



Annex I Cosumnes Community Services District/Fire District

I.1 Introduction

This Annex details the hazard mitigation planning elements specific to the Cosumnes Community Services District/Fire District (CCSD/Fire or District), a previously participating jurisdiction to the 2021 Sacramento County Local Hazard Mitigation Plan (LHMP) Update. This Annex is not intended to be a standalone document but appends to and supplements the information contained in the Base Plan document. As such, all sections of the Base Plan, including the planning process and other procedural requirements apply to and were met by the District. This Annex provides additional information specific to the District, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this jurisdiction.

I.2 Planning Process

As described above, the CCSD/Fire followed the planning process detailed in Chapter 3 of the Base Plan. In addition to providing representation on the Sacramento County Hazard Mitigation Planning Committee (HMPC), the District formulated their own internal planning team to support the broader planning process requirements. Internal planning participants, their positions, and how they participated in the planning process are shown in Table I-1. Additional details on Plan participation and District representatives are included in Appendix A.

Table I-1 CCSD/Fire – Internal Planning Team

Name	Position/Title	How Participated
Matt DeMarco	Assistant Chief	Provided input on mitigation actions. Attended HMPC meetings. Coordinated with staff for Annex Review.
Troy Bair	Deputy Chief of Operations	Provided input on mitigation actions. Coordinated with staff for Annex Review.

Coordination with other community planning efforts is paramount to the successful implementation of this LHMP Update. This section provides information on how the District integrated the previously FEMA-approved 2021 LHMP into existing planning mechanisms and programs. Specifically, the District incorporated into or implemented the 2021 LHMP through other plans and programs shown in Table I-2.

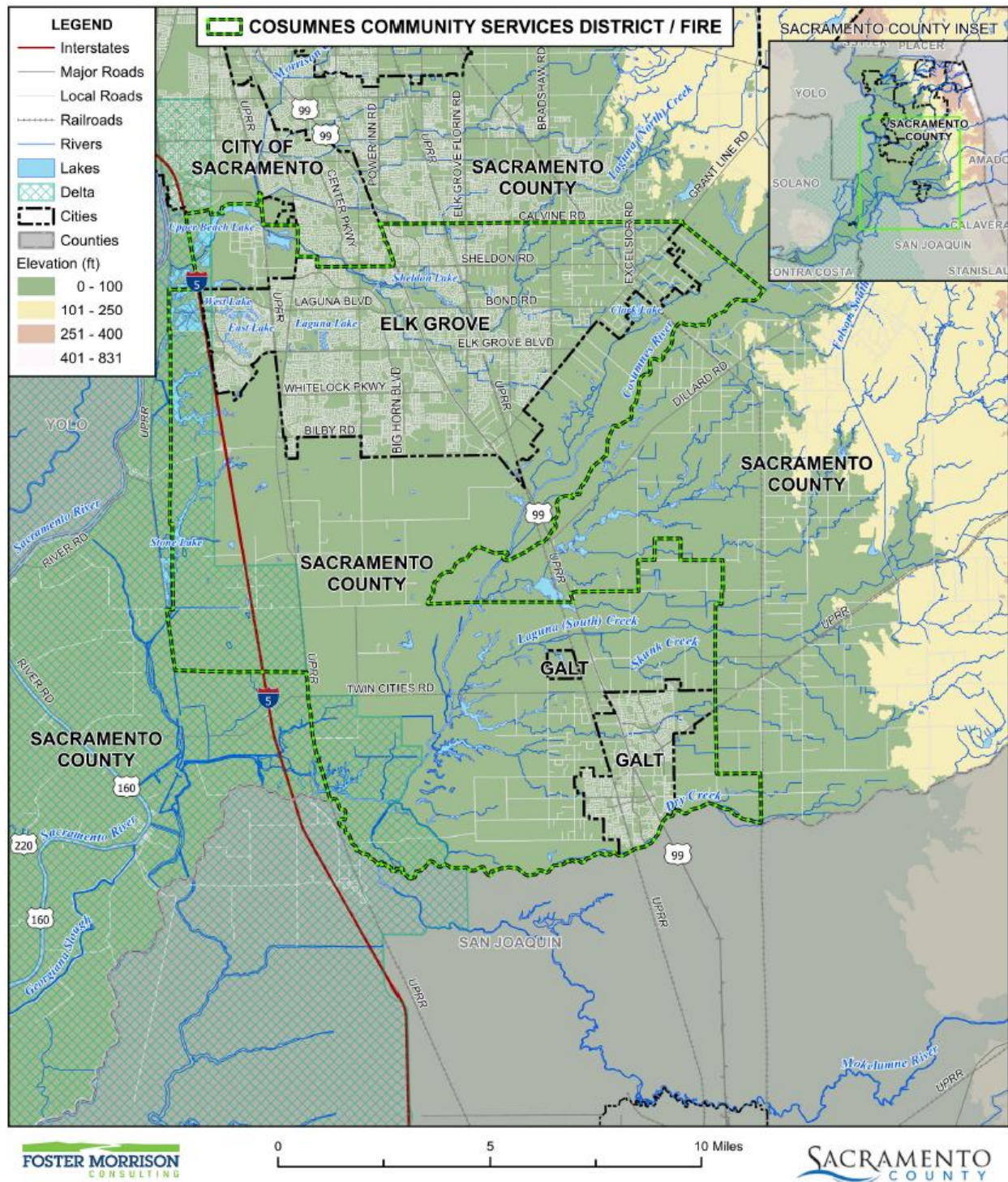
Table I-2 2021 LHMP Incorporation

Planning Mechanism 2021 LHMP Was Incorporated/Implemented In.	Details: How was it incorporated?
Multiple	The LHMP is used with Cosumnes CSD Strategic Plan, Fire Department Strategic Plan, Capital Improvement Plan, Climate Action and Sustainability Plan, emergency operations and continuity planning, budget process, and Fire Department operational and prevention programs. These plans are used when identifying facility, staffing, equipment, mitigation actions, and other mitigation needs.

I.3 Community Profile

The community profile for the CCSD/Fire is detailed in the following sections. Figure I-1 displays a District map and the location of CCSD/Fire within Sacramento County.

Figure I-1 CCSD/Fire



I.3.1. Overview and Background

The Cosumnes Community Services District Planning Area encompasses the former territory of six Plains Miwok tribelets along the Cosumnes River drainage and two, possibly three, tribelets along the Sacramento River. In 1850, Elk Grove was established as a hotel stop and a stop for the stage. It is located about 15 miles south of historic Sutter's Fort and thus became a crossroads for business, entertainment, mail service and agriculture, and acted as home base for gold miners in nearby communities.

The roots of the Cosumnes Community Services District/Fire Department date back to 1893, when the Elk Grove Fire Department started with a single hose cart and a small group of volunteers, and to 1921, when the all-volunteer Galt Fire Protection District was formed. Today, the two fire departments operate as one, servicing growing communities with progressive, modern firefighter practices and equipment.

The Cosumnes CSD/Fire Department is the product of two mergers. The first occurred in 1985 when the Elk Grove Fire Department merged with the Elk Grove Parks and Recreation District, one of the oldest park districts in the state, to become the Elk Grove Community Services District. The second merger was in 2006, when the CSD merged its fire services with the Galt Fire Protection District forming the Cosumnes Community Services District.

Initially, the town of Elk Grove developed around a stage stop on the Monterey Trail, though after the railroad passed by east of town, Elk Grove's center shifted to its present location. "Old Town" Elk Grove is located about a mile east of State Route 99 (formerly U.S. Route 99, the north-south artery of the California Central Valley).

America's first transcontinental highway, the Lincoln Highway, ran through Galt until it was ultimately replaced by State Route 99. Lincoln Way in central Galt is a remnant of this historic route. Galt grew around the rail depot and State Route 99 throughout the first half of the twentieth century. Improvements to State Route 99 in recent years have made Galt more accessible, which has resulted in increased population and growth to the west and northeast.

The original 1850 Spanish land grant, Rancho del los Moquelumnes, was purchased in 1861 by Dr. Obed Harvey, considered today as Galt's founder. His purchase included much of the Dry Creek Township which was later established as the town of Galt in 1869 by the Western Pacific Railroad company. A prominent early settler, John McFarland, named the town after his former home in Ontario, Canada, which was named after a Scottish novelist, John Galt. The combination of favorable land for agriculture and the proximity to the railroad provided Galt with the economic support to continue to grow.

With the decline of gold mining in the Sierra Nevada foothills by the end of the eighteenth century, Galt, like many other Central Valley towns, saw the arrival of miners looking to start anew in agriculture. The City's proximity to several major rivers and the water resources of the Sacramento-San Joaquin River Delta made Galt ideal for the establishment of agriculture early in California's history.

Today, Galt is at a strategic location between the growing areas of Sacramento and Stockton. The city's proximity to I-5 and SR 99 provides Galt excellent access to the rest of the Central Valley and California.

Despite fast growth in the region, the city continues to maintain its small-town character while balancing the needs for housing and acknowledging its important agricultural heritage.

Cosumnes Fire Department provides all risk emergency services to the cities of Elk Grove, and Galt. Additionally, services are provided to the communities of Sheldon, Pleasant Grove, Laguna, Laguna West, and Franklin.

In addition to fire services, the District provides parks and recreation services through well-maintained parks and recreational opportunities for health, wellness, and social interactions

Geography and Climate

The District has a Mediterranean climate, characterized by damp to wet, mild winters and hot, dry summers. The wet season is generally October through April, though there may be a day or two of light rainfall in June or September. The mean annual temperature is 61.1°F, with monthly means ranging from 45.8°F in December to 75.4°F in July. Summer heat is often moderated by a sea breeze known as the “delta breeze” which comes through the Sacramento-San Joaquin River Delta from the San Francisco Bay.

On average, 96 days in the year experience some degree of fog, which usually occurs in the morning (tule fog). The foggiest months are December and January. Tule fog can be extremely dense, lowering visibility to less than 100 feet and making driving conditions extremely hazardous. Chilling tule fog events have been known to last for several consecutive days or weeks. During tule fog events temperatures do not exceed 50 degrees.

On average, there are 74 days where the high exceeds 90°F, and 15 days where the high exceeds 100°F; on the other extreme, freezing nights occur 16 nights per year. At Sacramento International Airport, extremes have ranged from 18°F on December 22, 1990, to 115°F on June 15, 1961.

The average annual precipitation is 21.45 inches. On average, precipitation falls on 62 days each year in Sacramento region, and nearly all of this falls during the winter months. Average January rainfall is 3.84 inches, and measurable precipitation is rare during the summer months. In February 1992, Sacramento region had 16 consecutive days of rain, resulting in an accumulation of 6.41 inches for the period. A record 7.24 inches of rain fell on April 20, 1880. On rare occasions, monsoonal moisture surges from the Desert Southwest can bring upper-level moisture to the Sacramento region.

I.4 Risk Assessment

As defined by FEMA, risk is a combination of hazard, vulnerability, and exposure. “It is the impact that a hazard would have on people, services, facilities, and structures in a community and refers to the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.”

The CCSD/Fire risk assessment identifies and profiles relevant hazards and assesses the exposure of lives, property, infrastructure, and the environment to these hazards. The process allows for a better understanding of the District’s potential risk and vulnerability to hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

Building on the District Profile above, a risk assessment was performed for the District utilizing the existing District boundaries. This includes the following sections:

- I.4.1 Assets Inventory and Growth and Development Trends
- I.4.2 Hazard Identification
- I.4.3 Hazard Profiles and Vulnerability to Specific Hazards

I.4.1. Assets Inventory and Growth and Development Trends

This section provides an inventory of the CCSD/Fire's total assets potentially at risk to hazards and an overview of growth and development trends. This section is broken into two parts:

- **Asset Inventory** – The assets inventory identifies the CCSD/Fire's total assets, including the people and populations; structures; critical facilities and infrastructure; community lifelines; natural, historic, and cultural resources; and economic assets and community activities of value. This data is not hazard specific, but is representative of total assets within the District, potentially at risk to identified hazards as discussed in Section I.4.3 Hazard Profiles and Vulnerability to Specific Hazards.
- **Growth and Development Trends** – A discussion of growth and development trends in the District, both current and future, is presented.

Assets Inventory

The District's asset inventory is detailed in the following sections:

- People and Populations
- District Assets and Critical Facilities and Infrastructure
- Community Lifelines
- Natural, Historic, and Cultural Resources
- Economic Assets and Community Activities of Value

A discussion of each of these assets follows and serves as the template for the asset discussion for each hazard in Section I.4.3.

People and Populations

The most important asset within any community are the people and populations that reside in the community. This section includes an inventory of past and current populations of the District and also discusses vulnerable populations and underserved communities as a subsection of people and populations located within the District and potentially at risk to hazards. Information from the District and other sources as detailed below form the basis of this discussion.

Historic Population Trends and Current Population

The most important asset within any community are the people and populations that both work and reside in the District. For special districts, this generally includes District staff and contractors as well as those populations located within its boundaries and served by the District. The District has more than 350 staff that work for the District. The Fire Department's 2023 Community Risk Assessment/Standards of Cover

reported 183 career line personnel assigned to shift operations, with 61 personnel per shift. Cosumnes CSD serves approximately 221,000 residents within an approximately 157-square-mile service area. Fire protection and emergency medical services are provided to Elk Grove, Galt, and unincorporated areas of south Sacramento County.

District Assets and Critical Facilities and Infrastructure

This section considers the CCSD/Fire’s assets at risk, with a focus on key District assets such as structures, critical facilities and infrastructure, and other District assets and their values. With respect to District assets, the majority of these assets are considered critical facilities as defined for this Plan. Critical facilities are defined for this Plan as:

Any facility, including without limitation, a structure, infrastructure, property, equipment or service, that if adversely affected during a hazard event may result in severe consequences to public health and safety or interrupt essential services and operations for the community at any time before, during and after the hazard event.

A critical facility is classified by the following categories: (1) Essential Services Facilities, (2) At-risk Populations Facilities, (3) Hazardous Materials Facilities.

Most of the District assets are considered Category 1 critical facilities, specifically essential services facilities. Table I-3 lists critical facilities and other District assets identified by the District Planning Team as important to protect in the event of a disaster. CCSD/Fire’s physical assets, valued at over \$250 million, consist of structures, critical facilities and infrastructure, and other District assets to support the District’s operations.

Table I-3 CCSD/Fire Assets: Structures, Critical Facilities and Infrastructure, and Other Facilities

Name of Asset	Facility Type	Replacement Value*	Which Hazards Pose Risk
Cosumnes Fire Training Center	EMS, Fleet Maintenance Support, Prevention, and Training	\$30,000,000	Flood/Levee Failure/Wildfire
Fire Headquarters	Fire	\$20,000,000	Flood/Levee Failure/Wildfire
EMS facilities/resources, including EMS/Logistics	EMS	\$15,000,000	Flood/Levee Failure/Wildfire
Cosumnes Fire Stations (9)	Emergency Response	\$160,000,000	Flood/Levee Failure/Wildfire
Cosumnes CSD Administration	CSD Administration	\$25,000,000	Flood/Levee Failure/Wildfire
Total		\$250,000,000	

Source: CCSD/Fire

* The values are intended as replacement/reconstruction planning estimates and are not assessed or insured values.

Community Lifelines

Assessing the vulnerability of the CCSD/Fire to natural hazards and disasters also involves reviewing and inventorying the community lifelines in place that could be affected. It is important to include these items in hazard discussions as the continuous operation of critical government and business functions is essential to human health and safety, property protection, and economic security. The importance of community lifelines is discussed below:

- Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function.
- FEMA has developed a method for objectives-based response that prioritizes the rapid stabilization of Community Lifelines after a disaster.
- The integrated network of assets, services, and capabilities that provide lifeline services are used day-to-day to support the recurring needs of the community and enable all other aspects of society to function.
- When disrupted, decisive intervention (e.g., rapid re-establishment or employment of contingency response solutions) is required to stabilize the incident.

