program are geared toward addressing schools that are located within a disadvantaged community and use this as an eligibility requirement. This means that schools seeking support for water supply issues that are not in a disadvantaged community may not be eligible for funding.

6.5 Next Steps

The next step for the CDRP is for the Agency to continue coordination with the Task Force and especially the County in carrying out the implementation plan starting with the identified low regrets actions, and putting the implementation monitoring and evaluation schedule into effect.

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Appendices

- **Appendix A** – El Dorado County Drought and Water Shortage Task Force Charter
- **Appendix B** – List of Active El Dorado County Small Water Systems
- **Appendix C** – Small Water System Questionnaire
- **Appendix D** – Data Used in Development of Risk Factors
- **Appendix E** – Water Haulers List
- **Appendix F** – Resources for Domestic Well
- **Appendix G** – Water Shortage Contingency Plan Template for Schools

Appendix A: El Dorado County Drought and Water Shortage Task Force Charter

El Dorado Water Agency

County Drought and Water Shortage Task Force

El Dorado County Drought and Water Shortage Task Force Charter

PURPOSE AND GOALS

The purpose of the El Dorado County Drought and Water Shortage Task Force (Task Force) is to facilitate drought and water shortage preparedness for small water systems throughout El Dorado County through proactive planning and coordination. It will serve as the venue for collaborative discussions related to drought and water shortage conditions, regulatory requirements, updates and implementation, and potential funding opportunities for water shortage actions.

BACKGROUND

Senate Bill (SB) 552 of 2021 is part of the implementation of the SB 606 and Assembly Bill 1668 of 2018 (collectively, 2018 Water Conservation and Drought Planning Legislation, or 2018 Legislation). As the conditions for small water suppliers and rural communities are diverse, the 2018 Legislation directs the California Department of Water Resources (DWR), in coordination with the State Water Resources Control Board (State Water Board), to develop recommendations to the Legislature for actions to improve drought planning for small water suppliers and rural communities. DWR organized a County Drought Advisory Group (CDAG) in 2018 to assist DWR in the vulnerability assessment and recommendation development. The El Dorado Water Agency (Agency) is a member of CDAG and provided input and perspectives from mountain counties and foothill communities.

The 2018 Legislation did not provide a definition for small water suppliers or rural communities, although it was implied by the definition of urban water suppliers who are subject to the requirements in a separate part of the legislation. SB 552 (Hertzberg) provides such definitions and imposes new drought planning requirements on small water suppliers/systems throughout the state. One of these requirements includes formation of this Task Force. Specifically, Water Code Section 10609.70 states:

> *(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.*
>
> *(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."*

Consistent with the Agency's authority under the 1959 El Dorado County Water Agency Act, and through a 2018 Memorandum of Understanding (MOU) between the Agency and the County of El Dorado (County), the Agency was designated to prepare the Countywide Water Management Plan, which is satisfied by the Agency's 2019 Water Resources Development and Management Plan (WRDMP). The drought resiliency of small water systems and rural communities is within the scope of the WRDMP with recommended actions and resource management strategies. One of those strategies includes preparing the Upper American River Basin Regional Drought Contingency Plan (RDCP) to support drought planning and preparedness. Included within the scope of the RDCP are recommended mitigation actions—such as system consolidation or the development of a Water Shortage Contingency Plan—that would meet SB 552 requirements and improve the resiliency of small water systems in El Dorado County. The RDCP is anticipated to be finalized by Fall 2022.

Furthermore, the County requested the Agency's assistance in complying with requirements under SB 552 in coordination with the County's Environmental Management Department (EMD). EMD oversees the small water systems as the Local Primacy Agency with delegated authority from the State Water Board and permitting requirements for well drilling. On February 9, 2022 (County File #22-0202), the County's Board of Supervisors designated the Agency's Countywide Plenary for Water group to serve as the alternative process to formulating a Task Force. The Countywide Plenary for Water group meets biannually and provides an opportunity to coordinate water shortage planning with other planning efforts in El Dorado County, while also meeting the requirements of SB 552.

MEMBERSHIP

This Task Force is responsible for facilitating drought and water shortage preparedness for small water systems and domestic wells within El Dorado County and includes representatives such as local government, public water agencies, a groundwater sustainability agency, small water suppliers, schools, and citizen groups. The Task Force includes "core" members that are legally responsible for public water systems, SSWS, and domestic wells and implementing the requirements of SB 552. The Task Force also includes "advisory" members that are relied on for information and input related to drought conditions, small water system needs, and potential response actions.

ROLES AND RESPONSIBILTIES

Members

Core Task Force members are expected to:

- Review current drought conditions using tools provided by the U.S. Drought Monitor and state agencies, identify drought-related issues that will impact county residents, and develop actionable solutions to address identified problems.
- Provide support during SB 552 implementation to meet regulatory compliance; this support will include the development of a County Plan for SSWS and domestic wells.
- Disseminate Task Force findings/recommendations to the community.

Advisory Task Force members are expected to:

- Provide current water supply conditions, data, and feedback, when applicable, to support water shortage preparedness and response in El Dorado County.
- Disseminate Task Force findings/recommendations to the community and, when applicable, its customers.

El Dorado Water Agency

Consistent with its MOU with the County, the Agency will facilitate Task Force meetings and provide the venue for discussions related to SB 552 support and implementation.

ATTENDANCE AND MEETING SCHEDULE

It is anticipated that the Task Force will meet biannually, approximately every 6 months, to discuss updates and actions for water shortage planning and preparedness, and other SB 552 implementation. During drought or other water shortage events, the Task Force will meet more frequently to discuss emergency response actions to support county water users in having a reliable water supply. Attendance at every meeting is expected, or Task Force member can designate an alternate to attend on their behalf who has decision making authority.

Appendix B: List of Active El Dorado County Small Water Systems

Table B-1. Community Water Systems Serving 1,000 to 2,999 Service Connections, inclusive, and Non-transient Non-community Water Systems that are Schools

Water System No.	Water System Name	Type	Source Type	Population Served	Number of Connections	Service Area Type	Location
CA0910003	Placerville, City Of - Main	C	SW	10762	2795	Residential Area	West Slope
CA0910015	Tahoe Keys Water Company	C	GW	1420	1566	Residential Area	Tahoe Basin
CA0900111	Pioneer Elementary School EDC	NTNC	GW	250	19	School	West Slope
CA0900210	Millers Hill School	NTNC	GW	120	7	School	West Slope
CA0900304	Silverfork School (Health)	NTNC	GW	25	2	School	West Slope
CA0900309	Mountain Creek School	NTNC	GW	125	8	School	West Slope
CA0900410	Latrobe Elementary School	NTNC	GW	65	5	School	West Slope

C = Community; EDC = El Dorado County; GW = Groundwater; NTNC = Non-transient Non-community; SW = Surface Water

Table B-2. Community water systems serving 15 to 999 service connections

Water System No.	Water System Name	Type	Source Type	Population Served	Number of Connections	Service Area Type	Location
CA0910007	Lukins Brothers Water Company	C	GW	3200	982	Residential Area	Tahoe Basin
CA0910019	Lakeside Park Association	C	SW	1000	139	Residential Area	Tahoe Basin
CA0900422	Crystal Caves MHP	C	GW	112	40	Mobile Home Park	West Slope
CA0900102	Gold Beach Park	C	GW	100	40	Mobile Home Park	West Slope
CA0900404	Oaklane Mobile Village, LLC.	C	GW	75	35	Mobile Home Park	West Slope
CA0900112	Candlelight Village Mutual Water Co.	C	GW	32	32	Mobile Home Park	West Slope
CA0910006	Grizzly Flats Community Service	C	SW	1300	621	Residential Area	West Slope
CA0910018	El Dorado ID- Outingdale	C	SW	538	193	Residential Area	West Slope
CA0900300	Kyburz Mutual Water System	C	SW	30	118	Residential Area	West Slope
CA0901217	Bear State Water Works	C	GW	100	56	Residential Area	West Slope
CA0900308	Quintette Service Corp Water	C	GW	67	52	Residential Area	West Slope

Note: SB 552 only lists requirements for community water systems. Of the 135 SWS in El Dorado County with less than 1,000 service connections, only 11 are community water systems.
C = Community GW = Groundwater SW = Surface Water

Table B-3. State Small Water Systems

Water System No.	Water System Name	Type	Number of Connections	Location
CA0900669	2218 Lake Tahoe Blvd LLC	SSWS	≤ 14	Tahoe Basin
CA0901281	30 Milestone # 1 Tract Red	SSWS	≤ 14	Tahoe Basin
CA0901282	30 Milestone # 2 Tract Blue	SSWS	≤ 14	Tahoe Basin
CA0900313	Deer Crossing Camp	SSWS	≤ 14	Tahoe Basin
CA0900559	Della Cella	SSWS	≤ 14	Tahoe Basin
CA0900615	Fallen Leaf Camp Assoc	SSWS	≤ 14	Tahoe Basin
CA0900588	Heavenly Valley Trailer Park	SSWS	≤ 14	Tahoe Basin
CA0900566	Hunter Water Supply System	SSWS	≤ 14	Tahoe Basin
CA0900595	Lower Emerald Bay Tract SSWS	SSWS	≤ 14	Tahoe Basin
CA0900672	Meadow Park Village	SSWS	≤ 14	Tahoe Basin
CA0900667	Pinecone Trailer Park SSWS	SSWS	≤ 14	Tahoe Basin
CA0900117	Strawberry TRT 1-6, 36-38	SSWS	≤ 14	Tahoe Basin
CA0901285	Upper 34 Milestone Tract	SSWS	≤ 14	Tahoe Basin
CA0900557	Watermarc	SSWS	≤ 14	Tahoe Basin
CA0900616	47 Milestone/Aspen Creek Tract	SSWS	≤ 14	West Slope
CA0900637	Huckleberry Ridge Estates Mutual Water	SSWS	≤ 14	West Slope
CA0900106	Indian Diggings School	SSWS	≤ 14	West Slope
CA0900417	Rivers Bend Resort	SSWS	≤ 14	West Slope
CA0900119	Rocky Creek Water System #2	SSWS	≤ 14	West Slope
CA0900663	South Echo Summit Tract Civic	SSWS	≤ 14	West Slope