Community lifelines, as defined by FEMA, include the following:

- **Safety and Security** – Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety
- **Food, Hydration, Shelter** – Food, Water, Shelter, Agriculture
- **Health and Medical** – Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management
- **Energy** – Power Grid, Fuel
- **Communications** – Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch
- **Transportation** – Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime
- **Hazardous Material** – Facilities, HAZMAT, Pollutants, Contaminants
- **Water Systems** – Potable Water Infrastructure, Wastewater Management

It should be noted that these community lifelines are all in place and functional as part of regular government operations in the Sacramento County Planning Area serving as a partnership between the cities, local special districts and agencies, and Sacramento County. Most all of the District's community lifelines overlap with the Planning Area's and include many of the critical facilities and infrastructure assets inventoried for this LHMP. As such, specific information on these community lifelines in the District and how they may be affected by a hazard event or disaster are discussed collectively for all jurisdictions in the Base Plan.

Natural, Historic, and Cultural Resources

Natural Resources

CCSD/Fire has a variety of natural resources of value to the District. These natural resources parallel that of the cities of Elk Grove, Galt, and Sacramento County as a whole. Information can be found in Section 4.2.1 of the Base Plan and in the Annexes for Elk Grove and Galt.

Historic and Cultural Resources

CCSD/Fire has a variety of historic and cultural resources of value to the District. These historic and cultural resources parallels that of the cities of Elk Grove, Galt, and Sacramento County as a whole. Information can be found in Section 4.2.1 of the Base Plan and in the Annexes for Elk Grove and Galt.

Economic Assets and Community Activities of Value

Assessing the vulnerability of the CCSD/Fire to natural hazards and disasters also involves inventorying the economic assets and community activities of value in the District.

Economic Assets

After a disaster, economic resiliency is one of the major drivers of a speedy recovery. Each community has specific economic drivers. Economic assets for the County were discussed in Section 4.2.1 of the Base Plan (as well as in the cities of Elk Grove and Galt, annexes) and are assumed to be the same or similar for the District.

Community Activities of Value

Inventorying economic assets in the District and their vulnerability to natural hazards and disasters also involves inventorying activities that have value to the community. This includes activities that are important to a community, like long-standing traditions such as a festival or fair or other activities that bring money into the communities such as sports tournaments and other recreational activities. Community Activities of Value for the County were discussed in Section 4.2.1 of the Base Plan (as well as in the cities of Elk Grove and Galt) and are assumed to be the same or similar for the District.

Growth and Development Trends

As part of the planning process, the District looked at changes in growth and development, both current and future, and examined these changes in the context of hazard-prone areas, and how the changes in growth and development affect loss estimates and vulnerability over time. This inventory section details future development/redevelopment projects that are likely to occur over the next five years covered by this 2026 LHMP. For Districts, this generally includes the following:

- Construction/development projects related to adding new District facilities, infrastructure, land acquisition, etc.
- Plans for expansion or build out of the District's service area, including new service hookups, and other District functions related to where the District will be expanding services.

Population Trends and Projections

The District has continued to grow since the 2021 LHMP. The current service population is approximately 221,000. Continued residential and commercial development is increasing demand for fire protection, emergency medical services, prevention, and supporting facilities and infrastructure.

Development since 2021 Plan

Development and capital investment have continued since 2021 LHMP. The current CIP includes 123 projects totaling approximately \$226 million, including fire-facility projects. Post-2021 investments include Fire Station 77, additional wildland apparatus and command vehicles, and improvements to communications and station-alerting systems. These are all designed to reduce risk to hazards, especially wildfire.

Future Development Areas

It is important to review future development plans for the District. Future development should be sited in areas that are away from known hazard risks. If this is not possible, mitigation should be done to ensure that future development is protected against future hazards. Development is expected to continue in the District's service area. CSD/Fire will continue to review staffing, station locations, equipment, emergency access, and other facility needs as development occurs. These needs are addressed through the annual Capital Improvement Plan and coordination with the applicable land-use jurisdictions.

I.4.2. Hazard Identification

The CCSD/Fire identified the hazards that affect the District and summarized their location, extent, likelihood of future occurrence, potential magnitude, and significance (or priority of a hazard) specific to the District (see Table I-4). Those hazards identified as a high or medium significance in Table I-4 are considered District priority hazards for mitigation planning. Those hazards that occur infrequently or have little or no impact in the District were determined to be of low significance and not considered a priority hazard. Significance was determined based on the hazard profile, focusing on key criteria such as frequency, extent, and resulting damage, including deaths/injuries and property, natural and cultural resources, and economic damage. The ability of a jurisdiction to reduce losses through implementation of existing and new mitigation measures was also considered as to the significance of a hazard. This assessment was used to prioritize those hazards of greatest significance, enabling the District to focus resources where they are most needed.

Table I-4 CCSD/Fire—Hazard Identification Assessment

Hazard	Geographic Extent	Likelihood of Future Occurrences	Magnitude/Severity	Significance	Climate Change Influence
Aquatic Nuisance Species (plant/animal)	Limited	Occasional	Negligible	Low	Low
Climate Change	Limited	Unlikely	Negligible	Low	–
Dam Failure	Limited	Unlikely	Critical	Low	Medium
Drought & Water Shortage (w/tree mortality)	Extensive	Likely	Limited	Medium	High
Earthquake (w/subhazards)	Significant	Occasional	Limited	Low	Low
Flood: 1%/0.5%/0.2% annual chance	Significant	Occasional	Critical	Medium	Medium
Flood: Localized Stormwater	Significant	Likely	Limited	Low	Medium
Landslides, Mudslides, and Debris Flow	Limited	Unlikely	Negligible	Low	Medium
Levee Failure	Significant	Occasional	Critical	Medium	Medium
Sea Level Rise	Limited	Likely	Limited	Low	High
Severe Weather: Extreme Cold and Freeze	Extensive	Likely	Limited	Low	Medium
Severe Weather: Extreme Heat	Extensive	Likely	Limited	Medium	High
Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)	Extensive	Highly Likely	Limited	Low	Medium
Severe Weather: High Winds and Tornadoes	Limited	Occasional	Limited	Low	Low
Subsidence	Limited	Unlikely	Negligible	Low	Medium
Wildfire (with smoke and air quality)	Significant	Highly Likely	Critical	High	High
Geographic Extent Limited: Less than 10% of planning area Significant: 10-50% of planning area Extensive: 50-100% of planning area Likelihood of Future Occurrences Highly Likely: Near 100% chance of occurrence in next year, or happens every year. Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less. Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years. Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years. Magnitude/Severity Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid Significance Low: minimal potential impact Medium: moderate potential impact High: widespread potential impact Climate Change Influence Low: minimal potential impact Medium: moderate potential impact High: widespread potential impact					

I.4.3. Hazard Profiles and Vulnerability to Specific Hazards

This section includes the hazard profiles and vulnerability assessment for the CCSD/Fire’s priority hazards (i.e., those ranked of medium or high significance specific to the District as identified in the Significance column of Table I-4). This section focuses on where and how the District is affected by their priority hazards. Chapter 4 of the Base Plan provides more detailed information about these hazards and their impacts on the Sacramento County Planning Area. Methodologies for evaluating vulnerabilities and calculating loss estimates are the same as those described in Section 4.2 of the Base Plan.

Hazard Profiles and Vulnerability Assessment

Each hazard is profiled in the following format:

- **Hazard Profile** – A hazard profile is included for each hazard. This includes information on:
 - ✓ **Hazard Overview** – A general discussion of the hazard and related issues is detailed here.
 - ✓ **Location and Extent** – Location is the geographic area within the District that is affected by the hazard. Extent is the expected range of intensity for each hazard. These are discussed in specific detail for mapped hazards, and in more general detail for those hazards that do not have discrete mapped hazard areas.
 - ✓ **Past Occurrences** – Past occurrences are discussed for each hazard. A discussion of disaster declarations is included in each hazard section. NDC events are also discussed. Other past occurrences data specific to the District follow the disaster declarations and NDC events for each hazard.
 - ✓ **Climate Change** – This section contains the effects of climate change (as applicable). The possible influence of climate change on the hazard is discussed.

After the hazard profile, a vulnerability assessment is presented. As part of the vulnerability assessment, an estimate of the vulnerability of the District to each identified hazard, in addition to the estimate of risk of future occurrence, is provided in each of the hazard-specific sections. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into the following classifications:

- **Extremely Low**—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
- **Low**—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
- **Medium**—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High**—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.
- **Extremely High**—Very widespread with catastrophic impact.

After this classification, a general discussion of hazard vulnerabilities occurs. This is done in the following format:

- **Vulnerability Overview** – A general discussion of the hazard vulnerability and related issues is detailed here.
- **Local Concerns** – This includes District provided information on how the District is uniquely affected by or vulnerable to each hazard.
- **Assets at Risk** – A discussion of the assets at risk follows, presented in the same order as in Section I.4.1 above, with a few exceptions. This includes sections on: People and Populations; District Assets, Critical Facilities and Infrastructure, and Other Facilities; and Natural, Historic, and Cultural Resources. These are discussed in specific terms for mapped hazards, and in more general terms for those hazards that are unmapped. Sections on Community Lifelines and Economic Assets and Community Activities of Value are not included in the Sections below, as they are common to all jurisdictions and are fully covered in Section I.4.1 above, in Chapter 4 of the Base Plan, and in the City Annexes where the District is located, as applicable.
- **Impacts** – A discussion on hazard impacts follows. Impacts describe how each hazard can affect the District and its assets. The type and severity of impacts reflect both the potential magnitude of the hazard and the vulnerability of the asset.
- **Future Conditions/Future Development** – A discussion of how future conditions and future development may affect the hazard is also included. This considers both new District assets and improvements as well as any changes with the District’s boundaries and/or within its service area.

Power Interruption/Power Failure: A Common Vulnerability of all Hazards

An impact of almost all hazards evaluated as part of this LHMP Update relates to power shortage and/or power failures. There are two major power providers in the Sacramento County Planning Area - Sacramento Municipal Utility District (SMUD) and Pacific Gas and Electric (PG&E). The US power grid crisscrosses the country, bringing electricity to homes, offices, factories, warehouses, farms, traffic lights and even campgrounds. According to statistics gathered by the U.S. Department of Energy, major blackouts are on the upswing. Incredibly, over the past two decades, blackouts impacting at least 50,000 customers have increased 124 percent. The electric power industry does not have a universal agreement for classifying disruptions. Nevertheless, it is important to recognize that different types of outages are possible so that plans may be made to handle them effectively. In addition to blackouts, brownouts can occur. A brownout is an intentional or unintentional drop in voltage in an electrical power supply system. Intentional brownouts are used for load reduction in an emergency. Electric power disruptions can be generally grouped into two categories: intentional and unintentional. Much of the Sacramento County Planning Area is served by PG&E and SMUD. More information on types of power disruptions can be found in Section 4.3 of the Base Plan.

Public Safety Power Shutoff (PSPS)

An intentional disruption type of power shortage/failure event has been implemented in California as a result of wildfires starting as a result of downed power lines or electrical equipment. This was the case for the Camp Fire in 2018. As a result, California’s three largest energy companies (including PG&E), at the direction of the California Public Utilities Commission (CPUC), are preparing all Californians for the threat of wildfires and power outages during times of extreme (fire) weather. To help protect customers and communities during extreme fire weather events, electric power may be shut off for public safety in an effort to proactively prevent wildfire. This is called a PSPS. More information on PSPS criteria can be found in Section 4.3 of the Base Plan. PG&E noted no PSPS events in the Sacramento County Planning

Area since the 2021 LHMP. SMUD noted that it has had no PSPS events for its service territories since 2021.

Local Concerns

There have been no intentional (including PSPS events) or unintentional power outage issues associated with hazard events affecting the District since 2021. However, with an increase in climate change related issues (e.g., extreme heat conditions, atmospheric river storms) occurring in the District and Sacramento County Planning Area, the potential for future hazard related power outages remain a concern.

Hazard Profiles and Vulnerability Assessment by Hazards

The following sections provide the hazard profile and vulnerability assessments for each of the hazards identified in Section I.4.2 Hazard Identification.

Drought & Water Shortage (w/Tree Mortality)

Likelihood of Future Occurrence–Likely
Vulnerability–High

Hazard Profile

Drought and water shortage are complex issues involving many factors—it occurs when a normal amount of precipitation is not available to satisfy an area’s usual water-consuming activities. Drought can often be defined regionally based on its effects. Drought is different than many of the other natural hazards in that it is not a distinct event and usually has a slow onset. Drought can severely impact a region both physically and economically. Drought affects different sectors in different ways and with varying intensities. Adequate water supply is the most significant issue and is critical for agriculture, manufacturing, tourism, recreation, and commercial and domestic use. Drought has also affected tree mortality in the area in the past. As the population in the area continues to grow, so will the demand for water.

Tree Mortality and Drought

One of the specific impacts of drought in the CCSD/Fire and the Sacramento County Planning Area is the increased risk to trees from insects, pathogens and parasites, and other tree mortality and die back issues. Drought weakens trees and makes them more susceptible to insect infestation and other pathogens. Insects, such as bark beetles and others, frequently attack trees weakened by drought, disease, injuries, or other factors that may stress the tree. These insects and other pathogens can contribute to the decline and eventual death of trees throughout the District. The tree mortality and dieback problems are a high priority because of the issue of hazardous trees and an increased wildfire hazard. In addition to an increase in wildfire fuels, hazardous trees can fall onto structures causing damage and a result in a reduction on the tree canopy within the District that provides relief during extreme heat days.

Location and Extent

Drought and water shortage are regional phenomenon. The whole of the District and County is at risk. The US Drought Monitor categorizes drought conditions with the following scale:

- None
- D0 – Abnormally dry
- D1 – Moderate Drought
- D2 – Severe Drought
- D3 – Extreme Drought
- D4 – Exceptional Drought

The Sacramento County Planning Area, including the CCSD/Fire, has been in and out of drought since 2014. Over the last seven years since the 2021 LHMP, drought conditions have ranged from none to exceptional. Drought conditions are expected to continue to be cyclical in nature depending on the year. Current drought conditions in the District are shown in Section 4.3.9 of the Base Plan.

Drought has a slow speed of onset and a variable duration. Drought can last for a short period of time (which does not usually affect water shortages) or for longer periods (which may challenge water supplies). Should a drought last for a long period of time, water shortage becomes a larger issue. Surface water is a major source due to the number of rivers in the region, but ground water supplements agriculture, which consumes the majority of water in the surrounding County. Runoff from precipitation and snowmelt from the Sierra Nevada mountains are the main sources of surface water supply in the City.

Past Occurrences

Disaster Declaration History

There have been 3 state and 1 federal disaster declarations for Sacramento County. This can be seen in Table I-5. Additionally, there have been 26 USDA Secretarial Disaster Declarations from drought in the County, as shown in Past Occurrences in Section 4.3.9 of the Base Plan. These events also likely affected the District to some degree.

Table I-5 Sacramento County –State and Federal Drought Disaster Declarations 1950-2025

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Drought	4	2008, 2014, 2015	1	1977

Source: Cal OES, FEMA

NCDC Events

There have been 83 NCDC drought events in Sacramento County since 1993. These most likely had some impact on the District.

CCSD/Fire Events

Based on historical information, the occurrence of drought in California, including the CCSD/Fire, is cyclical, driven by weather patterns. Section 4.3.9 of the Base Plan notes that five droughts have occurred in the past 86 years, which impacted the District and Sacramento County Planning Area. The District Planning Team noted that the District has experienced multiple, consecutive years of drought. During the 2021–2022 drought, the District implemented water-conservation measures, including a 20 percent reduction in park and streetscape irrigation during the 2022 Stage 2 restrictions. Drought also affects vegetation conditions, irrigation needs, and wildfire fuels. Cosumnes CSD continues to use water-efficient practices and considers water conservation in capital planning.

Climate Change and Drought and Water Shortage

It is likely that climate change will increase the chance of future occurrence as well as future impacts associated with drought and water shortage. More information on future impacts to the District can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate scientists studying California find that drought conditions are likely to become more frequent and persistent over the 21st century due to climate change. The experiences of California during recent years underscore the need to examine more closely the state’s water storage, distribution, management, conservation, and use policies. The 2024 Climate Adaptation Study (CAS) stresses the need for public policy development addressing long term climate change impacts on water supplies. The CAS notes that climate change is likely to significantly diminish California’s future water supply, stating that: California must change its water management and uses because climate change will likely create greater competition for limited water supplies needed by the environment, agriculture, and cities.

Cal Adapt scenarios for modeled future drought scenarios were shown in Section 4.3.9 of the Base Plan.

The 2024 Sacramento County CAP noted that California, including Sacramento County, has a highly variable climate that is susceptible to prolonged periods of drought, and recent research suggests that extended drought occurrences (or “mega-droughts”) could become more pervasive in future decades, which may result in major impacts on local water supplies and other secondary impacts. The County is not located in an area where snow accumulates, however, major water districts and utilities in the County receive and depend on a substantial amount of water from watersheds that rely upon spring and early-summer snowmelt in the Sierra Nevada mountain range. The Sierra Nevada snowpack, which serves as a natural water supply reservoir for California during the dry months, is predicted to decline in area covered and water volume stored as temperatures rise and precipitation falls more frequently as rain instead of snow at mountain elevations. Further, increased temperatures will affect the timing of historical snowmelt such that the snowpack will typically melt earlier in the year, causing more rapid early spring flows in the Sacramento, American, Cosumnes, and Mokelumne Rivers and reduced late spring and summer flows. Approximately 50 percent of the County is served by groundwater supplies. Changes in surface water flow will have a direct impact on groundwater recharge, including decreased periods of recharge when late spring and summer stream flows diminish. Further, groundwater usage is higher in periods of drought, therefore, groundwater supplies may be reduced during and after periods of limited surface water flows.

The 2026 American, Bear, and Cosumnes Watersheds Resilience Plan noted that a key driver of climate vulnerability, adaptive capacity, and implementation readiness in the watershed group is drought. An equity analysis was performed as part of this Plan. An Equity Analysis Technical Appendix demonstrates how social vulnerability aligns with the physical hazard environment across the watershed. It noted that drought vulnerability intensifies in the upper watersheds, where cumulative annual flow deficits are projected to increase by up to 25%, contributing to downstream water-supply and affordability pressures that disproportionately affect low-income households.

The September 2020 CCSD/Fire Climate Action Plan / Sustainability Action Plan noted that although uncertainty exists regarding the specific outcomes of climate change on precipitation patterns within the State, scientists agree that climate change will alter the hydrologic patterns within the State. In particular, climate change is anticipated to affect the frequency, magnitude, and duration of extreme weather events, and result in declining snowpack, as well as more frequent, and longer droughts.

Vulnerability to Drought and Water Shortage

Based on historical information, the occurrence of drought and water shortage in California, including the District, is cyclical, driven by weather patterns. Drought has occurred in the past and will occur in the future. Periods of actual drought with adverse impacts can vary in duration, and the period between droughts can be extended. Although an area may be under an extended dry period, determining when it becomes a drought is based on impacts to individual water users. The vulnerability of the CCSD/Fire to drought may vary and include reduction in water supply, turf losses, impacts to natural resources, agricultural losses, and an increase in dry fuels and tree dieback.

The whole of the District is at some measure of vulnerability to drought and water shortage. An assessment of a community's vulnerability to drought and water shortage begins with an understanding of local exposure to drought. This is included in the Local Concerns section below followed by a discussion of the District's Assets at Risk to this hazard.

Local Concerns

The District has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

CSD/Fire's main drought concerns are maintaining adequate water supplies for fire suppression, managing water use at District facilities, and addressing dry vegetation and associated wildfire risk. Prolonged drought could also affect normal emergency operations. Cosumnes CSD will continue to evaluate water conservation and emergency water-supply needs. An additional impact to the District would be a reduction in training opportunities.

Assets at Risk

Assets at risk from drought and water shortage include people and populations; District assets and critical facilities and infrastructure); and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

The people and populations of the District are not directly affected by drought; although, their turfed areas, trees, and other water dependent resources can all be affected. In extreme drought conditions, however, residents and other populations within the District may be vulnerable to drought and water shortage issues. Water quality can be impacted causing health problems, especially to vulnerable populations. Drought and water shortage can lead to an increase in wildfires threatening District residents. Water shortages can have an effect on all populations in the District, but often have a greater effect on the unhoused and other vulnerable populations that may be unable to access clean drinking water during shortages. During periods of drought, as the costs of water usage may increase, especially during mandated conservation times, those who are economically disadvantaged may be unable to afford the increased costs of potable water.

District Assets and Critical Facilities and Infrastructure

Most District assets, including structures, critical facilities, and infrastructure have a limited vulnerability to drought and water shortage. Should drought conditions be severe enough to cause water shortage reliability issues, some facilities and infrastructure may be affected. Water systems may be impacted during times of reduced water supply and need to employ contingencies to remain functional and fully operational, especially for firefighting. Other water dependent systems may also be adversely affected. Further, the secondary hazard of drought (increased potential for spread of urban fires and wildfire) can pose a significant risk to District facilities. Drought can also stress trees, causing die off. These trees may fall on critical infrastructure adjacent to them and impact power lines and other utilities.

No District assets in Table I-3 were deemed to be at direct risk to drought.

Natural, Historic, and Cultural Resources

Drought and water shortage can have a significant impact on natural resources. Water levels in reservoirs and lakes may be reduced and a loss of wetlands and marsh areas may occur. Severe drought conditions can contribute to an increase in erosion of soils and lead to poor soil quality. Further, all of the trees in the District are at risk to drought impacts and a reduction in water supply. These trees provide a wealth of social and environmental benefits to District residents and visitors, from shade and beauty to air quality, carbon reduction and stormwater management. Drought can devastate crops and dry out pastures, dry out trees and critical habitat areas, and reduce food and water available for wildlife and livestock. Additionally, drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding. It is unlikely that drought and water shortage would have a significant impact on historic and cultural resources in the District.

Impacts from Drought and Water Shortage

The vulnerability of the District to drought is District-wide, but impacts may vary and include reduction in water supply and an increase in dry fuels. The potential for a reduction in water supply during drought conditions generally leads to both mandated and voluntary conservations measures during extended droughts. During these times, the costs of water can also increase. Also of concern, the increased dry fuels, fuel loads, and tree mortality events associated with drought conditions can result in an increased fire danger. In areas of extremely dry fuels, the intensity and speed of fires can be significant. Water supply

and flows for fire suppression can also be an issue during extended droughts. Drought can also lead to turf losses and cause tree die off within the District.

Other qualitative impacts associated with drought in the District are those related to water intensive activities such as municipal usage, commerce, tourism, and recreation use. With more precipitation likely falling as rain instead of snow in the Sierra's, and warmer temperatures causing decreased snowfall to melt faster and earlier, water supply is likely to become more unreliable. In addition, drought and water shortage is predicted to become more common. This means less water available for use over the long run, and additional challenges for water supply reliability, especially during periods of extended drought.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the District may be affected in the future by climate change (which was discussed in the hazard profile discussion above), changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. These are discussed below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the CCSD/Fire include the following:

- Climate change is likely to exacerbate future drought conditions and associated impacts and vulnerability of the District to drought and water shortage. This was discussed in greater detail in the Climate Change and Drought and Water Shortage section of the Hazard Profile above.
- Population projections within the jurisdictional boundaries of the District show the population to be slowly increasing. It is unknown how population patterns and demographics will change in the near future. The District may add staff, but this number would be small. The District noted that it has no control over population changes within its jurisdictional boundaries. With additional populations, the vulnerability of the District to this hazard may increase.
- Changes in land use and development within the District are expected to be limited in the near future and thus are not likely to affect the vulnerability of CCSD/Fire to drought and water shortage. Depending on the land use change, the District may or may not see an increased vulnerability to this hazard. The District conducts water supply planning to ensure a continued water supply to address future drought conditions.

Future Development

As the population in the District continues to grow, so will the demand for water. Ongoing planning will be needed by the District and local water companies to account for population growth and increased water demands.

Flood: 1%/0.5%/0.2% Annual Chance

Likelihood of Future Occurrence—Occasional (1%)/Unlikely (0.5/0.2%)

Vulnerability—Medium

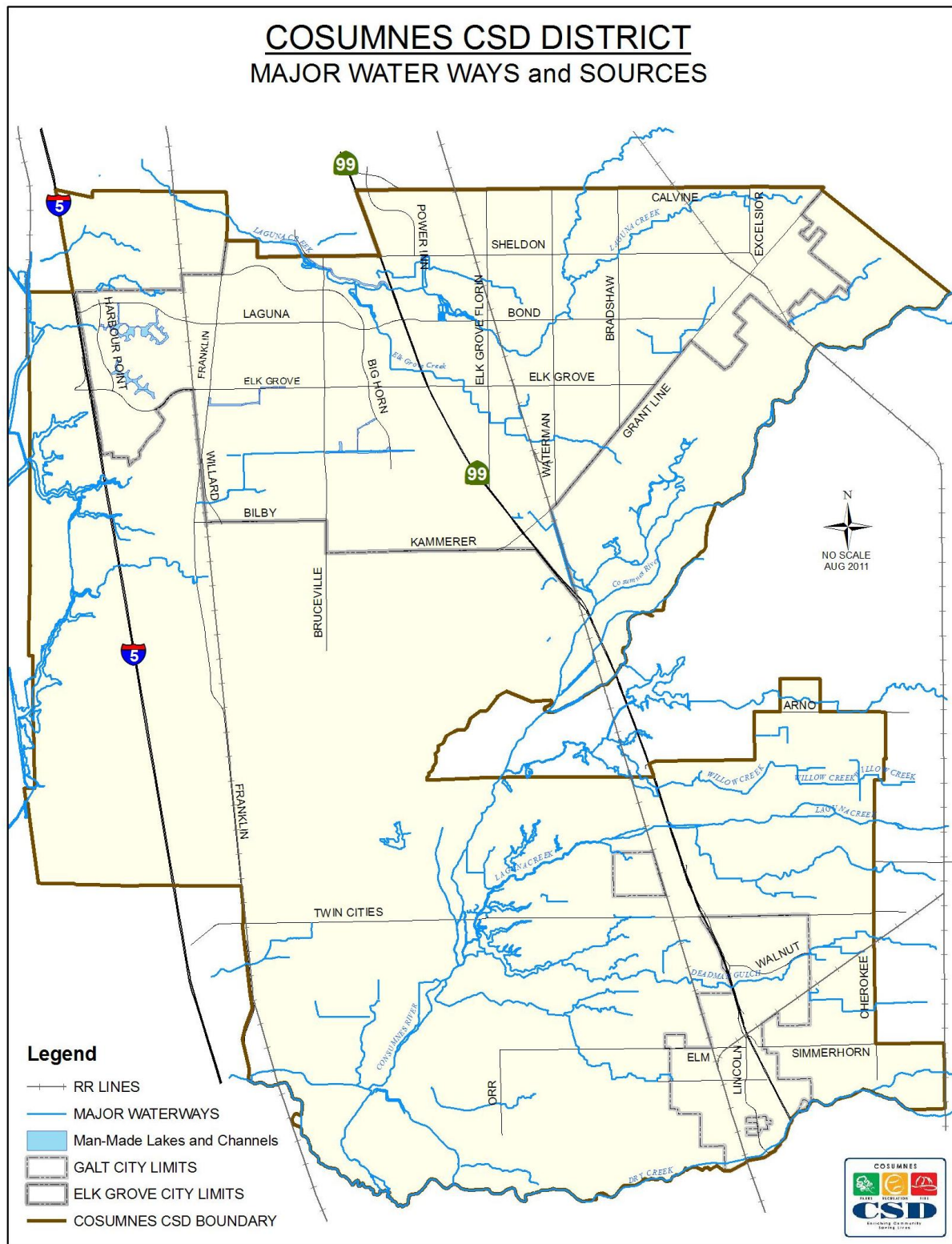
Hazard Profile

This hazard discusses the FEMA DFIRM 1%, 0.5%, and 0.2% annual chance floods. These tend to be the larger floods that can occur in the District and have caused damage in the past. Flooding can be a significant problem in the District. Historically, the District has been at risk to flooding primarily during the winter and spring months when river systems in the District swell with heavy rainfall and snowmelt runoff. The District has also been at risk during atmospheric river flood events. Normally, storm floodwaters are kept within defined limits by a variety of storm drainage and flood control measures located throughout the Sacramento County Planning Area and the CCSD/Fire. Occasionally, extended heavy rains result in floodwaters that exceed normal high-water boundaries and cause damage. Flooding has occurred within the 1% and 0.2% annual chance floodplains and in other localized areas in the District. Rain on snow events occurring in upper elevations during the spring months can also be significant and contribute to greater downstream runoff and flooding during large storm events.

Location and Extent

Major surface waters in the area of the District include the Morrison Creek Stream Group, and include Elder, Elk Grove, Laguna (and tributaries), Morrison, Strawberry, and Whitehouse Creeks near Elk Grove. Badger Creek, Willow Creek, Laguna Creek, Skunk Creek, Deadman Gulch, and Dry Creek, which drain to the Cosumnes River are near Galt. These can be seen on Figure I-2.

Figure I-2 CFD Major Waterways and Sources of Flooding



Source: CCSD/Fire

The CCSD/Fire has areas located in the 1% and 0.2% annual chance flood zones. This is seen in Figure I-3. In accordance with the Central Valley Flood Protection Project, a 0.5% annual chance flood zone (i.e., 200-year) map is shown for the Sacramento County Planning Area in section 4.3.11 of the Base Plan and includes areas in the 200-year floodplain for the cities of Elk Grove, Isleton, Rancho Cordova, and Sacramento and Unincorporated Sacramento County. Utilizing the 200-year map for the Planning Area, portions of CCSD fall within the 0.5% annual chance flood zone. No additional analysis was conducted on the 0.5% annual chance flood zones as part of this LHMP.