Table B-4. Remaining Small Water Systems in El Dorado County (without specific SB 552 requirements)

Water System No.	Water System Name	Type	Source Type	Population Served	Number of Connections	Service Area Type	Location
CA0900103	Silverfork Store Water System	NC	GW	50	3	Restaurant	West Slope
CA0900104	Pioneer Bible Church	NC	GW	250	1	Secondary Residences	West Slope
CA0900105	Somerset House Water System	NC	GW	100	4	Restaurant	West Slope
CA0900107	Gray's Mart & Gas (Health)	NC	GW	100	3	Other Transient Area	West Slope
CA0900109	Dru Barner Campground	NC	GW	294	8	Recreation Area	West Slope
CA0900113	Leoni Meadows Camp	NC	GW	451	150	Other Transient Area	West Slope
CA0900116	Mother Lode Water System	NC	GW	3	3	Recreation Area	West Slope
CA0900120	Sciots Tract Water System	NC	SW	218	79	Other Residential Area	West Slope
CA0900204	Nugget Campground	NC	GW	1000	6	Other Transient Area	West Slope
CA0900205	Camp Lotus Water System	NC	GW	1000	35	Other Transient Area	West Slope
CA0900206	Camp Chiquita Campground (Health)	NC	GW	100	44	Other Transient Area	West Slope
CA0900208	Pipi Campground Water System	NC	GW	150	51	Recreation Area	West Slope
CA0900212	Henningsen Lotus Park Water System	NC	GW	1000	9	Recreation Area	West Slope
CA0900213	Pioneer Park Water System	NC	GW	100	4	Recreation Area	West Slope
CA0900214	Wolf Creek Campground	NC	GW	150	45	Recreation Area	West Slope
CA0900216	The Pub Water System	NC	GW	100	2	Restaurant	West Slope

Water System No.	Water System Name	Type	Source Type	Population Served	Number of Connections	Service Area Type	Location
CA0900219	All Outdoors Adventure Trips	NC	GW	100	4	Recreation Area	West Slope
CA0900301	Silverfork Mutual Water Sys.	NC	GW	7	41	Other Residential Area	West Slope
CA0900303	Silverfork Water Association	NC	GW	20	25	Residential Area	West Slope
CA0900306	Forward Bible Conference	NC	GW	7	8	Summer Camp	West Slope
CA0900307	Olson Tract Water Association	NC	GW	25	8	Restaurant	West Slope
CA0900311	Mountain Camp II	NC	GW	300	15	Summer Camp	West Slope
CA0900314	Ice House Resort (Health)	NC	GW	100	15	Other Transient Area	West Slope
CA0900316	SMUD Powerhouse (Health)	NC	GW	100	52	Recreation Area	West Slope
CA0900317	Lake Chiquita Mutual Water Company	NC	GW	7	17	Residential Area	West Slope
CA0900319	Mt Aukum Square	NC	GW	100	4	Other Transient Area	West Slope
CA0900401	Camp Fleming -- Campground	NC	GW	240	20	Other Transient Area	West Slope
CA0900100	Camp Fleming -- Lodge	NC	GW	103	23	Other Transient Area	West Slope
CA0900411	Lotus Pub	NC	GW	65	6	Restaurant	West Slope
CA0900419	Kiota Diggings Water System	NC	GW	100	6	Recreation Area	West Slope
CA0900420	Robbs Resort	NC	GW	132	40	Recreation Area	West Slope
CA0900423	O.A.R.S., Inc #70	NC	GW	100	1	Recreation Area	West Slope
CA0900502	Pyramid Creek Trailhead	NC	GW	2000	3	Other Transient Area	West Slope
CA0900505	Camp Shelly	NC	GW	200	15	Summer Camp	Tahoe Basin
CA0900506	Spring Creek Tract Association	NC	GW	6	137	Residential Area	Tahoe Basin
CA0900507	Stanford Sierra Camp	NC	SW	15	32	Summer Camp	Tahoe Basin
CA0900511	Cathedral Water Association	NC	GW	25	26	Other Residential Area	Tahoe Basin
CA0900515	Angora Lakes Resort	NC	GW	400	14	Other Transient Area	Tahoe Basin
CA0900516	Camp Sacramento	NC	SW	250	20	Summer Camp	West Slope
CA0900523	Cascade Mutual Water Company	NC	GW	60	33	Residential Area	Tahoe Basin
CA0900525	Echo Road Group Water Assoc.	NC	GW	40	19	Other Residential Area	Tahoe Basin
CA0900529	Station House Inn	NTNC	GW	30	4	Hotel/Motel	Tahoe Basin
CA0900535	Pinewood Inn	NC	GW	70	1	Hotel/Motel	Tahoe Basin
CA0900536	Econo Lodge Inn & Suites	NC	GW	100	7	Hotel/Motel	Tahoe Basin

Water System No.	Water System Name	Type	Source Type	Population Served	Number of Connections	Service Area Type	Location
CA0900549	Tamarack Park How	NC	GW	50	18	Residential Area	West Slope
CA0900551	Alder Inn	NC	GW	60	3	Hotel/Motel	Tahoe Basin
CA0900553	Beverly Lodge	NC	GW	25	2	Hotel/Motel	Tahoe Basin
CA0900554	The Trailhead	NC	GW	60	1	Hotel/Motel	Tahoe Basin
CA0900560	FLL Mutual	NC	GW	100	41	Residential Area	Tahoe Basin
CA0900562	Heather Lake Road Tract	NC	GW	25	13	Residential Area	Tahoe Basin
CA0900564	King's IV Condominiums	NC	GW	60	4	Residential Area	Tahoe Basin
CA0900565	Tahoe Valley Lodge	NC	GW	42	3	Hotel/Motel	Tahoe Basin
CA0900576	Alpine Inn & Spa	NC	GW	100	4	Hotel/Motel	Tahoe Basin
CA0900582	The Jeffrey Hotel	NC	GW	40	2	Hotel/Motel	Tahoe Basin
CA0900585	Ginger Mountain Lodge	NC	GW	17	2	Hotel/Motel	Tahoe Basin
CA0900587	Heavenly Ski Sky Deck	NC	GW	20	2	Recreation Area	Tahoe Basin
CA0900591	North Echo Summit Water Association	NC	GW	42	15	Other Residential Area	West Slope
CA0900592	Deerfield Lodge @ Heavenly	NC	GW	46	2	Hotel/Motel	Tahoe Basin
CA0900603	Echo Peak Water Association	NC	GW	73	26	Residential Area	Tahoe Basin
CA0900618	Bryant Creek/Fir Tracts MWA	NC	GW	36	13	Other Residential Area	West Slope
CA0900623	Tahoe Travel Inn	NC	GW	100	6	Hotel/Motel	Tahoe Basin
CA0900624	Villa Tahoe Condominiums	NC	GW	44	4	Residential Area	Tahoe Basin
CA0900629	American Legion Tract Resort Assoc	NC	GW	5	34	Residential Area	Tahoe Basin
CA0900631	Camp Concord	NC	GW	69	10	Summer Camp	Tahoe Basin
CA0900641	Fallen Leaf Mutual Water Co	NC	SW	100	103	Other Residential Area	Tahoe Basin
CA0900643	Mt Ralston Property Ass. Inc.	NC	GW	75	27	Residential Area	West Slope
CA0900649	South Shore Recreation Area	NTNC	GW	3300	200	Recreation Area	Tahoe Basin
CA0900650	Echo Lake Camp	NC	SW	120	11	Summer Camp	West Slope
CA0900651	Sierra Pines Camp	NC	GW	220	68	Summer Camp	West Slope
CA0900652	Echo Chalet Inc.	NC	GW	43	6	Other Transient Area	Tahoe Basin
CA0900654	Baldwin Beach	NC	GW	200	16	Recreation Area	Tahoe Basin
CA0900656	Rainbow Tract Water Assoc.	NC	GW	25	23	Other Residential Area	Tahoe Basin
CA0900658	Sierra Tahoe Grandview	NC	GW	500	1	Recreation Area	West Slope
CA0900659	Sierra Tahoe Main Lodge	NTNC	GW	40	5	Recreation Area	West Slope
CA0900660	Heavenly Ski Creek Station	NTNC	GW	1000	5	Recreation Area	Tahoe Basin