Figure I-3 CCSD/Fire – FEMA DFIRM Flood Zones

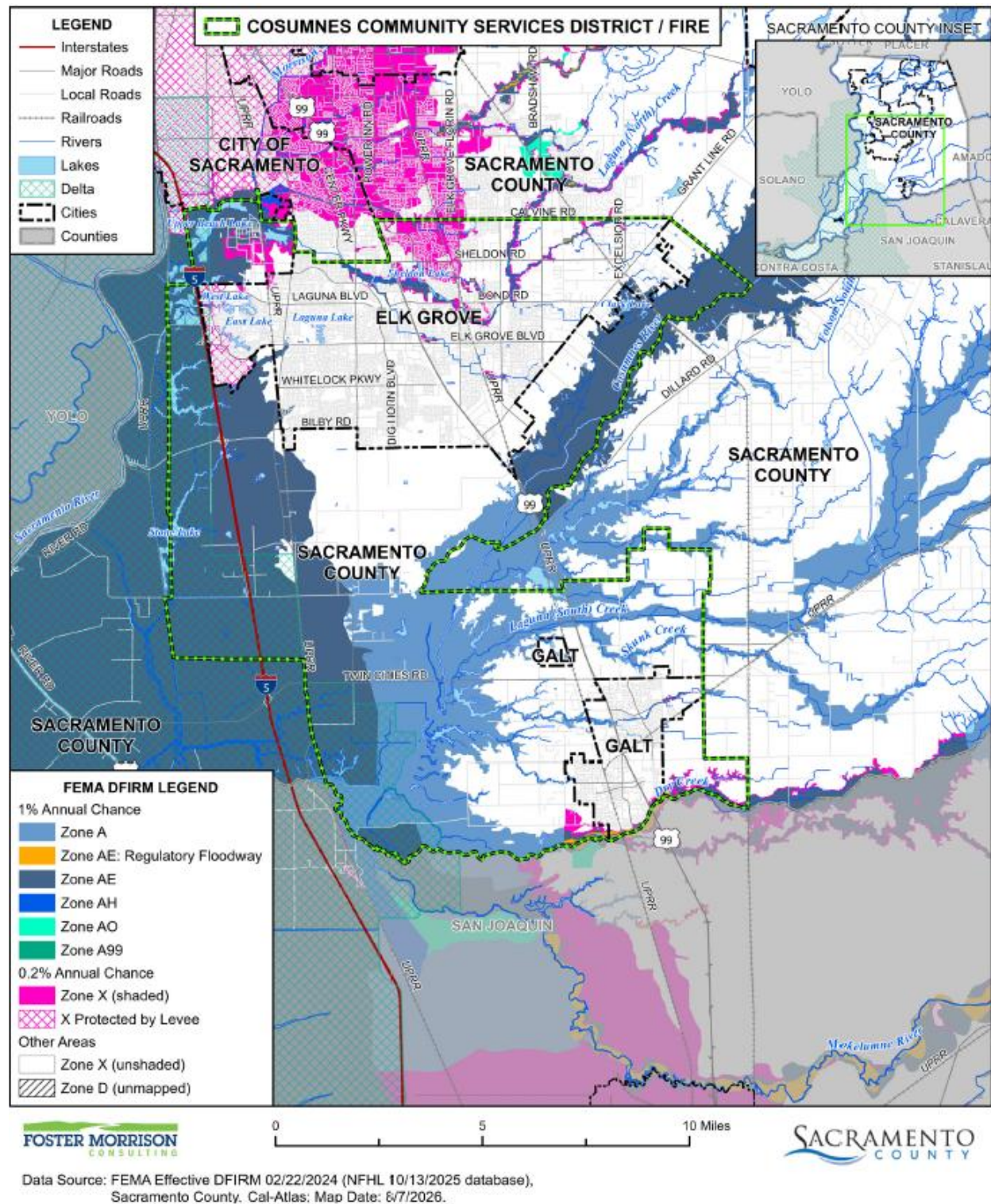


Table I-6 details the DFIRM mapped flood zones located within the District.

Table I-6 CCSD/Fire– DFIRM Flood Hazard Zones

Flood Zone	Description	Present in District
A	1% annual chance flooding; No base flood elevations provided	X
AE Regulatory Floodway	1% annual chance flood; Regulatory floodway; Base flood elevations provided	X
AE	1% annual chance flooding; Base flood elevations provided	X
AH	1% annual chance flood areas of shallow flooding between one to three feet deep. Regulatory floodway; Base flood elevations provided	X
AO	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone.	X
A99	Areas subject to inundation by the 1-percent-annual-chance flood event, but which will ultimately be protected upon completion of an under-construction Federal flood protection system.. No Base Flood Elevations (BFEs) or depths are shown.	
X (shaded)	0.2% annual chance flooding; The areas between the limits of the 1% annual chance flood and the 0.2-percent-annual-chance (or 500-year) flood	X
X Protected by Levee	Areas protected by levees from 1% annual chance flood event. Levee protection places these areas in the 0.2% annual chance flood zone. Flood insurance is not mandatory but is available.	X
X (unshaded)	Areas of minimal flood hazard	X
D	Unmapped areas	

Source: FEMA DFIRM 02/22/2024

Additionally, flood extents can generally be measured in volume, velocity, and depths of flooding. Expected flood depths in the District vary, depending on the nature and extent of a flood event; specific depths are unknown. Flood durations in the District tend to be short to medium term, or until either the storm drainage system can catch up or flood waters move downstream. Flooding in the District tends to have a shorter speed of onset, due to the amount of water that flows through the District. Geographical flood extents for the District from the FEMA DFIRMs are shown in Table I-7.

Table I-7 CCSD/Fire – Geographical DFIRM Flood Zone Extents

Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
1% Annual Chance Flood Hazard	44,757	47%	24,211	39%	20,546	62%
0.2% Annual Chance Flood Hazard	2,453	3%	1,539	2%	914	3%
Other Areas	47,980	50%	36,355	59%	11,626	35%
CCSD/Fire Total	95,190	100%	62,104	100%	33,086	100%

Source: FEMA DFIRM 02/22/2024

Past Occurrences

Disaster Declaration History

A list of state and federal disaster declarations for Sacramento County from flooding is shown on Table I-8. These events also likely affected the District to some degree.

Table I-8 Sacramento County – State and Federal Disaster Declarations from Flood 1950-2025

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Flood (including heavy rains and storms)	26	1950, 1955, 1958 (twice), 1963, 1969, 1982 (twice), 1983, 1986, 1995 (twice), 1996, 1997, 1998, 2008, 2017 (three times), 2022*, 2023 (three), 2024 (twice)	18	1955, 1958, 1964, 1969, 1983, 1986, 1995 (twice), 1997, 1998, 2006, 2017 (three times), 2023 (three times)*, 2024*

Source: Cal OES, FEMA

*included a landslide component.

NCDC Events

The NCDC tracks flood events for the County. Events have been tracked for flooding since 1993. Sacramento County has seen 174 events. These events most likely had some impact on the District.

CCSD/Fire Events

During the **2023** storms, flooding affected Highway 99 and other roadways, restricting travel between Galt and Elk Grove. Flooding can also affect emergency access, communications, facilities, and response times.

In January **2017**, the District had major flooding that compromised Emerald Lakes Golf Course, railroad tracks, Highway 99, and local roadways. The damage to Emerald Lakes Golf Course consisted of erosion and fallen trees. The impact to the railroad consisted of erosion underneath the tracks that caused a train derailment. Highway 99 was impacted by flooding at Dillard Road. The local roadways in west Elk Grove were closed due to flooding.

The areas serviced by the Cosumnes CSD/Fire experienced a significant flood in January **1997**. During this time, major transportation corridors, Interstate 5 and Highway 99 were shut down due to rising water levels. The loss of transportation corridors had a major impact on emergency services delivery to quickly respond to routine and flood related emergencies. The rising waters from the Cosumnes River essentially divided the district into two separate areas

Climate Change and Flood

It is likely that climate change will increase the chance of future occurrence as well as future impacts associated with flood. More information on future impacts to the District can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

According to the 2024 CAS, climate change may affect flooding in California, the Sacramento County Planning Area, and the District. While average annual rainfall may increase or decrease slightly, the intensity of individual rainfall events is likely to increase during the 21st century. It is possible that average soil moisture and runoff could decline, however, due to increasing temperature, evapotranspiration rates, and spacing between rainfall events. Reduced snowpack and increased number of intense rainfall events are likely to put additional pressure on water infrastructure which could increase the chance of flooding associated with breaches or failures of flood control structures such as levees and dams.

Cal Adapt future precipitation projections were shown in Section 4.3.4.

The 2024 Sacramento County CAP noted that climate change is likely to lead to changes in the frequency, intensity, and duration of extreme weather events, such as sustained periods of heavy precipitation, increased rainfall intensity during precipitation events, and increased risk of rain-on-snow events. Further, more winter-time precipitation that falls as rain instead of snow, and higher temperatures that will cause earlier snowmelt, which could produce substantial surface water flows over a short period of time and may potentially affect dams and spillways and overwhelm levee systems designed for historical precipitation patterns. Historically, the County experienced an average of four extreme precipitation events per year (as shown in Section 4.3.4 of the Base Plan). Under the medium and high emissions scenarios, the County is expected to experience five to six extreme precipitation events per year by mid-century and six to seven extreme precipitation events per year by the late century.

The 2026 American, Bear, and Cosumnes Watersheds Resilience Plan noted that a key driver of climate vulnerability, adaptive capacity, and implementation readiness in the watershed group is flooding. An equity analysis was performed as part of this Plan. An Equity Analysis Technical Appendix demonstrates how social vulnerability aligns with the physical hazard environment across the watershed. It noted that flooding impacts are most severe downstream, where rising flows increasingly stress Sacramento's levee system; a modeled levee-breach scenario affects 12.5% of the watershed population, and 59% of those affected fall into the highest flood-sensitivity category.

Future flooding exacerbated by climate change will result in a range of potential impacts across the County and District. For populations, there is an array of social vulnerability factors that exacerbate flood-related risks, and those residing in floodplains are especially vulnerable to the direct impacts of flooding. Floodwaters can interact with sources of pollution and distribute hazardous pollutants locally and regionally, which may result in water contamination and a range of human health impacts. Additionally, flooding can disrupt transportation networks, cause economic losses through business and government facility closures, disrupt communications, disrupt the provision of utilities, and cause significant damage to buildings and critical infrastructure. Further, flooding may also threaten ecosystems and agricultural resources; unlike natural flooding regimes that deposit useful sediment resulting in increased soil fertility as well as groundwater recharge, catastrophic flooding from levee overtopping could lead to soil erosion and loss of viable cropland. It could also release sewage and hazardous materials into the environment if wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed.

Vulnerability to Flood: 1%, 0.5%, and 0.2% Annual Chance

Floods have been a part of the District's historical past and will continue to be so in the future. During winter months, long periods of precipitation and the timing of that precipitation are critical in determining the threat of flood, and these characteristics further dictate the potential for widespread structural and property damage and potential loss of life and injury. Predominantly, the effects of 1%, 0.5%, and 0.2% annual chance flooding are generally confined to areas near the waterways of the District. As waterways grow in size from local drainages, so grows the threat of flood and dimensions of the threat.

The whole of the District is at some measure of vulnerability to floods. An assessment of a community's vulnerability to flood begins with an understanding of local exposure to flood. This is included in the Local Concerns section below followed by a discussion of the District's Assets at Risk to this hazard.

Local Concerns

The District has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

General Concerns

Cosumnes CSD/Fire's flood concerns include emergency access, evacuation support, protection of fire stations and other critical facilities, communications, continuity of operations, and protection of emergency resources. The District will continue coordination with Sacramento County, the cities of Elk Grove and Galt, and regional flood-management agencies. The District is also vulnerable to the impacts of flooding on local roadways and freeways.

Elk Grove Area of the District

The Elk Grove area is part of the Sacramento River watershed, which covers approximately 27,000 square miles, with 400 miles of river from Lake Shasta to the convergence of the Sacramento-San Joaquin Delta. The City is also a part of this larger watershed. More specifically, surface water resources in Elk Grove are a part of the Morrison Creek Stream Group, and include Elder, Elk Grove, Laguna (and tributaries), Morrison, Strawberry, and Whitehouse Creeks. Florin, Gerber, and Union House creeks are located close to the City. Deer Creek is located in the eastern portion of the City, parallel to the Cosumnes River. The Cosumnes River is the eastern border of the City; however, all of the creeks in the area drain into the Morrison Creek Stream Group, then eventually into the Sacramento River. Runoff from precipitation and snowmelt from the Sierra Nevada mountains are the main sources of surface water supply in the City.

Laguna Creek, the Cosumnes River, and the Sacramento River are the main surface hydrological features in the City. The Morrison Creek Stream Group drainage basin covers 192 square miles. The nine creeks that drain into Morrison Creek flow southwest and eventually drain into the Beach Stone Lakes area west of Interstate 5.

Laguna Creek, the main creek that flows through the City of Elk Grove, has been altered by development. There have been channels, levees, and culverts created to alleviate the possibility of flooding, as well as to

accommodate different development scenarios. Some of the other creeks in the City have also been altered to accommodate development or alleviate flooding potential. Structures and assets at risk, population at risk, and critical facilities at risk for Elk Grove can be found in their annex (Annex B) to this Plan Update.

Galt Area of the District

Although the City is located outside of the major floodplain area, the City experiences two types of flooding. The first is associated with local water courses. The second is associated with localized flood events resulting from inadequate surface flow. Heavy rainfall causes these types of flooding events.

Runoff from the City's study area is drained by a variety of local streams and creeks including Badger Creek, Willow Creek, Laguna Creek, Skunk Creek, Deadman Gulch, and Dry Creek, which drain to the Cosumnes River. The areas near the confluence of these smaller water courses with the Cosumnes River includes large areas of flood plain, which absorb excess flows from local watersheds during heavy rains and spring floods. Much of the storm water of this floodplain is maintained through a complex system of levees and dikes. Structures and assets at risk, population at risk, and critical facilities at risk for Galt can be found in their annex (Annex D) to this Plan Update

Assets at Risk

Assets at risk from flood include people and populations; District assets and critical facilities and infrastructure); and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

All people and populations located in the 1%, 0.5%, and 0.2% annual chance floodplains within the District (including both District staff and the population served by the District) are at some risk to flooding. Certain vulnerable populations located within areas prone to flooding may be at increased risk to this hazard, especially during a large event with minimal advance notice. These vulnerable populations include: the unsheltered, those with limited mobility, and those that lack the resources to leave the area.

Populations served by the District can be the most vulnerable. Not only are the residents at risk, but their homes and contents are all at risk, compounding the impacts associated with significant hazard events.

District Assets and Critical Facilities and Infrastructure

Certain District structures are at risk of DFIRM flooding and primarily include those structures located within the 1%, 0.5%, and 0.2% annual chance floodplains. All District assets listed in Table I-3 would be at risk to flooding.

Natural, Historic, and Cultural Resources

Large flood events can affect natural, historic, and cultural resources. There are a number of ways floodwaters can impact natural resources and the environment. Wildlife habitats can be destroyed by floodwaters. Contaminated floodwater can pollute rivers and habitats. Silt and sediment can destroy natural areas. Riverbanks and natural levees can be eliminated as rivers reach bankfull capacity. Rivers can be

widened, and deposition can increase downstream. Trees can be uprooted by high-velocity water flow. Plants that survived the initial flood may die due to being inundated with water. Historic and cultural resources may also be affected. Generally, the impacts are associated with damage to structures within the flooded areas, but other cultural resources such as those associated with Native Americans and old tribal areas can also be disturbed, damaged and lost during extreme flood events. Any of these that fall in the 1%, 0.5%, and 0.2% annual chance floodplain would be vulnerable.

Impacts from Flood: 1%, 0.5%, and 0.2% Annual Chance

Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide. Large flood events, including those associated with 1% and 0.2% annual chance floods, can cause substantial damage to structures, landscapes, and utilities as well as life safety issues. People may be swept away in floodwaters, causing injuries or deaths. Floods can be extremely dangerous, and even six inches of moving water can knock over a person given a strong current. During a flood, people can also suffer heart attacks or electrocution due to electrical equipment short outs. Direct impacts, such as drowning, can be limited with adequate warning and public education about what to do during floods. Floodwaters can transport large objects downstream which can damage or remove stationary structures. Structures can be damaged directly from floodwaters and can also be damaged from trees falling as a result of water-saturated soils. Ground saturation can result in instability, collapse, or other damage. Objects can also be buried or destroyed through sediment deposition. Floodwaters can also break utility lines and interrupt services causing power outages. The interruption of power causes major problems and can result in the closure of governmental offices and community businesses. Public schools may also be required to close or be placed on a delayed start schedule. Roads can be damaged and closed, causing safety and evacuation issues.

Standing water can cause damage to crops, roads, foundations, and electrical circuits. Other problems connected with flooding and stormwater runoff include erosion, sedimentation, degradation of water quality, loss of environmental resources, and economic impacts.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the District may be affected in the future by climate change (which was discussed in the hazard profile discussion above), changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. These are discussed below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the CCSD/Fire include the following:

- Climate change is likely to exacerbate future flood conditions and associated impacts and vulnerability of the District to 1%, 0.5%, and 0.2% annual chance flooding. This was discussed in greater detail in the Climate Change and Flood section of the Hazard Profile above.
- Population projections within the jurisdictional boundaries of the District show the population to be slowly increasing. It is unknown how population patterns and demographics will change in the near future. The District may add staff, but this number would be small. The District noted that it has no control over population changes within its jurisdictional boundaries. With additional populations, the vulnerability of the District to this hazard may increase.
- Changes in land use and development in the District are expected to be limited in the near future and thus are not likely to affect flooding and associated impacts to the District. Additional development traditionally leads to additional flooding. In addition, adherence to protective building codes for new development will assist in limiting future impacts and associated vulnerabilities of the District to this hazard.

Future Development

Future development in the District may be built in the floodplain, as long as it conforms to the standards of the applicable floodplain ordinance. The County and each City enforce their floodplain management ordinance on areas inside the District. More detail on the specifics of the floodplain ordinance can be found in Section 4.4.1 of the Base Plan and in the corresponding City annexes. New District facilities and assets will be sited in such a way as to reduce the risk from flooding to District structures and assets.

Levee Failure

Likelihood of Future Occurrence—Occasional

Vulnerability—Medium

Hazard Profile

A levee is a raised area that runs along the banks of a stream or canal. Levees reinforce the banks and help prevent flooding by containing higher flow events to the main stream channel. By confining the flow to a narrower stream channel, levees can also increase the speed of the water. Levees can be natural or man-made. A natural levee is formed when sediment settles on the streambank, raising the level of the land around the stream.

Levees provide strong flood protection, but they are not failsafe. Levees are designed to protect against a specific flood level and could be overtopped during severe weather events or a release from or failure of a dam. Levees reduce, not eliminate, the risk to individuals and structures located behind them. A levee system failure or overtopping can create severe flooding and high-water velocities. It is important to remember that no levee provides protection from events for which it was not designed, and proper operation and maintenance are necessary to reduce the probability of failure.

Over 518 miles of levees are located throughout the Sacramento County Planning Area. These include both accredited and unaccredited levees, as discussed in Section 4.3.14 of the Base Plan, all which pose a risk to adjacent communities should a levee fail or overtop. While the levee analysis included in this section focuses on the accredited levees and those with improvements in process based on the DFIRM A99 and X-

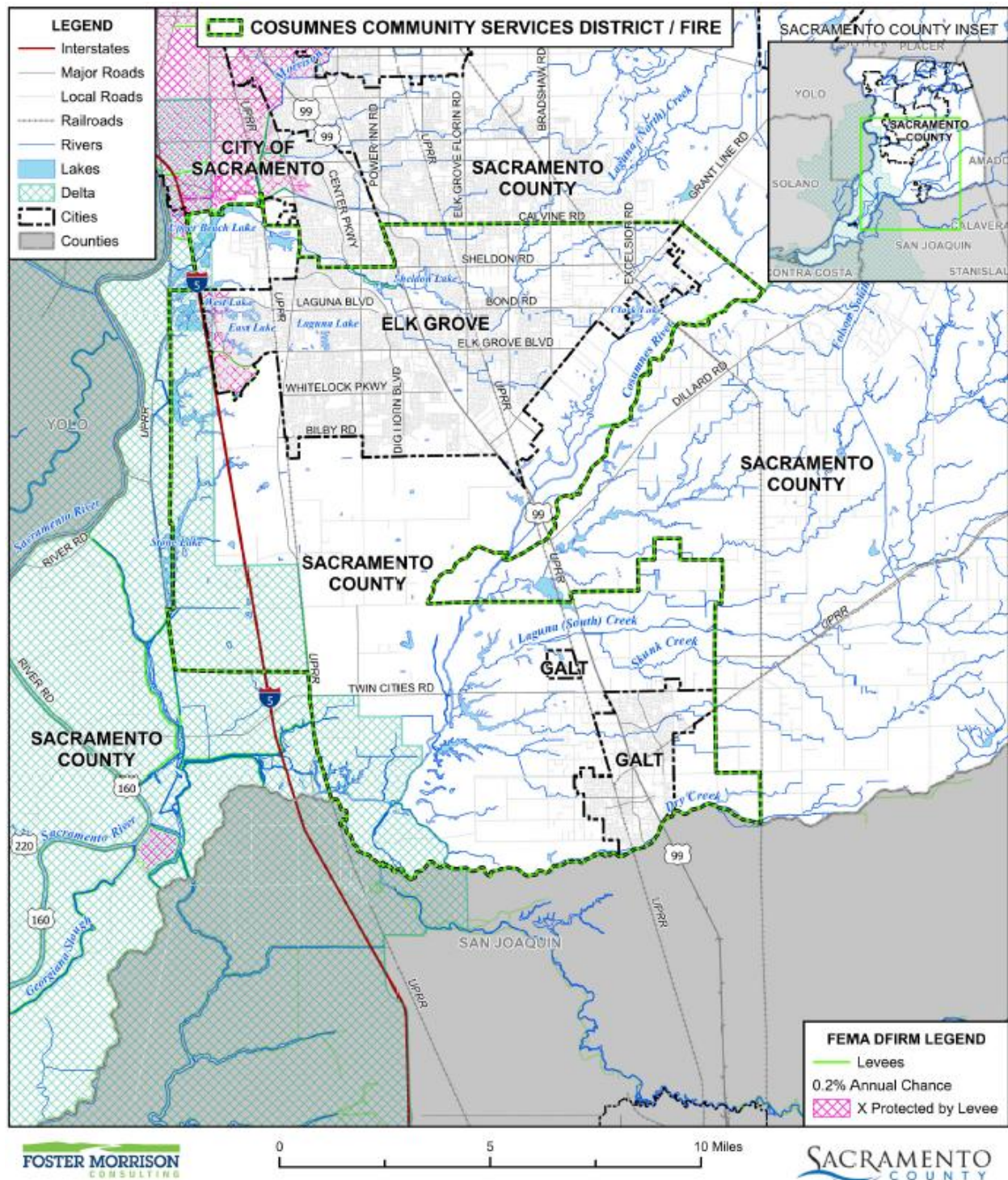
Protected by Levee Flood Zones, there are many older, unaccredited levees located throughout the County Planning Area, including the District, that may have a greater potential for overtopping or breaching and pose a significant risk to communities should they fail.

Location and Extent

Certain areas of the District are at risk to levee failure flooding. There is not a scientific scale or measurement system in place for levee failure. It is usually measured in area covered and depth of flooding. A map of levees located in the Sacramento County Planning Area is shown in Section 4.3.14 of the Base Plan. The speed of onset is slow as the river rises, but if a levee fails the warning times are short for those in the inundation area. The duration of levee failure risk times can be hours to weeks, depending on the river flows that the levee holds back. Those levees accredited as providing protection against the 1% or greater annual chance flood and those in levees in the certification process are identified in the FEMA DFIRMs which also include those areas protected by the levees. Geographical DFIRM A99 and X Protected by Levee flood zone extent from the FEMA DFIRMs is shown on Figure I-4 and included in Table I-9.

Note: Many more unaccredited levees are also located throughout the County. It should be noted that these unaccredited levees may have a greater potential for failure or breach and can pose even a greater risk to those communities in which they are located.

Figure I-4 CCSD/Fire – FEMA DFIRM A99 and X Protected by Levee Zones



Data Source: FEMA Effective DFIRM 02/22/2024 (NFHL 10/13/2025 database),
Sacramento County, Cal-Atlas; Map Date: 6/7/2026.

Table I-9 CCSD/Fire – Geographical Flood Hazard Extents in FEMA X Protected by Levee DFIRM Flood Zones

Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
0.2% Annual Chance Flood Hazard						
X Protected by Levee	699	1%	501	1%	198	1%

Source: FEMA 02/2024 DFIRM

Past Occurrences

Disaster Declaration History

There have been two state and two federal disasters declarations directly related to levee failure in Sacramento County, as shown on Table I-10. Also, it is important to note that many of the flood disaster declarations included in Section 4.3.11 of the Base Plan (like the December 31, 2022 event near Wilton) also may include flooding associated with levee breach or failure events.

Table I-10 Sacramento County – State and Federal Disaster Declarations Summary 1950-2025

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Levee Break	2	1972, 1980	2	1972, 1980

Source: Cal OES, FEMA

NCDC Events

There have been no NCDC levee failure events in Sacramento County, as the NCDC does not track levee failure flooding as a stand-alone hazard.

CCSD/Fire Events

No significant levee failure affecting Cosumnes CSD/Fire facilities were identified since the 2021 LHMP. During the 2023 storms, levee failures occurred in the neighboring Wilton area, where Cosumnes Fire provides mutual-aid assistance. A levee failure in or affecting the District could result in rapid inundation, evacuation needs, restricted emergency access, and impacts to essential services.

Climate Change and Levee Failure

The 2024 Sacramento County CAP noted that climate change is likely to lead to changes in the frequency, intensity, and duration of extreme weather events. The County is projected to experience a steady increase in average annual precipitation through the end of the century, with much of that precipitation likely to occur during extreme precipitation events, which can lead to flood impacts. According to Cal-Adapt, the historic average annual precipitation in Sacramento County is 18.3 inches, and the historic average annual number of extreme precipitation events is four. The average annual precipitation across the County may

rise upwards of 22 inches, with the number of extreme precipitation events potentially exceeding 7 per year by the end of the century, depending on the level of current and future GHG emissions.

In general, California exhibits “booms and busts,” which refers to the existence of both very wet years and very dry years. The amount of precipitation that falls in any particular year is largely influenced by occurrences of large, discrete winter storms, also known as atmospheric rivers, which often provide a substantial fraction of the region’s annual precipitation, inclusive of the county. In California, atmospheric rivers vary in intensity; some are beneficial for water supply and replenish snowpack that naturally melts during the summer, serving as the water supply for people and agriculture, while others are responsible for widespread and adverse impacts (NOAA 2023). Extreme precipitation from these atmospheric rivers in the future may prove to be more variable, volatile, and potentially more severe. These extremes are most likely to occur during storm events, leading to more severe damage from waves and floods, thus possibly leading to more levee failure events.

Vulnerability to Levee Failure

According to historical hazard data and levee mapping, levee failures can occur in or near the District. Portions of the District are at some measure of vulnerability to levee failure floods, including failure or breach of accredited levees, those in the certification process, and unaccredited levees. An assessment of a community’s vulnerability to levee failure flooding begins with an understanding of local exposure to levees. This is included in the Local Concerns section below followed by a discussion of the District’s Assets at Risk to this hazard.

Local Concerns

The District has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

Local concerns include inundation of roads and critical facilities, emergency access, evacuation support, communications, and continuity of operations. Cosumnes CSD/Fire will continue to coordinate with Sacramento County, the cities of Elk Grove and Galt, and regional flood-management partners.

Assets at Risk

Assets at risk from levee failure include people and populations; District assets and critical facilities and infrastructure); and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

All people and populations (including both District staff and the population served by the District) located in leveed areas are at some risk to levee failure flooding. Certain vulnerable populations located within areas prone to levee failure flooding may be at increased risk to this hazard, especially during a large event with minimal advance notice. These vulnerable populations include: the unsheltered, those with limited mobility, and those that lack the resources to leave the area.

District Assets and Critical Facilities and Infrastructure

Certain District assets and critical facilities are at risk of levee failure flooding and primarily include those structures located adjacent to levee protected areas. All District assets listed in Table I-3 would be at risk to flooding from levee failure.

Natural, Historic, and Cultural Resources

Large flood events, such as those occurring as a result of a levee failure, can affect natural, historic, and cultural resources. There are a number of ways floodwaters can impact natural resources and the environment. Wildlife habitats can be destroyed by floodwaters. Contaminated floodwater can pollute rivers and habitats. Silt and sediment can destroy natural areas. Riverbanks and natural levees can be eliminated as rivers reach bankfull capacity. Rivers can be widened, and deposition can increase downstream. Trees can be uprooted by high-velocity water flow. Plants that survived the initial flood may die due to being inundated with water. Historic and cultural resources may also be affected. Generally, the impacts are associated with damage to structures within the flooded areas, but other cultural resources such as those associated with Native Americans and old tribal areas can also be disturbed, damaged and lost during extreme flood events. Any of these that fall in the X Protected by Levee flood zones shown on Figure I-4 as well as those resources located in areas adjacent to or downstream of unaccredited levees would be vulnerable.

Impacts from Levee Failure

Floods and their impacts vary by location, including impacts associated with a levee failure flood event, and will only affect certain areas of the District that are in areas protected by levees. Based on the areas of the District surrounded by levees, it is evident that levee failure floods could potentially have significant impacts to the District, depending on the location, timing, and severity of the event. Impacts that are not quantified, but could be anticipated in large levee failure event, include:

- Injury and loss of life
- Structural and property damage
- Crop damage
- Disruption of and damage to public critical infrastructure and services
- Health hazards associated with mold and mildew, contamination of drinking water, etc.
- Impacts to natural resource areas, including stream bank erosion
- Damage to roads/bridges resulting in loss of mobility

In addition to flood related levee failures, the levees in the District are potentially at risk to failure during an earthquake event. Levee failure flooding could accompany an earthquake and could be compounded further if a dam or storage reservoir fails. Channels and water courses with earthen banks and levees are particularly vulnerable and could collapse in a major earthquake resulting in partial or complete blockage of channels causing flooding upstream of the impoundment. Levees are especially susceptible to rapid settlement due to liquefaction or horizontal spreading of underlying soils.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the District may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in

population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the CCSD/Fire include the following:

- Climate change is likely to exacerbate future flood and levee failure conditions and associated impacts and vulnerability of the District to levee failure flooding. This was discussed in greater detail in the Climate Change and Levee Failure section of the Hazard Profile above.
- Population projections within the jurisdictional boundaries of the District show the population to be slowly increasing. It is unknown how population patterns and demographics will change in the near future. The District may add staff, but this number would be small. The District noted that it has no control over population changes within its jurisdictional boundaries. With additional populations, the vulnerability of the District to this hazard may increase.
- Changes in land use and development in the District are expected to be limited in the near future and thus are not likely to affect levee failure flooding and associated impacts to the District. Additional development traditionally leads to additional flooding, especially in levee protected areas. However, adherence to protective building codes for new development will assist in limiting future impacts and associated vulnerabilities of the District to this hazard.

Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes and the floodplain ordinance, are followed, and levee improvements, inspections, and maintenance is ongoing will help reduce impacts to future development.

Severe Weather: Extreme Heat

Likelihood of Future Occurrence–Likely

Vulnerability–Medium

Hazard Profile

According to FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and lasts for several weeks. Heat kills by taxing the human body beyond its abilities. In extreme heat and high humidity, evaporation is slowed, and the body must work extra hard to maintain a normal temperature.” Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. Older adults, young

children, those who are sick or overweight, and those that work or recreate outdoors are more likely to experience heat exhaustion or succumb to extreme heat.

In addition to the risks faced by populations in the District, there are risks to the built environment from extreme heat. While extreme heat on its own does not usually affect structures, extreme heat can lead to interruptions in power and power outages, creating significant issues to the District.

Urban Heat Island

Large, urbanized areas can experience higher temperatures, greater pollution and more negative health impacts during hot summer months when compared to more rural communities. This phenomenon is known as an urban heat island. Heat islands are created by a combination of heat-absorptive surfaces (such as dark pavement and roofing), heat-generating activities (such as engines and generators) and the absence of vegetation (which provides evaporative cooling). According to the U.S. Environmental Protection Agency, daytime temperatures in urban areas are on average 1-6°F higher than in rural areas, while nighttime temperatures can be as much as 22°F higher as the heat is gradually released from buildings and pavement. The Urban Heat Island Index, developed by the California Environmental Protection Agency, quantifies the extent and severity of urban heat islands for individual cities, including urban heat island interactive maps that show the urban heat island effect for each census tract in and around most urban areas throughout the State. This was shown in Section 4.3.3 of the Base Plan.

Location and Extent

Heat is a regional phenomenon and affects the whole of the District. Heat emergencies are often slower to develop, taking several days of continuous, oppressive heat before a significant or quantifiable impact is seen. Heat waves do not strike victims immediately, but rather their cumulative effects slowly affect general and vulnerable populations and communities. Heat waves do not generally cause damage or elicit the immediate response of floods, fires, earthquakes, or other more “typical” disaster scenarios. The District experiences temperatures in excess of 100°F during the summer and fall months. The temperature moves to 105-110°F in rather extreme situations.