Water System No.	Water System Name	Type	Source Type	Population Served	Number of Connections	Service Area Type	Location
CA0900664	Sierra Tahoe West Bowl	NC	GW	1900	1	Recreation Area	West Slope
CA0900665	Heavenly Gondola	NC	GW	20	4	Recreation Area	Tahoe Basin
CA0901222	China Flat Campground	NC	GW	75	20	Recreation Area	West Slope
CA0901223	Cleveland Corral Rest Area	NC	GW	75	2	Highway Rest Area	West Slope
CA0901228	Gerle Creek Campground	NC	GW	125	50	Recreation Area	West Slope
CA0901229	Ice House Campground	NC	GW	200	84	Recreation Area	West Slope
CA0901230	Loon Lake Campground	NC	GW	125	45	Recreation Area	West Slope
CA0901232	Red Fir Group Campground Water System	NC	GW	25	1	Recreation Area	West Slope
CA0901239	Sand Flat Campground	NC	GW	50	29	Recreation Area	West Slope
CA0901243	Silverfork Campground	NC	GW	70	35	Recreation Area	West Slope
CA0901244	Stumpy Meadows Campground	NC	GW	100	62	Recreation Area	West Slope
CA0901246	Peninsula Recreation Area	NC	GW	350	161	Recreation Area	West Slope
CA0901247	Yellow Jacket Campground	NC	GW	350	152	Recreation Area	West Slope
CA0901248	Wrights Lake Campground, Pacific Ranger	NC	GW	75	28	Recreation Area	West Slope
CA0901249	Wench Creek Campground	NC	GW	250	102	Recreation Area	West Slope
CA0901250	Gerle Creek Summer Homes	NC	GW	40	41	Other Residential Area	West Slope
CA0901260	Cody Water Association	NC	SW	181	54	Other Residential Area	West Slope
CA0910024	Glenridge Water Company	NC	GW	124	46	Residential Area	Tahoe Basin
CA0910300	Folsom Lake SRA - Peninsula Campground	NC	GW	750	1	Recreation Area	West Slope
CA0910301	CA State Parks - D.L. Bliss	NC	SW	1000	14	Recreation Area	Tahoe Basin
CA0910302	CA State Parks - Emerald Bay, Vikingsholm	NC	SW	2500	2	Recreation Area	Tahoe Basin
CA0910303	CA State Parks - Emerald Bay, Eagle Point	NC	SW	1000	13	Recreation Area	Tahoe Basin
CA0910305	CA State Parks - Emerald Bay, Boat Campground	NC	SW	1000	5	Recreation Area	Tahoe Basin

Appendix C: Small Water System Questionnaire

Table C-1. Small Water System Questionnaire Components

Questionnaire Section	Information	Comments
General Water System Information	System Representative/Contact Information	
	System Address and Identification Number	WSID = water system identification number
	System Type	e.g., community, transient noncommunity, etc.
	Serves Disadvantaged Communities	
	System Use	e.g., recreation, residential, etc.
	System Ownership	e.g., privately owned business
Infrastructure	Current Infrastructure	Relevant specifics related to current water infrastructure (e.g, wells, pumps, and storage tanks) such as date installed, frequency of use, and capacity
	Treatment	Water treatment processes including indirect and direct chemical additives
	Fire Suppression Capability	Capability to suppress fires and if the system can meet fire flow requirements
	Auxiliary Power	• Backup power for sources, pumping stations, and water treatment plants • Number of times per year backup power was exercised • Maximum hours system can maintain pressure in all pressure zones by backup power or gravity fed storage during power outages
Water Supply	Water Supply Sources	• Water supply sources (e.g., wells, springs, etc.) and details, including active status, location, date operation began, and water quality issues • Consumer Confidence Report up to date • Any established interties with another system
Water Demands	Population Served	• Population type (e.g., residential, transient, etc.), count, and periods of operation • Number of metered and unmetered potable water connections by type (e.g., single-family residential, etc.)
	Current Demand	Maximum daily production; graph of monthly water demand/production by category plotted at the end of the questionnaire
Emergency Drinking Water Solutions	Drought or Water Shortage Planning Documents	e.g., water quality emergency notification plans, etc.

Questionnaire Section	Information	Comments
Long-term Drought or Water Shortage Planning	Drought Preparedness	• Long-term improvements made/planned to increase drought or water shortage resiliency (e.g., new wells or intakes) • Other drought preparedness information such as if the system projects having to go to mandatory restrictions in the upcoming year and experienced water shortages in 2020
	Climate Threat and Sensitivity	Sensitivity levels to climate change threats (none to low, medium, or high or already experiencing)
	Adaptation Measures and Implementation Status	Implementation status of potential adaptation measures (will not implement, plan to implement, in progress, or completed)
	Active Water Resources Threat Monitoring	
Other Information	Website, References, and Other Notes	

Below is a copy of the questionnaire template for reference. The EMD/eAR field identifies the information source used to populate the questionnaire.

El Dorado County Small Water Systems Questionnaire **TEMPLATE**			
Water System Name:	EMD/eAR	Contact Phone:	EMD
Water System Rep/Point of Contact:	EMD/eAR	Contact Email:	EMD
Water System Type:		Water System Use:	
Water System Address:	EMD/eAR		eAR
Serve disadvantaged or severely disadvantaged communities?		Water System Ownership:	
WSID:	EMD/eAR		

			Notes
Infrastructure	Provide/confirm map of water service area boundaries		
	Provide any water system schematics. If you do not have any, please see the above map and mark major system infrastructure.		
	CURRENT INFRASTRUCTURE		
	Please describe infrastructure and any relevant specifics (e.g., date installed, capacity, frequency of use):		
			EMD
	Treatment:		EMD

		Direct Additives	Chemical Name	Manufacturer Name	Purpose of Chemical	ANSI/NSF Std. 60 Certified	Use Initiated in 2021		
									eAR
		Indirect Additives	Does the water system have procedures to ensure all future equipment and materials meet NSF/ANSI standard 61?						eAR
	Required grade level for water treatment operator:				Required grade level for water distributor operator:				SDWIS
	Fire Suppression Capability:								EMD
		Are you able to meet fire flow requirements?							EMD
	Auxiliary Power:	Sources				How many times per year is backup power exercised?			eAR
		Pumping							eAR
		Treatment							eAR
		Maximum hours system can maintain system pressure in all pressure zones by backup power or gravity fed storage during power outages							eAR
	Other infrastructure:								EMD
	Did your water system experience water outages in 2020?								eAR
									Notes
Water Supply	Primary Source of Water Supply:							Location/Description:	EMD
		Daily/Monthly/Annual supply (acre-feet, gallons/min, etc):						Active status:	
		Date operation began:						Current/past water quality issues, if any:	
	Alternate Source of Water Supply #1:		None					Location/Description:	EMD

		Daily/Monthly/Annual supply (acre-feet, gallons/min, etc):		Active status:	
		Date operation began:		Current/past water quality issues, if any:	
	Alternate Source of Water Supply #2:		None	Location/Description:	EMD
		Daily/Monthly/Annual supply (acre-feet, gallons/min, etc):		Active status:	
		Date operation began:		Current/past water quality issues, if any:	
	Please describe any other alternate sources of supply, if any.				EMD
	If your system has wells, do you monitor the static or pumping water levels?				eAR
		Are these levels recovering, declining, or steady?			eAR
	Consumer Confidence Report date up to date?				eAR
	Has your system established interties with another system?			If so, please specify:	

								Notes
Water Demands	**POPULATION SERVED**							eAR
	Population Type	**Population Count**	**Period of Operation**					
			Start Date		**End Date**			
			Month	**Day**	**Month**	**Day**		
	Residential							
	Transient							

	Non-Transient							
	Current Number of People Served:							
	Type	**Number of Potable Water Connections**						eAR
		Unmetered	**Metered**	**2020 Total**				
	Single-Family Residential							
	Multi-Family Residential							
	Commercial/Institutional							
	Industrial							
	Landscape Irrigation							
	Agricultural Irrigation							
	Current Number of Connections Served:							
	.							
	CURRENT DEMAND (if unavailable, please provide rough estimate)							**Data Source(s):**
	Maximum Daily Production (units):							eAR
								Notes
Emergency Drinking Water Solutions	Do you have any other drought or water shortage planning documents for your water system?							EMD
		If ***yes***, please provide them.						
								Notes
Long-Term Drought or Water	**DROUGHT PREPAREDNESS**							
	Are there any long-term improvements made/planned that will increase your water system's resiliency to drought or water shortage (e.g., new well or intake)?							

		Improvements Made				eAR
		Improvements Planned				eAR
	Date of revised Water Shortage Contingency Plan (WSCP) or Drought Preparedness Plan, if any			Did drought conditions cause the owner to activate emergency standby wells in 2020?		eAR
		Number of water-shortage response stages in drought plan		Project water shortages in the current calendar year?		eAR
	Did your water system experience water shortages in 2020?			Anticipate having to go to mandatory restrictions in the upcoming year?		eAR
		If ***yes***, estimated amount of shortfall		Method(s) used to discourage excessive water use when in drought, in support of SB 814 (2016)		eAR
	CLIMATE CHANGE ADAPTATION AND RESILIENCY					
	Climate Threat	**Sensitivity**	**Adaptation Measure**		**Implementation Status**	
	Drought		Install new and deeper drinking water wells, or modify existing wells to increase pumping capacity			eAR
	Water Quality Degradation		Develop local supplemental water supply, enhanced treatment, or increased storage capacity (e.g. recycled water, storm runoff for groundwater recharge, desalination, new reservoir)			eAR

	Flooding		Interconnection with other utilities (transfers, mutual aid agreements with neighboring utilities)		eAR
	Extreme Heat		Relocate facilities, construct or install redundant facilities		eAR
	Fire		Modify facilities (e.g., install barrier or levee, raise a wall, seal a door, elevate construction)		eAR
	Other		Conservation measures (demand management, enhanced communication and outreach)		eAR
	None		Fire prevention – brush management, partnerships		eAR
			Alternative or backup energy supply		eAR
	Active water resource threat monitoring?		On-site energy generation		eAR
	Other Climate Change Comments		Enhance monitoring program, budget for additional testing and treatment, chemicals		eAR
			Other		eAR
Website:					
References:					
Other Notes:					

Appendix D – Data Used in Risk Factors Development

This appendix includes the detailed criteria, scoring breakdown, and data sources for each risk factor. Risk factors are listed under their respective vulnerability categories: environmental, infrastructure, regulatory and organizational, and social vulnerabilities.