The NWS has in place a system to initiate alert procedures (advisories or warnings) when extreme heat is expected to have a significant impact on public safety. The expected severity of the heat determines whether advisories or warnings are issued. The NWS HeatRisk forecast provides a quick view of heat risk potential over the upcoming seven days. The heat risk is portrayed in a numeric (0-4) and color (green/yellow/orange/red/magenta) scale which is similar in approach to the Air Quality Index (AQI) or the UV Index. This can be seen in Section 4.3.3 of the Base Plan.

Past Occurrences

Disaster Declaration History

There have been no federal or state disaster declarations from extreme heat.

NCDC Events

The NCDC data shows 68 extreme heat incidents for Sacramento County since 1993, some of which likely affected the District.

CCSD/Fire Events

Extreme heat is an ongoing concern for the District. During the 2022 heat wave, Cosumnes CSD/Fire experienced increased 911 call volume associated with heat illness, including heatstroke and heat exhaustion, as well as heat-exacerbated medical conditions. Extreme heat also increases exposure for firefighters and other personnel working outside.

The District Planning Team note that since extreme heat is a regional phenomenon, events that affected the County and the cities of Elk Grove and Galt, also affected the District to some degree. Those past occurrences were shown in the Base Plan in Section 4.3.3.

Climate Change and Extreme Heat

The 2024 CAS, citing a California Energy Commission study, states that “over the past 15 years, heat waves have claimed more lives in California than all other declared disaster events combined.” This study shows that California is getting warmer, leading to an increased frequency, magnitude, and duration of heat waves. These factors may lead to increased mortality from excessive heat.

As temperatures increase, California and Sacramento County will face increased risk of death from dehydration, heat stroke, heat exhaustion, heart attack, stroke and respiratory distress caused by extreme heat. According to the 2024 CAS, report and the 2023 State of California Hazard Mitigation Plan, by 2100, hotter temperatures are expected throughout the state, with projected increases of 3-5.5°F (under a lower emissions scenario) to 8-10.5°F (under a higher emissions scenario). These changes could lead to an increase in deaths related to extreme heat in Sacramento County and the District.

According to the 2024 CAP, the County has experienced, and is projected to continue experiencing, increases in average annual temperature and extreme heat, which could lead to an array of potential impacts. According to Cal-Adapt, the average annual maximum and minimum temperature across Sacramento County are both projected to rise between 5 and 9 degrees Fahrenheit (°F) from their respective historic averages by the end of the century as a result of climate change.

Vulnerability to Severe Weather: Extreme Heat

Extreme heat is becoming more frequent, intense, longer lasting and geographically widespread. Extreme heat occurs on an annual basis in the County and the District. In recent years, compounded by climate change conditions, summer months continue to get a bit hotter. The whole of the District is at some measure of vulnerability to extreme heat. An assessment of a community’s vulnerability to extreme heat begins with an understanding of local exposure to extreme heat. This is included in the Local Concerns section below followed by a discussion of the District’s Assets at Risk to this hazard.

Local Concerns

The District has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

Cosumnes CSD/Fire's primary heat concerns are increased EMS demand, heat-related illness, firefighter and responder exposure, and the need for cooling and rehabilitation resources. Prolonged heat can also affect outdoor operations, facilities, equipment, and power systems.

The District Planning Team noted that reliance on air conditioning can cause a strain on the electrical energy in the Cosumnes Fire Department operational area. Occasionally peak demands outweigh supply and a condition known as brown-out occurs. This is an extremely dangerous situation for electrical equipment as it operates without the needed electricity causing damage to the systems. Days of extreme heat have been known to result in medical emergencies, civil unrest, and unpredictable human behavior. Periods of extended heat and dryness (droughts) can have major economic, agricultural, and water resources impacts.

Assets at Risk

Assets at risk from extreme heat include people and populations; District assets and critical facilities and infrastructure); and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

District staff and all populations within the District are vulnerable to extreme heat. Extreme heat generally affects people spending large amounts of time outside or without means of cooling indoor structures and other vulnerable populations. During extended periods of high temperatures, extreme heat may overload the demands for electricity to run air conditioners and can present health concerns to individuals. When interruptions in power occur during extreme heat, the risk of heat related illnesses and deaths increases. Extreme heat is a significant concern to vulnerable populations. The unhoused; individuals who exercise or train outdoors; outdoor workers, including District staff and contractors; individuals that lack the resources to afford air conditioning; and the young, old, or medically fragile individuals are all more susceptible to heat related impacts. Pets and livestock are at risk to extreme heat conditions.

District Assets and Critical Facilities and Infrastructure

Extreme heat normally does not generally impact structures or critical facilities, but individuals working in structures may be affected during periods of extended heat, especially in structures that might not be equipped with air conditioning or other means of cooling. The District noted that extreme heat has caused interruptions to power in the past. Also depending on the structure, sensitive contents such as IT equipment can be impacted, especially if a power outage occurs. Extreme heat can buckle pavement, causing infrastructure issues.

No District assets in Table I-3 were deemed to be at direct risk to extreme heat.

Natural, Historic, and Cultural Resources

Natural resource assets, including those located in District park and open space areas, may be vulnerable during periods of extreme heat. These include turfed areas; landscapes, District trees, wildlife and habitat areas, and wetlands and marsh lands. Recently, trees were lost in areas of the District that were weakened by drought and extreme heat. Extreme heat may also cause drought-like conditions, contributing to other issues. For example, several weeks of extreme heat increases evapotranspiration and reduces moisture content in vegetation, leading to higher wildfire vulnerability in the region for that time period, even if the rest of the season is relatively moist. Historic and cultural resources are not expected to be affected by extreme heat.

Impacts from Severe Weather: Extreme Heat

The District experiences temperatures in excess of 100°F during the summer and fall months. The temperature moves to 105-110°F in rather extreme situations. During these times, drought conditions may worsen, and the District may see an increase in dry fuels and tree dieback. Also, power outage events may occur during these times as well. Health issues are a primary concern with this hazard, especially to vulnerable populations, although economic impacts can also be significant.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the District may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for District include the following:

- Climate change is likely to exacerbate future extreme heat conditions and associated impacts and vulnerability of the District. This was discussed in greater detail in the Climate Change and Extreme Heat section of the Hazard Profile above.
- Population projections within the jurisdictional boundaries of the District show the population to be slowly increasing. It is unknown how population patterns and demographics will change in the near future. The District may add staff, but this number would be small. The District noted that it has no control over population changes within its jurisdictional boundaries. With additional populations, the vulnerability of the District to this hazard may increase.
- Changes in land use and development in the District are expected to be limited in the near future and thus are not likely to affect heat and associated impacts to the District. Adherence to protective building

codes for new development will also assist in limiting future impacts and associated vulnerabilities of the District to this hazard.

Future Development

The District's future development plans will likely not be affected by extreme heat. Extreme heat is more likely to affect vulnerable populations., including District staff. New and existing critical facilities and infrastructure should also consider adding backup power systems to limit impacts associated with power outages.

Wildfire (with smoke and air quality)

Likelihood of Future Occurrence–Highly Likely

Vulnerability–High

Hazard Profile

Wildland fire and the risk of a conflagration is an ongoing concern for the CCSD/Fire. Throughout California, communities are increasingly concerned about wildfire safety as increased development in the foothills and more forested areas and subsequent fire control practices have affected the natural cycle of fire regimes. Wildland fires affect grass, forest, and brushlands, as well as structures. Where there is human access to wildland areas the risk of fire increases due to a greater chance for human carelessness and historical fire management practices. Historically, the fire season extends from early spring through late fall of each year during the hotter, dryer months; however, in recent years, the risk of wildfire and conflagration has become a year around concern.

Fire conditions arise from a combination of high temperatures, low moisture content in the air and fuel, accumulation of vegetation, and high winds. These weather conditions can result in red flag (e.g., fire weather) days, and can (rarely) result in PSPS events in the District. While wildfire risk has predominantly been associated with more remote forested areas and wildland urban interface (WUI) areas, significant wildfires can also occur in more populated, urbanized areas. There is also the concern of wildfires occurring in these more remote, forested areas that under certain weather conditions, can extend into areas not generally considered at a high risk to wildfire. Smoke and air quality also become an issue, both from fires occurring inside and outside of the Sacramento County Planning Area and the District.

Wildfire Smoke and Air Quality

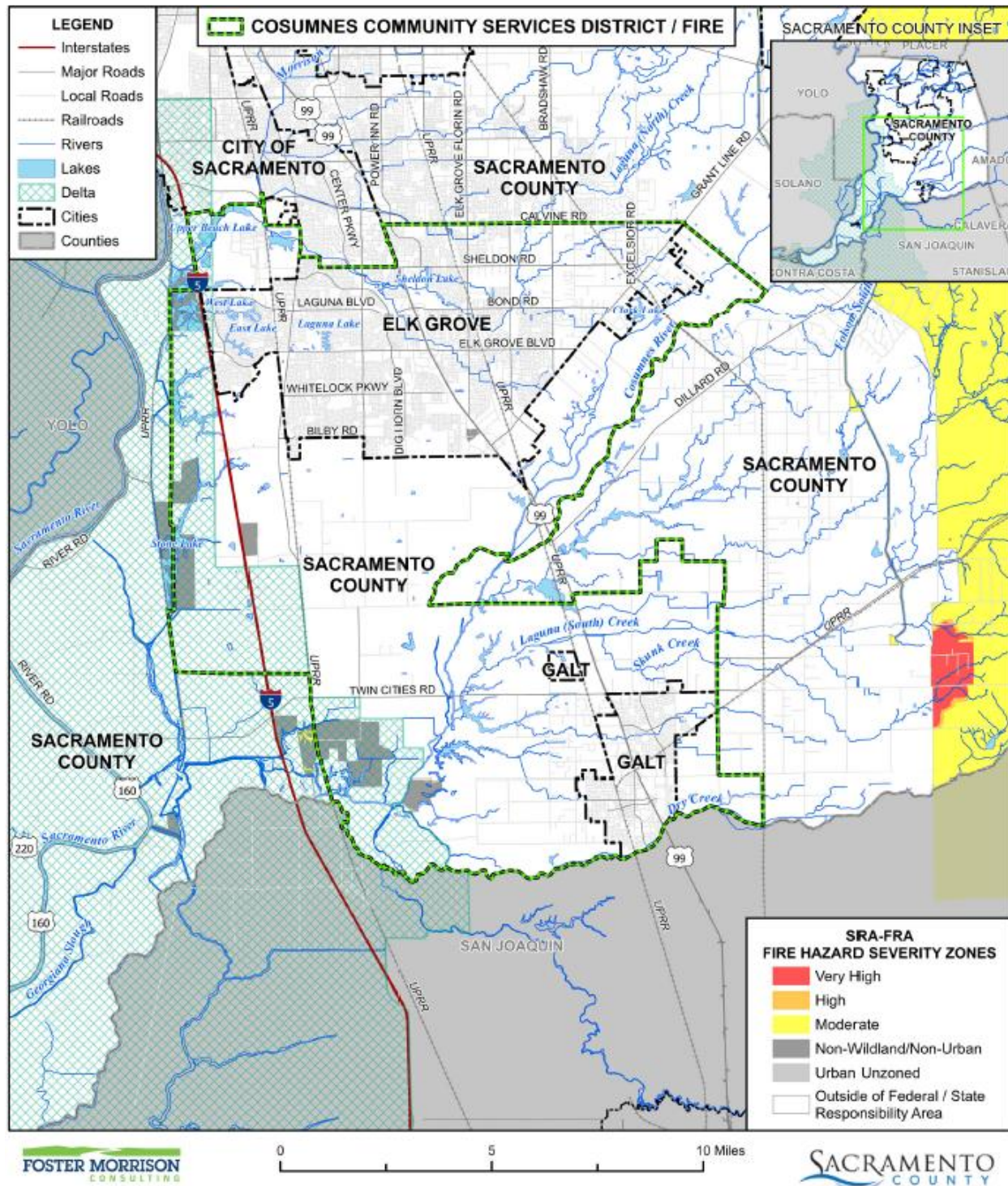
Smoke from wildfires is made up of gas and particulate matter, which can be easily observed in the air. Air quality standards have been established to protect human health with the pollutant referred to as PM2.5 which consists of particles 2.5 microns or less in diameter. These smaller sizes of particles are responsible for adverse health effects because of their ability to reach the lower regions of the respiratory tract.

Wildfire smoke can have negative effects to those who live in or near a fire burn area. Smoke and air pollution from wildfires can be a severe health hazard. Significant wildfires occurring in both Sacramento County and nearby northern California communities since the 2021 LHMP Update have created significant air pollution affecting area residents. These were discussed in Section 4.3.17 of the Base Plan.

Location and Extent

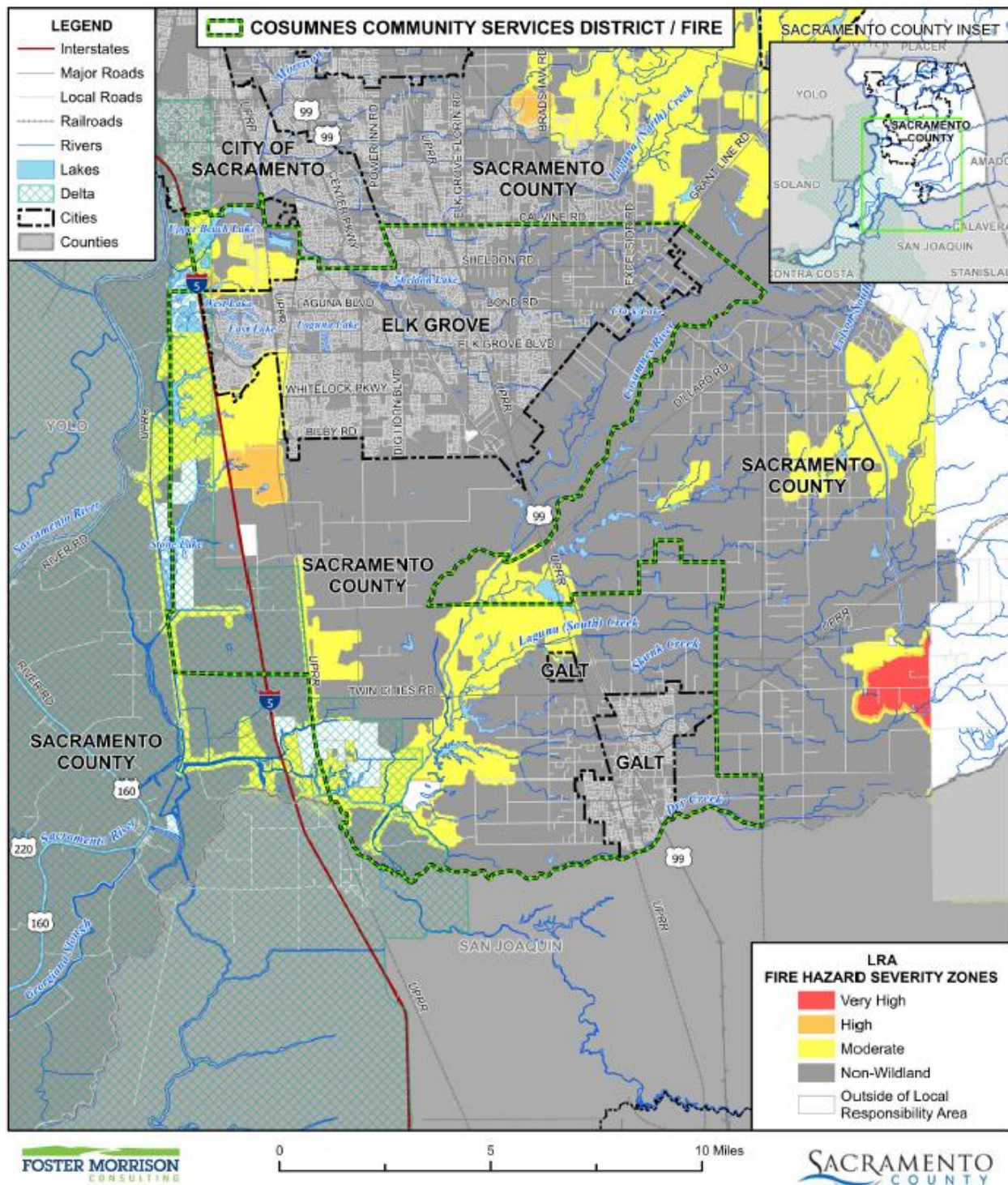
Wildfire can affect all areas of the District. CAL FIRE has estimated that the risk varies across the District and has created updated wildfire maps showing risk variance across the District and the Sacramento County Planning Area. Following the methodology described in Section 4.3.15 of the Base Plan, wildfire maps for the CCSD/Fire were created. Figure I-5 shows the CAL FIRE State Responsibility Areas (SRA) and Federal Responsibility Areas (FRA) and their associated Fire Hazard Severity Zones (FHSZ) in the District. Figure I-6 shows the CAL FIRE Local Responsibility Areas (LRA) and their associated Fire Hazard Severity Zones (FHSZ) in the District. As shown on the maps, the District falls in both the SRA/FRA FHSZs as well as the LRA FHSZs.

Figure I-5 CCSD/Fire – CAL FIRE SRA/FRA Fire Hazard Severity Zones



Data Source: CAL FIRE (State Responsibility Area: FHSZSRA_23_3) April 2024.
 CAL FIRE (Federal Responsibility Area: Draft c20/fhszl06_1). September 2007.
 Sacramento County, Cal-Atlas; Map Date: 6/7/2026.

Figure I-6 CCSD/Fire – CAL FIRE LRA Fire Hazard Severity Zones



Data Source: CAL FIRE (Local Responsibility Area FHSZ 3/2025 FHSZLRA25_v1_All),
Sacramento County, Cal-Atlas; Map Date: 6/7/2026.

Wildfires tend to be measured in structure damages, injuries, and loss of life as well as acres burned. Fires can have a quick speed of onset, especially during periods of drought or during hot dry summer months.

Fires can burn for a short period of time or may have durations lasting for a week or more. Geographical FHSZ extents in the SRA/FRA are shown in Table I-11, while extents in the LRA are shown on Table I-12. As shown, the District has areas of the SRA/FRA that range from Urban Unzoned to Moderate. The District has areas of the LRA that range from Non-Wildland to High.

Table I-11 CCSD/Fire – CAL FIRE SRA/FRA Fire Hazard Severity Zone Geographical Extents

Fire Hazard Severity Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Moderate	11	0.01%	0	0%	11	0.03%
Non-Wildland/Non-Urban	2,949	3%	1	0.002%	2,948	9%
Urban Unzoned	2	0.002%	0	0%	2	0.01%
Outside of Federal / State Responsibility Area	92,228	97%	62,103	100%	30,125	91%
Grand Total	95,190	100%	62,104	100%	33,086	100%

Source: CAL FIRE

Table I-12 CCSD/Fire – CAL FIRE LRA Fire Hazard Severity Zone Geographical Extents

Fire Hazard Severity Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
High	1,040	1%	569	1%	472	1%
Moderate	14,532	15%	2,982	5%	11,549	35%
Non-Wildland	76,656	81%	58,552	94%	18,103	55%
Outside of Local Responsibility Area	2,983	3%	8	0.01%	2,975	9%
Grand Total	95,210	100%	62,111	100%	33,099	100%

Source: CAL FIRE

Past Occurrences

Disaster Declaration History

There has been four state and three federal disaster declarations due to fire, as shown in Table I-13.

Table I-13 Sacramento County – State and Federal Wildfire Disaster Declarations 1950-2025

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Fire	4	1973, 2020 (twice), 2024	3	2020 (twice), 2025

Source: Cal OES, FEMA

NCDC Events

The NCDC has tracked 15 wildfire events in the County dating back to 1993.

CCSD/Fire Events

Wildfire remains a significant hazard for the District. Recent incidents include the approximately 45-acre Walmort Fire in Wilton in **August 2024** and the approximately 8-acre Calvin Fire near Calvin and Bader roads in Elk Grove in **July 2024**. The Calvin Fire destroyed a home and an additional outbuilding and required suppression activity to protect nearby livestock, vehicles, and structures. Drought, extreme heat, vegetation conditions, and development near open-space areas continue to affect wildfire risk.

The District annually deploys strike teams within the State of California that impact the District by reducing the availability of line personnel and increasing the District’s overtime costs. Smoke and air quality in the region has been a growing issue over the last five years.

Climate Change and Wildfire

It is likely that climate change will increase the chance of future occurrence as well as future impacts from wildfire. More information on future impacts to the District can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Warmer temperatures can exacerbate drought conditions. Drought often kills plants and trees, which serve as fuel for wildfires. Warmer temperatures could increase the number of wildfires and pest outbreaks, such as the western pine beetle. Cal-Adapt’s wildfire tool predicts the potential increase in the amount of burned areas for the year 2090-2099, as compared to recent (2010) conditions. This is shown in Section 4.3.17 of the Base Plan. Based on this model, Cal-Adapt predicts that wildfire risk in Sacramento County will increase moderately at the end of the century. However, wildfire models can vary depending on the parameters used. Cal-Adapt does not take landscape and fuel sources into account in their model. In all likelihood, in the Sacramento County Planning Area, precipitation patterns, high levels of heat, topography, and fuel load will determine the frequency and intensity of future wildfire.

The 2024 CAP noted issues with climate change and wildfire. Historically, attention to wildfire in California has mostly focused on the Sierra Nevada region and Southern California, but recent large and destructive wildfires in other portions of the state have rapidly shifted attention to the ongoing risks statewide. Climate change is exacerbating many of the factors that contribute to wildfire risk. Increased variability in precipitation may lead to wetter winters and increased vegetative growth in the spring. Potentially longer and hotter summer periods will lead to the drying of vegetative growth, which may ultimately result in a greater amount of fuel for wildfire ignition and spread.

The 2026 American, Bear, and Cosumnes Watersheds Resilience Plan noted that a key driver of climate vulnerability, adaptive capacity, and implementation readiness in the watershed group is wildfire. An equity analysis was performed as part of this Plan. An Equity Analysis Technical Appendix demonstrates how social vulnerability aligns with the physical hazard environment across the watershed. It noted that wildfire exposure grows sharply under mid-century climate conditions, with the population exposed to high burn probability increasing from 14% today to 34% in the future, and the number of people in the highest sensitivity category increasing five-fold.

Vulnerability to Wildfire

Risk and vulnerability to the District from wildfire is of significant concern. Wildfires that occur in the District occur from a variety of both natural and manmade causes. The District can be affected both by fires that start on or near District lands as well as those that start elsewhere and move into the District. In addition to burning large areas of land, air quality can be affected in the District by smoke from fires occurring inside the District as well as those from many miles away. As growth continues and populations increase in the District, the potential for wildfires will also increase.

The whole of the District is at some measure of vulnerability to wildfire. An assessment of a community's vulnerability to wildfire begins with an understanding of local exposure to wildfire. This is included in the Local Concerns section below. After that section, assets at risk are discussed.

Local Concerns

The District has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

Generally, the undeveloped portions of the Cosumnes Fire Department do not pose a high risk due to existing agricultural practices on the land. Most lands are actively cultivated with irrigated crops that have minimal fire fuel. However, grass fires can occur on uncultivated lands, particularly where there is native vegetation, such as the riparian corridors near local water courses. Fire hazards also exist in urbanized areas of the Cosumnes Fire Department. Residential and Commercial structure fires can occur particularly in neighborhoods where you have a mix of undeveloped parcels adjacent to developed parcels which requires a higher level of emergency resources for suppression activities. Additionally, in the rural setting the use of propane gas is commonly used for heating and cooking by residents. The propane is stored in large tanks ranging in size from 300 gallons up to 1,000 gallons and will create additional safety concerns for responding fire personnel in the wildland urban interface environment.

Assets at Risk

Assets at risk from wildfire include people and populations; District assets and critical facilities and infrastructure); and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

All populations are vulnerable to wildfire. Certain vulnerable populations are at greater risk to the effects of wildfire as well as smoke and air quality issues that wildfires bring. Vulnerable populations include: the unhoused, infants and children under age five and their caregivers, seniors (65 and older), individuals with disabilities or dependent on medical equipment, and individuals who exercise, recreate, or work outdoors.

District Assets and Critical Facilities and Infrastructure

All structures in the District have some risk to wildfire. Wildfire also presents a threat to critical facilities and infrastructure. Should a wildfire occur, structure damage could cause District facilities to go offline until repairs are made. All District assets in Table I-3 have some measure of risk from wildfire.

Natural, Historic, and Cultural Resources

Natural, historic, and cultural resources located within areas at risk to wildfire would be vulnerable. Should a wildfire occur in the District, the impacts to natural, historic and cultural resources could be extensive and include air pollution, contamination from water runoff containing toxic products, and other environmental discharges or releases from burned materials affecting soils, habitat areas, wildlife, and aquatic resources. Historic and cultural resources can be damaged or destroyed and are often more vulnerable due to their older age, construction type, and lack of fire prevention infrastructure such as sprinklers.

Impacts from Wildfire

Potential impacts from wildfire include loss of life and injuries; damage to structures and other improvements, natural and cultural resources, croplands, and timber; and loss of recreational opportunities. Out of control wildfires can have catastrophic impacts. Wildfires can cause short-term and long-term disruption to the District. Fires can have devastating effects on watersheds through loss of vegetation and soil erosion, which may impact the District by changing runoff patterns, increasing sedimentation, reducing natural and reservoir water storage capacity, and degrading water quality. Fires can also affect air quality in the District; smoke and air pollution from wildfires can be a severe health hazard. Smoke impacts may come from wildfires outside the District, as well as from within.

Although the physical damages and casualties arising from wildland-urban interface or conflagration fires may be severe, it is important to recognize that they also cause significant economic impacts by resulting in a loss of function of buildings and infrastructure. Economic impacts of loss of transportation and utility services may include traffic delays/detours from road and bridge closures and loss of electric power, potable water, and wastewater services. Schools and businesses can be forced to close for extended periods of time. In addition, catastrophic wildfire can create favorable conditions for other hazards such as flooding, landslides, and erosion during the rainy season.

The impacts of a fire are felt long after the fire is extinguished. In addition to the loss of property in fires, the loss in vegetation and changes in surface soils alter the environment. When supporting vegetation is burned, hillsides become destabilized and prone to erosion. The burnt surface soils are harder and absorb less water. When winter rains come, this leads to increased runoff, erosion, and landslides in hilly areas.

Impacts that are not quantified, but can be anticipated in large future events, include:

- Injury and loss of life;
- Commercial and residential structural and property damage;
- Disruption of and damage to public infrastructure, utilities, and services;
- Damage to roads/bridges resulting in loss of mobility;
- Significant economic impact (jobs, sales, tax revenue) to the community; and
- Negative impact on commercial and residential property values

Impacts to identified assets at risk to this hazard and the overall vulnerability of the District may be affected in the future by climate change (which was discussed in the hazard profile above), changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. These are discussed in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the CCSD/Fire include the following:

- Climate change is likely to exacerbate future wildfire conditions and associated impacts and vulnerability of the District to wildfire. This was discussed in greater detail in the Climate Change and Wildfire section of the Hazard Profile above.
- Population projections within the jurisdictional boundaries of the District show the population to be slowly increasing. It is unknown how population patterns and demographics will change in the near future. The District may add staff, but this number would be small. The District noted that it has no control over population changes within its jurisdictional boundaries. With additional populations, the vulnerability of the District to this hazard may increase. Wildfire smoke and air quality from regional events will likely continue to contribute to an increase in vulnerability to District populations.
- Changes in land use and development in the District are expected to be limited in the near future and thus would have possible associated wildfire impacts to the District. Additional development may contribute to an increase in wildfire ignitions. However, adherence to protective building codes for new development will assist in limiting future impacts and associated vulnerabilities of the District to this hazard.

Future Development

Additional growth and development within moderate or higher fire hazard severity zones in the District would normally place additional values at risk to wildfire. Building codes are in effect in the District and should continue to be followed as appropriate to reduce future impacts.

I.5 Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment is divided into five sections: regulatory mitigation capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, mitigation education, outreach, and partnerships, and other mitigation efforts.

I.5.1. Regulatory Mitigation Capabilities

Table I-14 lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in the CCSD/Fire.

Note: The District does not have the authority to regulate land use and development within its jurisdiction. Authority for promulgating and enforcing zoning, land use, and development requirements falls to counties and incorporated communities. As such development within the District’s jurisdictional boundaries will conform to the zoning and land use development ordinances and building codes of the county or incorporated community in which the District is located.

Table I-14 CCSD/Fire’s Regulatory Mitigation Capabilities

Plans	In Place Y/N	Does the plan address hazards? Can the plan be used to carry out mitigation actions? When was it last updated??
Capital Improvements Plan	Y	Yes, for District Facilities, please see www.yourcsd.com
Climate Change Adaptation Plan	Y	Climate action plan in place. Board approved Climate Action Plan/Sustainability and Adaption Plan in October 2020, please see www.yourcsd.com
Community Wildfire Protection Plan	Y	Weed abatement and Prevention Plans
Comprehensive/Master Plan	Y	There is a park and recreation facilities master plan for Elk Grove but we don’t control the general plan, please see www.yourcsd.com for current information.
Continuity of Operations Plan	N	Y – The COOP was completed in 2021.
Economic Development Plan	N	
Land Use Plan		
Local Emergency Operations Plan	Y	Discusses potential hazards and outlines mitigation strategies.
Stormwater Management Plan	Y	Discusses stormwater management plan District has MS-4 Small Municipal Permit in accordance with Sacramento Regional Water Resources Control Board annual requirements.
Transportation Plan	N	
Other		

Land Use Planning and Ordinances	Y/N	Is the ordinance an effective way to reduce hazard impacts?
		Is the ordinance adequately administered and enforced?
Acquisition of land for open space and public recreation use	Y	The District acquires land for the purposes of public recreation and open space through developer dedications and separate purchase acquisitions on an as needed basis to meet Quimby requirements of 5 acres per 1000 residents, in Elk Grove.
Building code	Y	Current County code
Flood insurance rate maps	N	
Floodplain ordinance	N	
Natural hazard-specific ordinance (stormwater, steep slope, wildfire)	N	
Subdivision ordinance	N	
Zoning ordinance	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		
Cosumnes CSD does not provide full municipal services and does not have land use jurisdiction (planning authority). Depending on the location, City of Elk Grove, City of Galt, and County of Sacramento have that authority. Cosumnes CSD does have authority when it comes to provision of fire and emergency services within the entire District and park and recreation services in Elk Grove and areas outside of the City of Galt. However, all planning, development and infrastructure is provided and controlled by other agencies. To improve these capabilities, all agencies need excellent record-keeping and communication to ensure jurisdiction needs are being met properly. Cosumnes CSD/Fire will continue to update staffing, technical resources, hazard information, and coordination with regional partners as needed.		

Source: CCSD/Fire

I.5.2. Administrative/Technical Mitigation Capabilities

Table I-15 identifies the District department(s) responsible for activities related to mitigation and loss prevention in the CCSD/Fire.