Table D-1: Data Used in SWS Risk Factor Development

Risk Factor / Score	1	2	3	4	5	Data Source
Environmental Vulnerabilities						
Temperature Increase Expected	Temperature increase between 3.21° and 3.27°C	Temperature increase between 3.28° and 3.34°C	Temperature increase between 3.35° and 3.40°C	Temperature increase between 3.41° and 3.47°C	Temperature increase between 3.48° and 3.53°C	American River Basin Study analysis
High Wildfire Risk	Decadal wildfire probability between 0.01 and 0.12	Decadal wildfire probability between 0.13 and 0.24	Decadal wildfire probability between 0.25 and 0.36	Decadal wildfire probability between 0.37 and 0.48	Decadal wildfire probability between 0.49 and 0.60	Wildfire (cal-adapt.org) CanESM2, RCP 4.5
	Located in a Moderate Fire Hazard Severity Zone		Located in a High Fire Hazard Severity Zone		Located in a Very High Fire Hazard Severity Zone	Agency Interactive Data Layers. Fire Hazard Severity Zones (CAL FIRE) and Utilities Fire Threat Areas (CPUC).
	Not located in a Utilities Fire Threat Area		Located in a Tier 2 Utilities Fire Threat Area		Located in a Tier 3 Utilities Fire Threat Area	
High Drought Susceptibility	0 Dry Years	1 Dry Year	2 Dry Years	3 Dry Years	4 to 5 Dry Years	California Water Watch (DWR Vulnerability Tool)
Fractured Rock Aquifer Dependent	Located within the Tahoe South Subbasin				Located within the West Slope	Agency's Interactive Data Layers

Risk Factor / Score	1	2	3	4	5	Data Source
Declining Groundwater Levels	Since 2012, have not drilled a new well or had a well deepened.				Since 2012, have either drilled a new well or had a well deepened.	Well permit data and well completion reports.
Reported Water Quality Concerns	No water quality problems/issues	SWS previously had water quality issues but does not currently	SWS currently has water quality issues with their secondary supply or is delinquent on water quality reporting/testing	SWS currently has water quality issues with their primary supply but has a reliable secondary supply	Water quality issues currently affect primary supply and the SWS does not have a secondary supply	EMD data
Population Growth	Has a population growth risk score of 0 to 0.20	Has a population growth risk score of 0.21 to 0.40	Has a population growth risk score of 0.41 to 0.60	Has a population growth risk score of 0.61 to 0.80	Has a population growth risk score of 0.81 to 1	CDAG
Competing Demand on Water Use	No irrigated agriculture within service area.	Low proportion ((0, 0.1]) of irrigated agriculture in service area	Medium-low proportion ((0.1, 0.3]) of irrigated agriculture in service area	Medium-high proportion ((0.3, 0.5]) of irrigated agriculture in service area	High proportion ((0.5, 1]) of irrigated agriculture in service area	https://data.cnra.ca.gov/dataset/statewide-crop-mapping

Risk Factor / Score	1	2	3	4	5	Data Source
	No irrigated agriculture within service area.	Low proportion ((0, 0.1]) of irrigated agriculture in service area	Medium-low proportion ((0.1, 0.3]) of irrigated agriculture in service area	Medium-high proportion ((0.3, 0.5]) of irrigated agriculture in service area	High proportion ((0.5, 1]) of irrigated agriculture in service area	Davids Engineering and ERA Economics (Agricultural Development Feasibility Report)
Infrastructure Vulnerabilities						
Lack of Water Supply Redundancy	More than one water source				One water source	EMD and eAR data (Questionnaire)
	More than one water source type				One water source type	EMD and eAR data (Questionnaire)
Inability to Receive Water Transfers	One or more interties				Zero interties	SDWIS
Limited Potential for Physical Consolidation	Less than 0.25 miles from the closest SWS/PWA	Is within 0.26 to 0.5 miles of the closest SWS/PWA	Is within 0.51 to 1 miles of the closest SWS/PWA	Is within 1.01 to 2 miles of the closest SWS/PWA	Is more than 2 miles from the closest SWS/PWA	
	Less than 100 feet of elevation difference from the closest SWS/PWA	Is within 101 to 250 feet of elevation difference of the closest SWS/PWA	Is within 251 to 500 feet of elevation difference of the closest SWS/PWA	Is within 501 to 750 feet of elevation difference of the closest SWS/PWA	Is more than 750 feet of elevation difference from the closest SWS/PWA	PWA infrastructure layer (provided by Agency)
Lack of Monitoring	100% of potable connections metered	67% to 99% of potable connections metered	34% to 66% of potable connections metered	1% to 33% of potable connections metered	0% of potable connections metered	eAR (not SDWIS).

Risk Factor / Score	1	2	3	4	5	Data Source
Regulatory and Organizational Vulnerabilities						
Water Curtailment Potential	Supply is not dependent on a water right				Supply is dependent on a water right	eWRIMS
Difficulty of Obtaining Bulk Water	Located within 5 miles of US 50, I-80, or an EID bulk water station		Located within 5 miles of SR 49 or SR 89		Located 5 or more miles from US 50, I-80, SR 49, or SR 89.	Google Maps
Institutional Instability	Does not require a Water Distribution Operator Certification.	Requires grade level D1	Requires grade level D2	Requires grade level D3	Requires grade level D4-D5	SDWIS
	Requires grade level T1	Requires grade level T2	Requires grade level T3 or a TD certification	Requires grade level T4	Requires grade level T5	SDWIS
Lack of Drought Planning	Has a drought preparedness or water shortage contingency plan				Does not have a drought preparedness or water shortage contingency plan	eAR

Risk Factor / Score	1	2	3	4	5	Data Source
Social Vulnerabilities						
High Social Vulnerability Score	Max social vulnerability score of 0-0.2	Max social vulnerability score of 0.21 to 0.4	Max social vulnerability score of 0.41 to 0.6	Max social vulnerability index score of 0.61 to 0.8	Max social vulnerability index score of 0.81 to 1	DWR Water Shortage Vulnerability Tool metadata link for social vulnerability indicators: https://data.cnra.ca.gov/dataset/i07-water-shortage-social-vulnerability-blockgroup
Located in a Disadvantaged Community	Not located within a disadvantaged or severely disadvantaged community		Located within a disadvantaged community		Located within a severely disadvantaged community	Agency's Interactive Data Layers https://eldoradoh2o-eldoradocounty.hub.arcgis.com/

This next table provides the risk factors used for the high level domestic wells analysis. Many risk factors are similar to those used in the SWS analysis. Risk factors new to the domestic wells analysis are indicated by a light blue color in the Domestic Well Analysis Risk Factor column.

Table D-2: Data Used in Domestic Well Risk Factor Development

	Domestic Well Analysis Risk Factor / Scores	1	2	3	4	5	Data Source
	Environmental Vulnerabilities						
External Environmental Factors	Temperature Increase Expected	Temperature increase between 3.21° and 3.27°C	Temperature increase between 3.28° and 3.34°C	Temperature increase between 3.35° and 3.40°C	Temperature increase between 3.41° and 3.47°C	Temperature increase between 3.48° and 3.53°C	American River Basin Study analysis
	High Wildfire Risk	Decadal wildfire probability between 0.01 and 0.12	Decadal wildfire probability between 0.13 and 0.24	Decadal wildfire probability between 0.25 and 0.36	Decadal wildfire probability between 0.37 and 0.48	Decadal wildfire probability between 0.49 and 0.60	Wildfire (cal-adapt.org) CanESM2, RCP 4.5
		Located in a Moderate Fire Hazard Severity Zone		Located in a High Fire Hazard Severity Zone		Located in a Very High Fire Hazard Severity Zone	Agency Interactive Data Layers. Fire Hazard Severity Zones (CAL FIRE) and Utilities Fire Threat Areas (CPUC).
		Not located in a Utilities Fire Threat Area		Located in a Tier 2 Utilities Fire Threat Area		Located in a Tier 3 Utilities Fire Threat Area	
	High Drought Susceptibility	0 Dry Years	1 Dry Year	2 Dry Years	3 Dry Years	4-5 Dry Years	California Water Watch (DWR Vulnerability Tool)

	Domestic Well Analysis Risk Factor / Scores	1	2	3	4	5	Data Source
Internal Environmental Factors	Fractured Rock Aquifer Dependent	Located within the Tahoe South Subbasin				Located within the West Slope	Agency's Interactive Data Layers
	Aquifer Water Quality Risk	Low risk (< 80% of comparison concentration)		Medium risk (80% to 100% of comparison concentration)		High risk (> comparison concentration)	SWRCB 2024 Aquifer Risk Map
	Infrastructure Vulnerabilities						
	Outside of Water Purveyor Service Area	Within water purveyor service area boundaries				Outside of water purveyor service area boundaries	EMD Data and water purveyor service area boundaries (e.g., Where is my water from? Agency GIS portal)
	Shallow Well	Moderate Depth or Deep (> 100 ft)		Moderately Shallow (50 to 100 ft)		Shallow (<50 ft)	EMD Data
	Regulatory/Organizational Vulnerabilities						
	Difficulty of Obtaining Bulk Water	Located within 5 miles of US 50, I-80, or an EID bulk water station		Located within 5 miles of SR 49 or SR 89		Located 5 or more miles from US 50, I-80, SR 49, or SR 89.	Google Maps
	Social Vulnerabilities						
	High Social Vulnerability Score	Max social vulnerability score of 0 to 0.2	Max social vulnerability score of 0.21 to 0.4	Max social vulnerability score of 0.41 to 0.6	Max social vulnerability index score of 0.61 to 0.8	Max social vulnerability index score of 0.81 to 1	DWR Water Shortage Vulnerability Tool

	Domestic Well Analysis Risk Factor / Scores	**1**	**2**	**3**	**4**	**5**	**Data Source**
	Located in a Disadvantaged Community	Not located within a disadvantaged or severely disadvantaged community		Located within a disadvantaged community		Located within a severely disadvantaged community	Agency's Interactive Data Layers

Appendix E: List of Water Haulers

As of August 7, 2024 – all water haulers listed below are located within El Dorado County and have been approved by the California Department of Public Health to provide water hauling services. The most recent list of water haulers can be obtained from the CDPH website.