Table I-15 CCSD/Fire's Administrative and Technical Mitigation Capabilities

Administration	In Place Y/N	Describe capability
		Is coordination effective?
Staff		Is staffing adequate to enforce regulations?
		Is staff trained on hazards and mitigation?
		Is coordination between agencies and staff effective?
Chief Building Official	Y	The District has a Chief of Planning, Design and Construction staff member.
Civil Engineer, including dam and levee safety	Y	
Community Planner	N	

Emergency Manager	Y	
Floodplain Administrator	N	
GIS Coordinator	Y	
Planning Commission	N	
Other		
Technical	Y/N	Has capability been used to assess/mitigate risk in the past?
Grant writing	Y	There aren't assigned personnel to grant writing, however there are personnel who write grants as part of their duties, but it isn't their sole job function,
Hazard data and information	Y	
GIS analysis	N	
Mutual aid agreements	Y	Local and State
Other		
How can these capabilities be expanded and improved to reduce risk?		
Hazard mitigation will continue to be considered in the Cosumnes CSD Strategic Plan, the Fire Department Strategic Plan, the CIP, emergency/continuity planning, budgeting, and department work plans. The Cosumnes CSD Fire Department is working with legislative efforts to implement better early warning systems for wildland fires across the State.		

Source: CCSD/Fire

I.5.3. Fiscal Mitigation Capabilities

Table I-16 identifies financial tools or resources that the District could potentially use to help fund mitigation activities.

Table I-16 CCSD/Fire's Fiscal Mitigation Capabilities

Funding Resource	In Place Y/N	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Capital improvements project funding	N	
Community Development Block Grant	Y	
Federal funding programs (non-FEMA)	Y	
Fees for water, sewer, gas, or electric services	N	
Impact fees for new development	Y	
State funding programs	Y	
Stormwater utility fee	N	
Other		

Funding Resource	In Place Y/N	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
How can these capabilities be expanded and improved to reduce risk?		
Cosumnes CSD/Fire will continue preparedness activities, training, exercises, after-action reviews, and continuity planning. Lessons learned will be incorporated into operational planning as appropriate. The District will continue to look for opportunities to expand its capabilities by finding grant funds. The District is always on the lookout for local, federal, and state grant opportunities.		

Source: CCSD/Fire

I.5.4. Mitigation Education, Outreach, and Partnerships

Table I-17 identifies education and outreach programs and methods already in place that could be/or are used to implement mitigation activities and communicate hazard-related information.

Table I-17 CCSD/Fire's Mitigation Education, Outreach, and Partnerships

Program/Organization	In Place Y/N	How widespread are each of these in your community?
Community newsletters		
Hazard awareness campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, school programs, public events)	Y	Community Outreach Programs through the Fire Department
Local news		
Organizations that interact with underserved and vulnerable communities		
Social media		
How can these capabilities be expanded and improved to reduce risk?		
Additional work should focus on critical-facility resilience, communications redundancy, emergency access, alternate operating locations, resource availability, and coordination with regional partners. It is the ongoing goal of the Cosumnes CSD Fire Department to utilize new technology and procedures to help further educate the community that we serve. The Cosumnes CSD Fire Department continues to provide outreach to local schools to provide education on fire prevention and safety. The Cosumnes CSD Fire Department is also exploring social media platforms to give the ability to reach more members of the community. The Community Emergency Response Team (CERT) goals include maximizing participation and exposure to the communities of Elk Grove and Galt. Part of the Cosumnes CSD Fire Department social media platform will include highlighting CERT to help reach those goals.		

Source: CCSD/Fire

I.5.5. Other Mitigation Efforts

Additional mitigation work being includes critical-facility continuity and resilience; wildfire, drought, and extreme-heat resilience; and flood/levee-failure preparedness. Specific work includes COOP planning, facility vulnerability assessments, communications and operational redundancy, vegetation management and defensible space, drought and water-supply planning, responder heat-safety measures, and flood/levee-failure preparedness.

I.6 Mitigation Strategy

I.6.1. Mitigation Goals and Objectives

The CCSD/Fire adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

I.6.2. NFIP Mitigation Strategy

The District does not participate in the NFIP, as it is not an eligible participant. Some of the District's projects work to reduce impacts from flooding thus furthering the objectives of the NFIP.

I.6.3. Mitigation Actions

The Planning Team for the CCSD/Fire identified and prioritized the following mitigation actions based on the risk assessment. Background information and information on how each action will be implemented and administered, such as ideas for implementation, responsible office, potential funding, and timeline are also included. The following hazards were considered a priority for purposes of mitigation action planning:

- Drought & Water Shortage (w/tree mortality)
- Flood: 1%/0.5%/0.2% annual chance
- Levee Failure
- Severe Weather: Extreme Heat
- Wildfire (w/smoke and air quality)

Low priority hazards for mitigation planning include:

- Aquatic Nuisance Species (plant/animal)
- Climate Change
- Dam Failure
- Earthquake (w/subhazards)
- Flood: Localized Stormwater
- Landslide, Mudslide, Debris Flow
- Sea Level Rise
- Severe Weather: Extreme Cold and Freeze
- Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)
- Severe Weather: High Winds and Tornadoes
- Subsidence

It should be noted that many of the projects submitted by each jurisdiction in Table 5-4 in the Base Plan benefit all jurisdictions whether or not they are the lead agency. Further, many of these mitigation efforts are collaborative efforts among multiple local, state, and federal agencies. In addition, the countywide public outreach action, as well as many of the emergency services actions, apply to all hazards and jurisdictions regardless of hazard priority. Collectively, this LHMP's multi-jurisdictional mitigation strategy includes only those actions and projects which reflect the actual priorities and capacity of each

jurisdiction to implement over the next 5-years covered by this plan. It should further be noted, that each jurisdiction has focused on identifying those mitigation actions and projects to address their priority hazards, which are both realistic and reasonable for them to implement for this 5-year planning process, and would like to preserve their right to modify hazard priorities should future projects be identified where the implementing jurisdiction has the future capacity to implement. The participating jurisdictions are not obligated by this document to implement any or all of these projects. Rather this mitigation strategy represents the desires of the jurisdictions to mitigate the risks and vulnerabilities from identified hazards. The actual selection, prioritization, and implementation of these actions will also be further evaluated in accordance with the mitigation categories and criteria contained in Appendix C.

Mitigation Actions

The District has put forward the actions as shown in Table I-18. Details of the actions can be found below the table.

Table I-18 CCSD/Fire Mitigation Actions

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 1. Critical Facilities Resilience and Continuity of Operations Enhancement Program	New Action	X	X	X	Prevention Property Protection Structural Projects Emergency Services
Action 2. Wildfire, Drought, and Extreme Heat Resilience Program	New Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Flood and Levee Failure Emergency Preparedness and Critical Facility Protection Program	New Action	X	X	X	Prevention Property Protection Structural Projects Emergency Services

Action 1. Critical Facilities Resilience and Continuity of Operations Enhancement Program

Hazards Addressed: Wildfire, Drought and Water Shortage, Flooding, Levee Failure, Extreme Heat

Goals Addressed: 1, 2, 3, 5, 6, 7

Issue/Background (Problem Statement): All priority hazards identified in the Cosumnes Fire Department Hazard Identification Table have the potential to disrupt emergency response operations, damage facilities, interrupt communications, impact staffing, reduce resource availability, and affect continuity of essential public safety services. Maintaining uninterrupted fire suppression, rescue, emergency medical, prevention, and emergency management capabilities during disasters is critical to community resilience. Existing continuity plans require periodic review and enhancement to address

evolving risks associated with climate change, infrastructure vulnerabilities, and increasing emergency service demands.

Project Description: Review and update the Department Continuity of Operations Plan; identify vulnerabilities affecting critical facilities, communications systems, dispatch capabilities, information technology infrastructure, fuel supplies, and emergency response resources; establish redundant systems and alternate operating locations where appropriate; conduct continuity exercises; and integrate mitigation planning into future capital improvement, facility replacement, and emergency preparedness efforts.

Other Alternatives:

- Alternative 1: No Action: Maintain existing continuity plans without updates or improvements.
- Alternative 2: Plan Update Only: Update planning documents without conducting assessments, exercises, or facility resilience improvements.
- Preferred Alternative: Comprehensive continuity planning, facility resilience assessment, and implementation program

Existing Planning Mechanism(s) through which Action Will Be Implemented:

- Cosumnes Fire Department Continuity of Operations Plan
- Cosumnes Community Services District Strategic Plan
- Sacramento County Emergency Operations Plan
- Sacramento County 2026 Local Hazard Mitigation Plan
- Capital Improvement Program
- Annual Budget Process
- Information Technology Strategic Planning

Responsible Agency/Department/Partners:

- Lead Agency:
 - ✓ Cosumnes Fire Department Administration Division
 - ✓ Cosumnes Fire Department Operations Division
 - ✓ Cosumnes Community Services District Administration
- Partners:
 - ✓ Sacramento County Office of Emergency Services
 - ✓ Sacramento Regional Fire/EMS Communications Center
 - ✓ Information Technology Service Providers
 - ✓ Utility Providers
 - ✓ Regional Mutual Aid Partners

Benefits (Losses Avoided): Maintains emergency response capability during disasters; reduces interruption of critical services; protects life safety; improves redundancy of communications and operational systems; protects public investments in facilities and equipment; improves organizational resilience; and supports rapid recovery following major emergencies.

Potential Funding (Local Budgets, Grant Funds, etc.):

- FEMA BRIC
- FEMA Hazard Mitigation Grant Program (HMGP)
- Homeland Security Grant Program (HSGP)
- State Homeland Security Program (SHSP)
- Cosumnes CSD General Fund
- Capital Improvement Program
- District Staff Time

Timeline: Initiate within 1 year and complete major updates and assessments within 3 years; conduct annual reviews and exercises through 2031.

Project Priority (High, Medium, Low): High

Action 2. Wildfire, Drought, and Extreme Heat Resilience Program

Hazards Addressed: Wildfire (including smoke and air quality), Drought and Water Shortage (including tree mortality), Severe Weather: Extreme Heat

Goals Addressed: 1, 2, 3, 4, 5, 6, 7

Issue/Background (Problem Statement): The Cosumnes Fire Department service area encompasses approximately 157 square miles of urban, suburban, agricultural, and open-space lands in southern Sacramento County. Increasing temperatures, prolonged drought conditions, reduced water availability, tree mortality, and expanding development near open-space areas have increased the risk of wildfire occurrence and severity. Extreme heat events have become more frequent and prolonged, increasing emergency medical service demand, creating health risks for vulnerable populations, and exposing firefighters to greater operational hazards. Drought conditions further exacerbate wildfire risk by reducing vegetation moisture, stressing water supplies, and increasing combustible fuel loads. Wildfire smoke events have also resulted in degraded air quality affecting residents, emergency responders, and critical community functions.

Project Description: Implement a comprehensive hazard mitigation program that includes wildfire fuel reduction projects, vegetation management, defensible space inspections, public education and outreach, drought preparedness planning, emergency water supply assessments, responder cooling and rehabilitation equipment, heat response operational protocols, wildfire and extreme heat training, and acquisition of specialized equipment to support emergency response during extreme weather conditions. The project will also identify firefighting water sources and strengthen coordination with local water providers during drought emergencies.

Other Alternatives:

- Alternative 1 - No Action: Continue existing programs without additional mitigation measures.
- Alternative 2 - Limited Program Expansion: Implement education and training efforts only without infrastructure, equipment, or water-supply improvements.
- Preferred Alternative: Implement a comprehensive multi-hazard mitigation program

Existing Planning Mechanism(s) through which Action Will Be Implemented:

- Cosumnes Fire Department Continuity of Operations Plan (COOP)
- Cosumnes Community Services District Strategic Plan
- Sacramento County 2026 Local Hazard Mitigation Plan
- Sacramento County Emergency Operations Plan
- Fire Prevention Bureau Standard Operating Procedures
- Annual Department Work Plan and Budget
- Capital Improvement Program

Responsible Agency/ Department/Partners:

- Lead agency
 - ✓ Cosumnes Fire Department Administration Division
 - ✓ Cosumnes Fire Department Operations Division
 - ✓ Cosumnes Fire Department Fire Prevention Bureau
- Partners
 - ✓ Sacramento County Office of Emergency Services
 - ✓ CAL FIRE Amador-El Dorado Unit
 - ✓ Elk Grove Water District
 - ✓ Sacramento County Water Agency
 - ✓ Sacramento Metropolitan Air Quality Management District
 - ✓ City of Elk Grove

Benefits (Losses Avoided): Reduces risk of wildfire-related fatalities and injuries; decreases structure loss; improves firefighter safety; enhances emergency response capabilities; protects critical infrastructure and community assets; improves air quality preparedness; protects natural resources and agricultural lands; strengthens water-supply reliability; reduces heat-related illnesses; and improves overall community resilience.

Potential Funding (Local Budgets, Grant Funds, etc.):

- FEMA Building Resilient Infrastructure and Communities (BRIC)
- FEMA Hazard Mitigation Grant Program (HMGP)
- FEMA Assistance to Firefighters Grant (AFG)
- CAL FIRE Prevention Grant Program
- California Climate Investments Programs
- Cosumnes CSD General Fund
- Cosumnes CSD Capital Improvement Program
- District Staff Time

Timeline: Initiate within 1 year and continue annually through 2031

Project Priority (High, Medium, Low): High

Action 3. Flood and Levee Failure Emergency Preparedness and Critical Facility Protection Program

Hazards Addressed: Flood: 1 % / 0.5% / 0.2% Annual Chance, Levee Failure

Goals Addressed: 1, 2, 3, 5, 6, 7

Issue/Background (Problem Statement): Portions of the Cosumnes Fire Department service area are vulnerable to flooding associated with riverine flooding, storm events, and potential levee failures. Flooding can restrict emergency access routes, damage infrastructure, disrupt communications, impact fire station operations, and delay emergency response activities. While levee failures are infrequent, their consequences can be catastrophic and include widespread inundation, mass evacuations, interruption of emergency services, and damage to public and private property. Maintaining continuity of emergency response operations during flood-related disasters is essential to protecting life safety and property throughout the district.

Project Description: Conduct a comprehensive assessment of flood and levee-failure vulnerabilities affecting fire stations, communications infrastructure, emergency vehicle access routes, fuel supplies, and operational facilities. Develop and update emergency response procedures, evacuation support plans continuity strategies, and alternate deployment locations. Implement facility hardening measures where feasible and conduct annual flood and levee-failure preparedness exercises with regional partners.

Other Alternatives:

- Alternative 1 - No Action: Continue existing flood response capabilities without additional planning or facility improvements.
- Alternative 2 -Planning Only: Update plans and procedures without conducting facility assessments or implementing physical improvements.
- Preferred Alternative: Comprehensive preparedness, continuity planning, facility assessment, and infrastructure protection program.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

- Cosumnes Fire Department Continuity of Operations Plan (COOP)
- Sacramento County Emergency Operations Plan
- Sacramento County Flood Emergency Response Plans
- Sacramento County 2026 Local Hazard Mitigation Plan
- Capital Improvement Program
- Department Emergency Response Procedures

Responsible Agency/Department/Partners:

- Lead Agency:
 - ✓ Cosumnes Fire Department Administration Division
 - ✓ Cosumnes Fire Department Operations Division
- Partners:
 - ✓ Sacramento County Office of Emergency Services

- ✓ Sacramento Area Flood Control Agency (SAFCA)
- ✓ Sacramento County Department of Water Resources
- ✓ Local Reclamation Districts
- ✓ City of Elk Grove
- ✓ California Department of Water Resources

Benefits (Losses Avoided): Improves continuity of emergency operations during flood events; reduces risk to emergency responders; protects critical facilities and communications systems; maintains emergency access routes; supports evacuation operations; reduces property damage; protects economic assets and infrastructure; and improves public safety during major flood and levee emergencies

Potential Funding:

- FEMA BRIC
- FEMA Hazard Mitigation Grant Program (HMGP)
- California Department of Water Resources Flood Management Grants
- SAFCA Partnership Funding Programs
- Cosumnes CSD General Fund
- Cosumnes CSD Capital Improvement Program
- District Staff Time

Timeline: Assessment and planning within 1-3 years; implementation of identified improvements within 3-5 years.

Project Priority (High, Medium, Low): Medium