Business Name	Address	City	Zip	Business Phone
SIERRA FIRE SERVICES LLC	7780 JOAQUIN WAY	SHINGLE SPRINGS	95682	5303633321
AZ MOBILE SUPPORT	7265 STEEPLE CHASE DRIVE	SHINGLE SPRINGS	95682	5305170385
PLEASANT VALLEY POTABLE WATER	1541 CLEAR CREEK COURT	PLACERVILLE	95667	9167984589
SIERRA SITE SERVICES LLC - CUSTOM WATER WORKS	1878 UNION RIDGE ROAD	PLACERVILLE	95667	5304174080
BRET WILLIAMS WATER TRUCK SERVICES	6526 MOTHERLODE DRIVE	PLACERVILLE	95667	5303133369
ABEL FIRE EQUIPMENT	4721 QUARRY COURT	PLACERVILLE	95667	9167156378
EL DORADO WATER & SHOWER SERVICE INC.	5821 MOTHER LODE DRIVE	PLACERVILLE	95667	5306228995

Appendix F: Technical Assistance Resources

Appendix F-1 General Technical Assistance (All SWS and Domestic Wells)

State Water Board Technical Assistance

In addition to assistance from the County and Agency, SWS and domestic wells can seek technical assistance from the State Water Board via the below request form link:

State Water Board Technical Assistance Request Form

Success Stories – View Drought Response and Recovery Projects That Were Successful for Water Utilities

The EPA developed a Drought Response and Recovery Project for Water Utilities map. The site contains case studies, drought action videos, and utility stories that describe the experiences of small and medium-sized drinking water utilities that successfully responded to drought.

EPA WaterTA Engineering Support

Per the EPA WaterTA website, the EPA Water Technical Assistance (WaterTA) program offers free engineering services to help communities apply for federal drinking water and wastewater infrastructure funding. EPA provides no-cost, supplemental services to help communities identify needs, conduct preliminary project planning analyses, and produce engineering documents as part of their administration of the Clean Water and Drinking Water State Revolving Funds (SRFs).

The EPA WaterTA Engineering Support program provides support in:

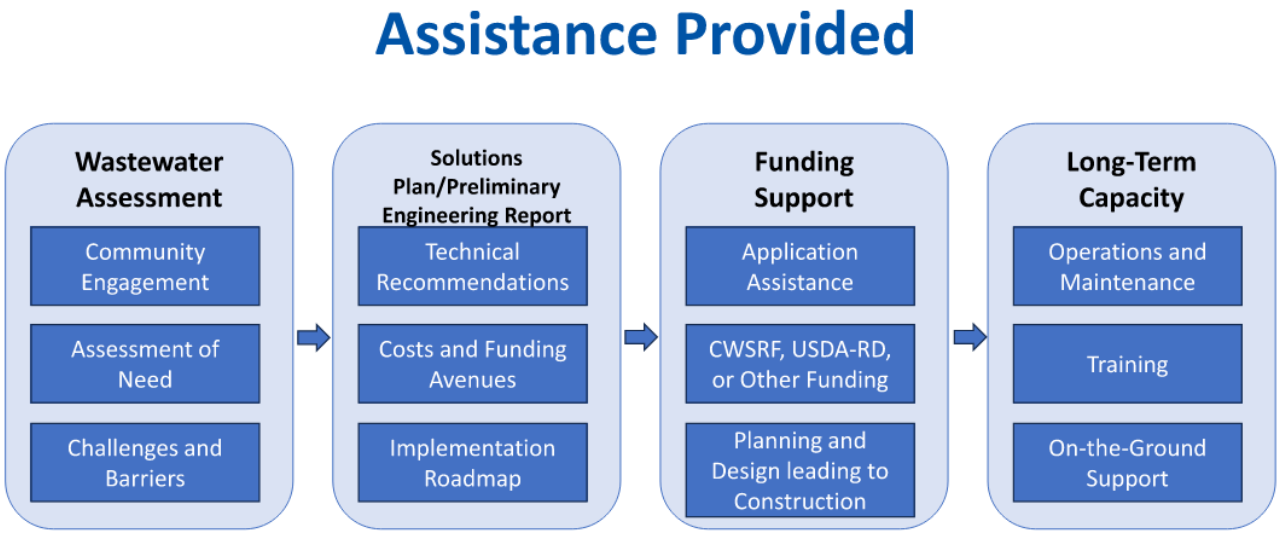
- Identifying water challenges (aging infrastructure, water quality concerns, climate resiliency, source water protection, emerging contaminants)
- Providing technical/managerial support
- Community engagement
- Assisting in the development of preliminary solutions plan (technical recommendations, costs and funding avenues, implementation roadmap)
- Funding support (identification and application support, planning and design development)
- Long-term capacity assistance (operations and maintenance, training, on-the-ground support).

A request form can be submitted to the Water TA.

Questions can be directed to WaterTA@epa.gov. Several screenshots are provided below from an EPA presentation on the WaterTA program.


WaterTA supports communities to identify water challenges and implement solutions.
Aging or Lack of Infrastructure
Water Quality Concerns
Technical, Managerial, & Financial Capacity
Climate Resiliency
Cybersecurity
Project Planning & Development
Community Engagement
Capacity Building & Training
Engineering Reports & Studies
Funding Identification & Application Support
EPA United States Environmental Protection Agency
Office of Water


WaterTA projects address drinking water, wastewater, and stormwater challenges, including:
Sewer backups or sewage in yards or homes
Water quality concerns
Unreliable or lack of water service
Neighborhood flooding or stormwater backups
Identifying and removing lead pipes
Water system consolidation
Treatment plant upgrades
Cybersecurity
Climate adaptation and resiliency
Workforce development
Regulatory Compliance
Source water protection
Emerging contaminants
Applying for federal funding
...and more!



RCAC Drought Resources

RCAC provides drought resources on contingency, preparedness, response, and more on their website Drought Resources - RCAC

To be eligible for TA, the community must be disadvantaged and rural. The program is also focused on failing systems and/or those out of compliance with drinking water standards. For limited TA projects (up to 80 hours), there are multiple funding sources to provide assistance, though the same eligibility requirements

apply. RCAC receives funding from federal, state, and the Rural Community Assistance Partnership (RCAP). For full TA projects (e.g., engineering design and environmental compliance), it must be considered a Category A-C project per the Drinking Water State Revolving Fund (DWSRF) Policy. Eligible projects include those addressing an immediate health risk, untreated or at-risk water sources, or chronic compliance or water shortage problems.

If someone is in need of TA but does not meet eligibility requirements, they may be able to hire RCAC to perform the work at affordable rates. RCAC will assist with the RFP process for hiring an engineer, then pay the cost for the engineering consultant to assist with construction bidding. Rates are not posted online but are often much lower than consultant fees.

In all cases, the process starts by filling out an online request form. It is recommended that applicants first fill out the SWRCB TA request form. There are many different programs managed by the Division of Financial Assistance (such as one for back-up generators) and they can route each request on a case-by-case basis. If the SWRCB request is denied, a water supplier should submit an RCAC TA request form. They may at least be able to hire RCAC at affordable rates, as discussed above. There are also RCAC training resources available to guide and support applicants.

Appendix F-2 Domestic Well Resources

Appendix F-2 provides technical and funding application support for domestic wells. The appendix compiles RCAC resources and other resources that are relevant to domestic wells.

RCAC Free Drinking Water Well Assessment

To check the water quality and potential vulnerabilities of your well, well owners can request a free drinking water well assessment at the link below:

Individual Well Program - RCAC

RCAC Well Owner Workshops

On the same website (Individual Well Program - RCAC), well owners can subscribe to get updates on upcoming workshops on the best practices of operation and maintenance of drinking water wells, common well troubleshooting, and preventive maintenance and solutions.

RCAC Environmental Infrastructure Loan Program Summary

The RCAC Environmental Infrastructure Loan issues loans to improve or expand drinking water facilities of lower-income rural communities. The RCAC webpage provides more information on the environmental infrastructure loan program including program requirements, loan products, contact for loan inquiries and additional information on template, application, and criteria. The loan program is summarized below:

RCAC
www.rcac.org

ENVIRONMENTAL INFRASTRUCTURE LOAN PROGRAM

Rural Community Assistance Corporation's (RCAC) Environmental Infrastructure Loan Program helps create, improve or expand the supply of safe drinking water, waste disposal systems and other facilities that serve communities in the rural West. RCAC's loan programs are unique — they provide the early funds small rural communities need to determine feasibility and pay pre-development costs prior to receiving state and federal program funding. RCAC also may provide interim construction financing, as well as intermediate and long-term loans for system improvements.

General Program Requirements

ELIGIBLE APPLICANT
Nonprofit organizations, public agencies and tribal governments.

ELIGIBLE AREA
Projects must be located in rural areas with populations of 50,000 or less in Alaska, Arizona, California, Colorado, Hawaii and other pacific islands, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. Community size is limited to 10,000 for long-term USDA guaranteed loans and short-term loans for which USDA is the long-term lender.

ELIGIBLE PROJECTS
Eligible projects include water, wastewater, solid waste and storm water facilities that primarily serve lower-income rural communities.

Loan Products

SHORT-TERM LOANS (1 TO 3 YEARS) FOR:

Feasibility (Such as Preliminary Engineering Reports (PER), environmental reports)
- Normally not more than $50,000
- Unsecured, Promissory Note only
- Normal term — one year
- Entity must be eligible for long-term financing from governmental or other source and have reasonable priority rating for probable funding
- Entity must agree to repay loan, on extended terms, if necessary, if project does not proceed
- Must have technical assistance to extent needed, either from RCAC or another acceptable technical assistance source

Pre-development (Such as engineering, legal, bond counsel)
- Amount corresponding with other financing source Letter of Conditions to cover preconstruction costs
- Normally not to exceed $1 million
- Unsecured, Promissory Note only
- Letter of Conditions from long-term funding source
- Normal term — one year
- Technical assistance as necessary

Construction
- Amount corresponding with other financing source Letter of Conditions to cover loan portion of funding commitment
- Normally not to exceed $6 million
- Generally secured by same type of security as permanent financing source outlined in Letter of Conditions for permanent loan
- Commitment letter for permanent financing from funding source
- Loan term corresponding with construction period for loan portion

INTERMEDIATE TERM LOANS:
- Up to 20 years repayment
- 5 percent interest rate
- For smaller capital needs, normally not to exceed $200,000

Application (Preview):

Rural Community Assistance Corporation

Infrastructure Feasibility Loan Application
Preliminary Engineering Report (PER) and Environmental Report

BORROWER INFORMATION			Date:
Name of Borrower:		Type of Organization:	☐ Nonprofit (Mutual)
Mailing Address:			☐ Public Body
Street Address (if different):			☐ Tribal
City:		Contact Person:	
County:		Title:	
State:		Telephone:	
Zip Code:		Fax:	
Tax ID Number:		Cell:	
DUNS #:		E-mail:	

PROJECT INFORMATION		
Loan Amount:		
Funds needed for:	☐ PER	☐ Environmental Report
Term Requested		
# of Jobs Created:		
# of Jobs Retained:		
Population Served:		
Technical Assistance Provider:		

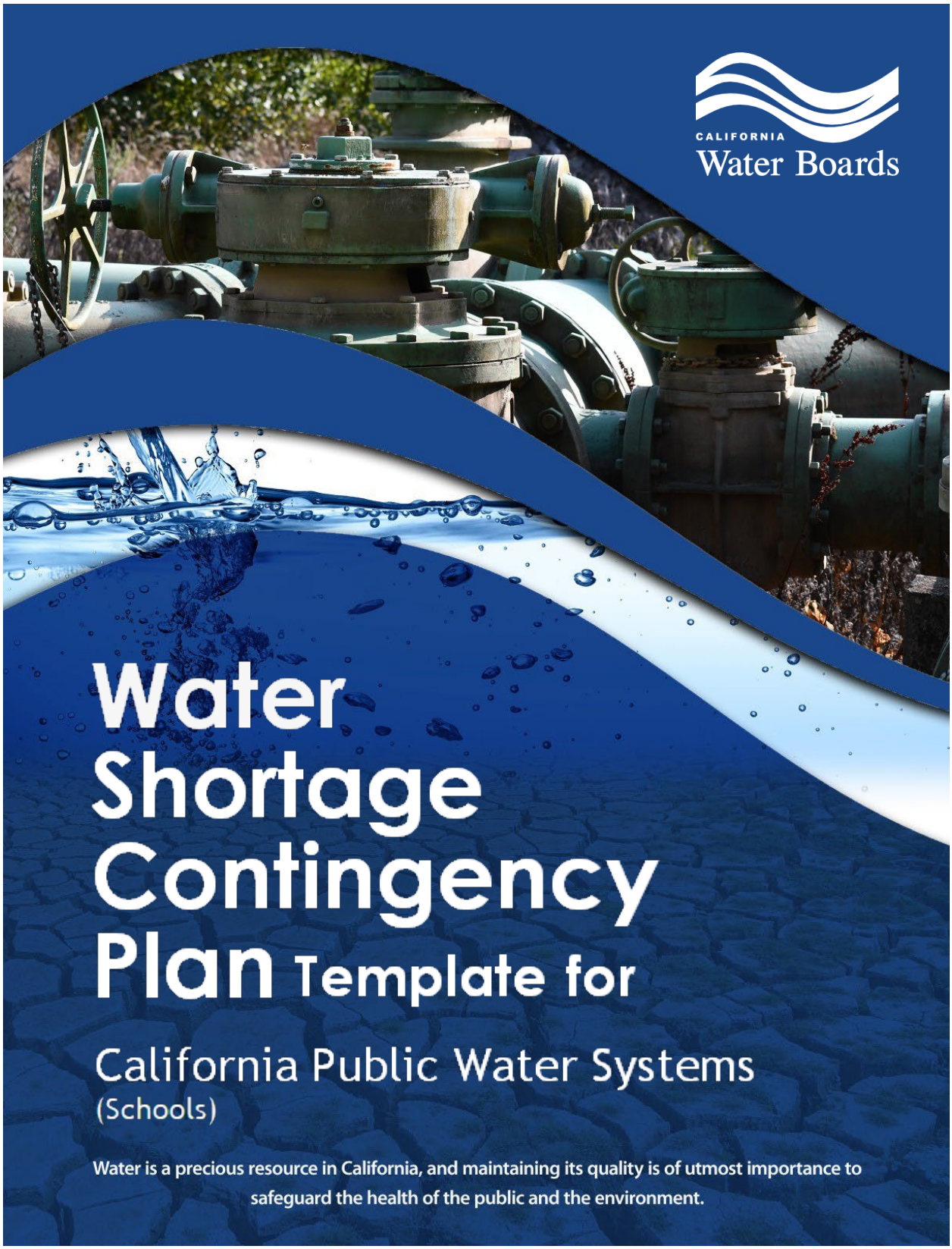
The website also provides:

- Instructions for Resolution to Borrow and a Resolution to Borrow template, Assurances Statement for nonprofit corporation applicants (RCAC form)
- Attorney's Opinion Letter for Public Body and Tribal Applicants (criteria)
- A contact for loan inquiries, and technical assistance –1-855-979-7322.

Free Well Webinars

Private Well Class offers free webinars for well owners on topics such as finding local information, outreach strategies, and water quality best practices.

Appendix G: Water Shortage Contingency Plan Template for Schools


CALIFORNIA
Water Boards
Water Shortage Contingency Plan Template for
California Public Water Systems
(Schools)
Water is a precious resource in California, and maintaining its quality is of utmost importance to safeguard the health of the public and the environment.

WATER SHORTAGE CONTINGENCY PLAN TEMPLATE FOR SCHOOLS

Instructions: This water shortage contingency plan template (Plan) is designed for a school that is also a nontransient noncommunity public water system. In addition to this template, there is a completed example available for reference, for "Happy Days School". **This template is optional and is supplied for your convenience. The State Water Resources Control Board recognizes that schools are required to have Emergency Planning documents designed to support student safety during a range of emergency events. Existing Emergency Planning documents, if modified, to incorporate mandatory elements specified in Section 10609.60 of Water Code will meet the statutory requirement. A summary of mandatory elements includes:**

- Updating the plan at least every 5 years
- Placing the Plan (or its applicable portions) on the school website, or if no website exists then making it available, upon request
- Providing drought-planning contacts, including:
    - At least one contact responsible for water shortage planning and response and for the development of the plan.
    - Contacts for local public safety partners and potential vendors that can provide repairs or alternative water sources, including, but not limited to, local community-based organizations that work with the population in and around areas served by the water system, contractors for drilling wells, vended water suppliers, and emergency shower vendors.
    - State and local agency contacts who should be informed when a drought or water shortage emergency is emerging or has occurred.
    - Regional water planning groups or mutual aid networks, to the extent they exist.
- Triggering mechanisms and levels for action, including both of the following:
- Standard water shortage levels corresponding to progressive ranges of actions based on the water supply conditions. Water shortage levels shall also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, a fire, and other potential emergency events.
- Water shortage mitigation, response, customer communications, enforcement, and relief actions that align with the water shortage levels required above.

Water Shortage Contingency Plan

Happy Days School
15 Learning Place, Summerville, CA 96031
CA # 4730582
June 10, 2023

Table of Contents

Chapter 1: Introduction

System Identification No.	**CA 4730582** ***(7-digit state water system ID Number)***
System Name, Address, County	**Happy Days School, 15 Learning Place, Summerville, CA 96031 Siskiyou County**
Basic Description and Location of System Facilities	**The school serves 125 students and staff in four buildings. In the winter without irrigation, the school typically uses 4,455 gallons per day. With irrigation in the late summer, the school uses 8,250 gallons per day. The school has one well and an intertie to a nearby mutual water company. The potable well, Well 01, has a total depth of 135 feet and is located at a latitude of 41° 5'54.45"N by longitude of 123° 4'2.04"W, behind the brown shed approximately 20 feet to the east. The well was built in 1989 by Waterhole Drilling company located in Happy Valley, CA. It has a submersible 10-hp pump normally maintained at a depth of 100 feet. The average elevations in the well in April and October are 55 feet below ground surface (bgs) and 85 feet bgs, respectively. A copy of the drillers well report is attached to this plan.** **Well water is treated with sodium hypochlorite for disinfection before being transferred to a 10,000-gallon storage tank near the field. The potable system also has two 85-gallon inline well pressure tanks that normally maintain 45-55 pounds per square inch (psi) pressure in the distribution system. The school's intertie to the adjacent Happy Valley Mutual Water Company can produce 20 gallons per minute and flows in either direction.** **There is also an irrigation well and associated 85-gallon pressure tank. The irrigation well does not meet current well standards and therefore cannot be used as a standby well and is fully separated from the potable distribution system and only waters the football field. The irrigation well does not meet all the irrigation needs of the school as other areas of serviced from the potable water well.** **The operations plans, manuals, locations of valves and pipes, and well pumping records are in the wellhouse in the green binder. The water system is typically checked once a week by the T-2 certified operator, Joan Fischer. The facilities**

	manager, Andrew Joy, is a T-1 operator who can manage the system on a backup basis. Mr. Joy is limited in his ability to fully commit time due to his many other responsibilities.

Authorized Official Responsible for Plan Response and Development	Superintendent, Bob Super 15 Learning Place, Summerville, CA 96031 256-123-4567 bsuper@school.edu **Role: Response, Coordination and Contracts**

Plan Development Support	Principal, Cecilia Chavez 15 Learning Place, Summerville, CA 96031 256-123-4568 cchavez@school.edu **Role: Plan Development**
Communications and Plan Updates	Office manager, Barbara Smith 15 Learning Place, Summerville, CA 96031 256-123-4569 bsmith@school.edu **Role: Communications and Updates plan every five years**
Plan Implementation	Facilities manager, Andrew Joy 15 Learning Place, Summerville, CA 96031 256-123-4568 ajoy@school.edu **Role: Plan Implementation**

Chapter 2: Contacts

The Superintendent, or designees specified below, is hereby authorized and directed to implement the applicable provisions of this Plan upon determination that such implementation is necessary to maintain adequate water supplies for the school or to meet other community public health needs. The Superintendent, or designees, shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Plan.

Internal Chain of Command – Lines of Authority

Name, Title and Contact Information	Responsibilities during an emergency
Superintendent, Bob Super 15 Learning Place, Summerville, CA 96031 256-123-4567 bsuper@school.edu	• All elements of this plan
Principal, Cecilia Chavez 15 Learning Place, Summerville, CA 96031 256-123-4568 cchavez@school.edu	• Notify superintendent of needs • Meet and assist emergency personnel and/or outside agencies, as needed • Oversee communications and ensure Plan implementation
Facilities manager, Andrew Joy 15 Learning Place, Summerville, CA 96031 256-123-4568 ajoy@school.edu	• Assist with emergency personnel and outside agencies, as needed • Coordinate with vendors • Coordinate with water haulers

External Emergency Notification List

Organization or Dept.	Name & Position	Telephone	Email
State Water Board, DDW[7] District Engineer	Bryson Sutter, District Engineer	224-4800	Bryson.Sutter@waterboards.ca.gov
State Water Board, DDW Staff Engineer	Amelia Johnson, Staff engineer	224-4800	Amelia.Johnson@waterboards.ca.gov
County Env. Health Specialist	Brian Case Environmental Health Specialist	151-2252	bcase@co.siskiyou.ca.us
Valley Fire District Non-Emergency	Dan Anzo, Fire Chief	752-6485	danzo@fire.local.us
County Office of Emergency Services (OES)	Bryan Martinez, OES Director	843-2166	bmartinez@co.siskiyou.ca.us
Happy Valley GSA contact[8]	Mike Parker, Natural Resource Specialist	842-8005	mparker@co.siskiyou.ca.us
Mutual Aid Contact	Mike Diego, Valley Unified School District	363-9999	mdiego@vusd.edu

[7] State Water Resource Control Board, Division of Drinking Water (DDW)
[8] Groundwater Sustainability Agency (GSA)

Service / Repair Notifications

Organization Type	Name & Company	Telephone	Night or Call Phone	Email
Water Operator	Joan Fischer Water Operator Consulting	256-123-4568	256-444-5555	jfischer@water.com
Electric Utility	PG&E	256-449-3333	800-743-5002	Outage map: PGE Emergency Site - Outage Center
Electrician	Dan Sparks, Sparks Electric	256-669-3355	800-555-3654	dsparks@sparks.com
Plumber	Julian Lopez, Fastest Plumber	256-224-3698	800-256-2342	jlopez@fp.com
Technical Assistance Provider	Jennifer Martin, California Rural Water Association	222-3332	N/A	jmartin@crwa.org
Water Hauler[3]	Audrey Mack Mack's Hauling	256-241-3369	256-241-3369	amack@macks.com
Bottled Water Vendor	Sandy Sparkles, Sparkles Water	256-241-3345	800-236-4122	ss@sparkles.com
Portable Restrooms and Showers	Tom Crawford Sanitation Central	256-341-6679	256-341-6680	tomc@sancentral.com
Well Drilling/Pump Company	Rob Weekly Weekly Drilling	256-333-2417	256-365-3333	robw@weekly.net
Back Flow Company	X-connect, Jose Chavez	256-125-3654	256-125-3655	chavez@xconn.com

[3] Use only licensed water haulers from the California Department of Public Health, see website below under "Licensed Water Haulers by County" for an Excel file – hit "cancel" when it requests a username and password:
https://www.cdph.ca.gov/Programs/CEH/DFDCS/pages/fdbprograms/foodsafetyprogram/water.aspx

Chapter 3: Criteria for Initiation and Termination of Water Shortage Response Stages

The table below provides a summary of possible events that may trigger water shortages for school water systems. These events should be considered as initiation and termination of Water Shortage Triggers are developed and updated.

Events for Consideration	Potential Water System Impacts & Appropriate Agency Contacts
Drought	California has experienced continuous and historic drought levels. Potential local impacts from drought can be assessed using the available California Water Watch[3] tool and by measuring elevations in drinking water sources. Drought may result in the need for varying levels of conservation. If County, State or Federal Drought Orders are put in place, water conservation may also be legally required. In the event that water outages appear to be imminent, pressure in the distribution system fails below 20 psi[4], or outages have occurred, State Water Resources Control Board staff and/or County Environmental Health (for LPA Programs[5]) should be contacted for additional direction. During water outages, local fire departments should also be notified.
Fire	Fire potential is high throughout much of California. Fire officials may request water conservation while they are addressing active fires; and some schools may be a shelter-in-place site during these emergencies. Thus, conservation may be required due to the additional water supply demand. Additionally, in all cases of water outage fire officials, State Water Resources Control Board staff and/or County Environmental Health (with LPA Programs) should be notified.
Earthquake	Earthquakes occur throughout California and may result in well failure due to ground movement, or water loss due to broken pipes. Potential contamination of water supply can also occur when broken sewers or septic lines occur near broken drinking water pipes. Should the water system be severely impacted due to an earthquake and need assistance, the County Office of Emergency Services should be contacted. Subsequent calls to the State Water Resource Control Board and/or County Environmental Health (with LPA Programs) are also appropriate. If water outages occur, local fire departments should also be notified.

Significant Treatment Failure	If water is treated to remove contamination, either chemical or bacterial, the failure of that treatment may result in the need for conservation and reliance on storage, or other actions, until the treatment system can be repaired. Public noticing and/or alternative water may also need to be provided. State Water Resources Control Board staff and/or County Environmental Health (with LPA Programs) should be notified to discuss corrective actions.
Pandemic	In the event of illness or death of the certified operator, particularly where extensive treatment is necessary, water conservation and reliance on storage maybe necessary when no trained backup operator is readily available to operate the water system. State Water Resources Control Board staff and/or County Environmental Health (with LPA Programs) should be notified to discuss options.
Vandalism/ Terrorism	Depending on the severity of the event, water in wells or storage tanks that have been tampered with may not be safe to be utilized until additional investigation is performed. Alternative water supplies may be necessary in this case as well as coordination with enforcement authorities, the State Water Resources Control Board, and/or County Environmental Health (with LPA Programs).
Power Outage	Power outages may result in pump failure. If backup power and adequate water storage are unavailable, this may lead to water outages or the need for extensive conservation. In the event of water outages or distribution pressure below 20 psi, State Water Resources Control Board staff and/or County Environmental Health (with LPA Programs) should be notified to discuss options.
Well Pump or Well Failure	Well pumps may unexpectedly fail if not properly maintained or utilized beyond its typical life expectancy. Wells also have a life expectancy and need to be replaced as the internal casing can fail over time. Typical life expectancies of water treatment and water distribution equipment is available for review on the State Water Resources Control Board website for reference[6]. This equipment should be properly maintained and replaced to prevent failure. However, should water outages occur State Water Resources Control Board staff and/or County Environmental Health (with LPA Programs) should be notified to discuss options.

This Plan includes four stages of water conservation for Happy Days School. The triggers for initiation of each Stage and the requirements for termination of each Stage are described below.

Stage 1 Triggers -- Water Shortage WATCH Conditions

Requirements for initiation:
The School shall implement actions and certain restrictions on non-essential water uses provided in Chapter 4 of this Plan when any of the following occur:

- Typical water supply capacity or water elevation in Well 01 decreases by more than 15% of its expected average seasonal value.
- California Water Watch[7] "Current Drought Map" shows the school's region is in an area of moderate or severe drought.
- California Water Watch for the school's zip code shows "Water Year to Date Precipitation" less than 60% of average.
- GSA's or nearby cities and public water systems are initiating drought measures.

Requirements for termination:
Stage 1 of the Plan may be rescinded when all the conditions listed as triggering events have ceased to exist for a period of 5 consecutive days.

Stage 2 Triggers -- Water Shortage ACUTE Conditions

Requirements for initiation:
The School shall implement actions and certain restrictions on non-essential water uses provided in Chapter 4 of this Plan when any of the following occur:

- Typical water supply capacity or water elevation in Well 01 decreases by more than 25% of its expected average seasonal value.
- California Water Watch "Current Drought Map" shows the school's region is in an area of extreme drought.
- California Water Watch for the school's zip code shows "Water Year to Date Precipitation" less than 40% of average.
- Local, State or Federal Drought Emergency Orders are in put in place.

Requirements for termination:
Stage 2 of the Plan may be rescinded when all the conditions listed as triggering events have ceased to exist for a period of 15 consecutive days or immediately if only Local, State, or Federal Drought Emergency Orders are lifted and no other requirements for initiation are present. Upon termination of Stage 2, Stage 1 becomes operative unless otherwise specified.

Stage 3 Triggers – EMERGENCY Water Shortage Conditions

Requirements for initiation:
The School shall implement actions and certain restrictions on non-essential water uses provided in Chapter 4 of this Plan when any of the following occur:

- California Water Watch for the school's zip code shows "Water Year to Date Precipitation" less than 25% of average,
- Typical water supply capacity or water elevation in Well 01 decreases by more than 40% of its expected average seasonal value.

Requirements for termination:
Stage 3 of the Plan may be rescinded when all the conditions listed as triggering events have ceased to exist for a period of 15 consecutive days and if there are no local, State, or Federal mandates on water conservation. Upon termination of Stage 3, Stage 2 becomes operative unless otherwise specified.

Stage 4 Triggers – CATASTROPHIC Water Shortage Conditions

Requirements for initiation:
The School shall implement actions and certain restrictions on water uses provided in Chapter 4 of this Plan when any event occurs that may impact the ability of the water system to maintain mandatory school functions:

- Typical water supply capacity or water elevation in Well 01 decreases by more than 50% of its expected average seasonal value.
- A natural disaster occurs that may critically impact the water supply (e.g. fire, earthquake, pandemic, power outage cause by weather, etc.)
- Other water systems failures occur that may critically impact the water supply or its safety (e.g. well collapse, well pump failure, treatment failure, vandalism/terrorism)

Requirements for termination:
Stage 4 of the Plan may be rescinded immediately when:

- All the conditions listed as triggering events have ceased to exist

and in the case of any water outage and/or significant treatment failures, the following have been met:

- Public health officials have deemed the water supply safe for human consumption, or
- Other directed actions by public health officials have been implemented to notify the public and take corrective actions of any water system hazards.

Upon termination of Stage 4, Stage 3 becomes operative unless otherwise specified.

Chapter 4: Drought Response Actions

The Superintendent, or designee, shall monitor water supply and/or demand conditions on a monthly basis and, in accordance with the triggering criteria set forth in this Plan, shall determine if a water shortage condition exists and the severity of any such water shortage conditions (*e.g., 1-Watch, 2-Acute, 3-Emergency, 4-Catastrophic Water Loss*), and shall implement the following notification procedures accordingly.

Description of Customer Notification Methods:

The Superintendent, or designee, shall notify the staff, parents, students, and public by means of one of the following Methods:

- Method 1: Notice to everyone on school website, under General Information
- Method 2: Notice on Parent Phone App notification system
- Method 3: Email to parent and student listing
- Method 4: Notice to local Spanish and English-speaking radio stations
- Method 5: County Emergency Messaging text alert

All school notifications go out in both English and Spanish.

Prepared materials from Department of Water Resources, "Save Our Water Toolkit", may be used as drought communication tools with the school system logo added. The link for these materials is provided below.

https://saveourwater.com/en/Partner-Toolkit

Additionally, K-12 focused water conservation and water education materials, provided in Chapter 6, may also be utilized for drought and/or water conservation awareness and supporting science curriculum.

Stage 1 Response -- Water Shortage WATCH Conditions

Target: Achieve a 15% percent reduction in total monthly water usage.

Best Management Practices for Supply Management:

a. The intertie with Happy Valley Mutual Water Company will be tested monthly to ensure it is operational. Coordination will be done on drought messaging with Happy Valley Mutual Water Company to ensure that if

the intertie is needed that there has been consistent messaging and water wasting is not occurring by either party.

b. Verify mutual aid relationship contacts with Valley Unified School District are up to date should water need to be hauled to/from their school district.

Water Use Restrictions for Reducing Demand:

a. Do a visual survey for pipe leaks and repair/replace any faucets, sprinklers or other apparatuses that may be resulting in water loss.

b. Limit distribution system flushing.

c. Ensure irrigation does not occur within 48 hours after measurable rainfall.

d. Limit irrigation to no more than two days per week.

Notification Method(s) and Frequency:

Method 1 – Put up water supply saving tips on website.

Agencies Contacted:

Contact local Happy Valley GSA to better understand the severity of the local drought situation and determine if any additional actions are necessary.

Stage 2 Response -- Water Shortage WARNING Conditions

Target: Achieve a 25% percent reduction in total monthly usage.

Best Management Practices for Supply Management:

a. Continue to test intertie and coordinate monthly with Happy Valley Mutual Water Company.

b. Begin performing groundwater well elevation assessments every two weeks.

c. Evaluate if drought conditions persist and additional storage capacity or well will be necessary. If so, determine what engineering and permitting will be required. Long lead times may be necessary to obtain engineering designs and all necessary permits. Permits may be needed from the Division of State Architect, County Environmental Health, County Planning and/or the Division of Drinking Water. Also, consider that an environmental assessment to meet California Environmental Quality Act (CEQA) requirements may also be necessary.

d. Seek potential funding opportunities to cover costs. Submit a Funding Inquiry Form request on the California Financing Coordinating Committee website[8].

Water Use Restrictions for Reducing Demand:

a. Limit all irrigation to one day per week, consider replacement of non-drought resistant plants.

b. Cease using water to washdown any sidewalks, walkways, etc. unless required to address a sanitary hazard.

c. Begin incorporating drought/conservation posters across school property.

d. Cease regular distribution flushing.

e. Evaluate if free/inexpensive leak detection services are currently available from technical assistance providers funded by the state, such as California Rural Water Association, Rural Community Assistance Corp. or others. If so, determine if these may benefit the school and schedule, as appropriate.

Notification Method(s) and Frequency:

- Method 1 – Put up water supply saving tips on website and provide status update
- Method 3 – Include information about drought issues at the school and remind students and parents about water conservation in monthly email

Agencies Contacted:

Contact local Happy Valley GSA to continue coordination on the severity of the local drought situation and determine if any additional actions are necessary. Notify the State Water Board's Division of Drinking Water that the school is seeing drought impacts and determine if any funding possibilities are available.

Stage 3 Response -- ACUTE Water Shortage Conditions

Target: Achieve a 40 percent reduction in weekly monthly usage.

Best Management Practices for Supply Management:

a. If storage levels are decreasing to rapidly on certain days or times, coordinate with Happy Valley Mutual Water Company to transfer water,

if possible. If water transfer is not possible due to limited capacities at Happy Valley Mutual Water Company, begin outreach to approved water haulers[9], bottled water suppliers, and sanitation services such as portable bathrooms to prepare should further drought impacts occur.

b. Begin performing groundwater well elevation assessments every week.

c. Contract for engineering services to obtain plans and permitting approval for an additional well and/or storage capacity, if not already completed. If a well will be added, determine scheduling for local well drillers and schedule, if appropriate. If additional storage is proposed, determine manufacturer lead times.

Mandatory Water Use Restrictions for Reducing Demand:

a. Limit all irrigation to only critical landscaping such as trees. Plan for replacement of non-drought resistant plants.

b. Increase communication to students on the importance of water conservation.

c. No distribution system flushing.

d. Cease using water to washdown any sidewalks, walkways, etc. unless needed to address a sanitary hazard.

Notification Method(s) and Frequency:

- Method 1 – Put up water supply saving tips on website and provide status update
- Method 2 – Include information about drought issues at the school twice per month and remind parents about water conservation in parent phone app.
- Method 3 – Include information about drought issues at the school and remind students and parents about water conservation in weekly email

Agencies Contacted:

Contact local Happy Valley GSA to continue coordination on the severity of the local drought situation and determine if any additional support is available. Notify the State Water Board's Division of Drinking Water that the school is continuing to see drought impacts and determine if any funding possibilities are available from the State Water Resources Control Board, Department of Water Resources, and/or County Office of Emergency Services.

Stage 4 Response -- CATASTROPHIC Water Shortage Conditions

In the event of water outages, water pressure in the distribution system of less than 20 psi, or water shortage conditions that would otherwise result in school closure, the Superintendent, or designee, shall at minimum implement the following steps.

1. **Notify Emergency Service Providers and Public Health Agencies**

Valley Fire District:

- Notify the local fire district of any water outage/low pressure event so that if a fire occurred at the school alternative or supplemental water supply could be provided.

State Water Board, Division of Drinking Water:

- Notify Division of Drinking Water of water outage, distribution pressures less than 20 psi, any potential changes in source water, including hauling. Changes of sources **must** be approved ahead of time to ensure their safety. Obtain instructions on any next steps, any special sampling, and/or public noticing requirements.

County Office of Emergency Services:

- Notify of water outages and needed assistance, particularly in disaster events such as earthquakes, fires, or if the facility is being utilized as a shelter-in-place location.

2. **Seek Replacement Water Supply to Address Potential or Actual Water Outages.**

Alternative Water Supply and/or Sanitation:

- Water supply will first be attempted to be obtained from Happy Valley Mutual Water Company through the existing permitted and approved intertie. Division of Drinking Water does not need to be notified to utilize this pre-approved intertie.

- If water is not available from the intertie, water will be hauled, using a licensed water hauler from either our mutual aid partner, Valley Unified School District, or another approved source. This will be coordinated with the Division of Drinking Water prior to implementation to determine any special treatment, sampling or public notification requirements. Do not utilize irrigation well for drinking water supply.

- If not already initiated, implement any additional well drilling and/or additional storage capacity construction developed in earlier phases.

- If hauled water supply is extremely limited, sanitation facilities such as portable toilets and handwashing stations may be provided to decrease water usage, depending on the circumstances. Coordination with public health officials at the County would be appropriate.

3. **Notification of Students, Parents and Public.**

- Method 1: Notice to everyone on school website, under General Information
- Method 2: Notice on Parent Phone App notification system with regular updates
- Method 3: Email to parent and student listing with regular updates
- Method 4: Notice to local Spanish and English-speaking radio stations
- Method 5: County Emergency Messaging text alert (if appropriate)

All school notifications go out in both English and Spanish.

4. **Ensure all non-essential uses of water, such as irrigation and leaks, have ceased.**

- Valve off irrigation pipelines to ensure that no water loss occurs in those areas.