Annex F City of Sacramento

F.1 Introduction

This Annex details the hazard mitigation planning elements specific to the City of Sacramento, 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 City. This Annex provides additional information specific to the City of Sacramento, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this jurisdiction.

F.2 Planning Process

As described above, the City of Sacramento 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 City 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 F-1. Additional details on Plan participation and City representatives are included in Appendix A.

Table F-1 City of Sacramento – Internal Planning Team

Name	Position/Title	How Participated
Neal Joyce	DOU Supervising Engineer	Utilities Department - Came to the larger meetings, provided information on floodplain management, past occurrences, local concerns, development requirements and planning efforts.
KC Channakhone	DOU Administrative Analyst	Utilities Department - Provided information on floodplain management, coordinated department input, facilitate communication with City departments, compile responses, attend meetings and planning efforts.
Daniel Smith	DOU Assistant Engineer	Utilities Department - Provided information on floodplain management and attended County LHMP meetings
Brett Ewart	DOU Supervising Engineer	Utilities Department – Provided information on current and future conditions of the drainage system. Identified hazard areas and possible mitigation projects.
Brett Grant	DOU Supervising Engineer	Utilities Department – Drainage CIP, Provided information on current and future conditions of the drainage system. Identified hazard areas and possible mitigation projects.
Paul Barnes	DOU Supervising Engineer	Utilities Department – Electrical Supervisor: Provided information on the technology infrastructure of our utilities. Also, provided background to generator mitigation project.

Name	Position/Title	How Participated
Lt. Joe Bailey	Police Lieutenant	SPD-Homeland Security UASI Director: Provided Police perspective on services effected by hazards
Cpt. Steven Icenbice	Fire Captain	SFD- OEM: Provided Fire information earthquake, severe weather, and wildfire.
Vic Randall	Senior Planner	Community Development Department – Provided information on long-range planning and policy, development, building procedures, and other planning aspects.
Ryan Dodge	Associate Planner	Community Development Department – Provided information on development
Thomas Mehall	DOU Sustainability Analyst	Utilities Department – Provided information on water supply, demand, quality, and climate impacts.
Kelly Sherfey	DOU Supervising Financial Analyst	Utilities Department- Provided information on Fiscal table.
David Levine	DOU Program Manager	Utilities Department- Long Range Financial Planning- Provided information in Fiscal table.

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

Table F-2 2021 LHMP Incorporation

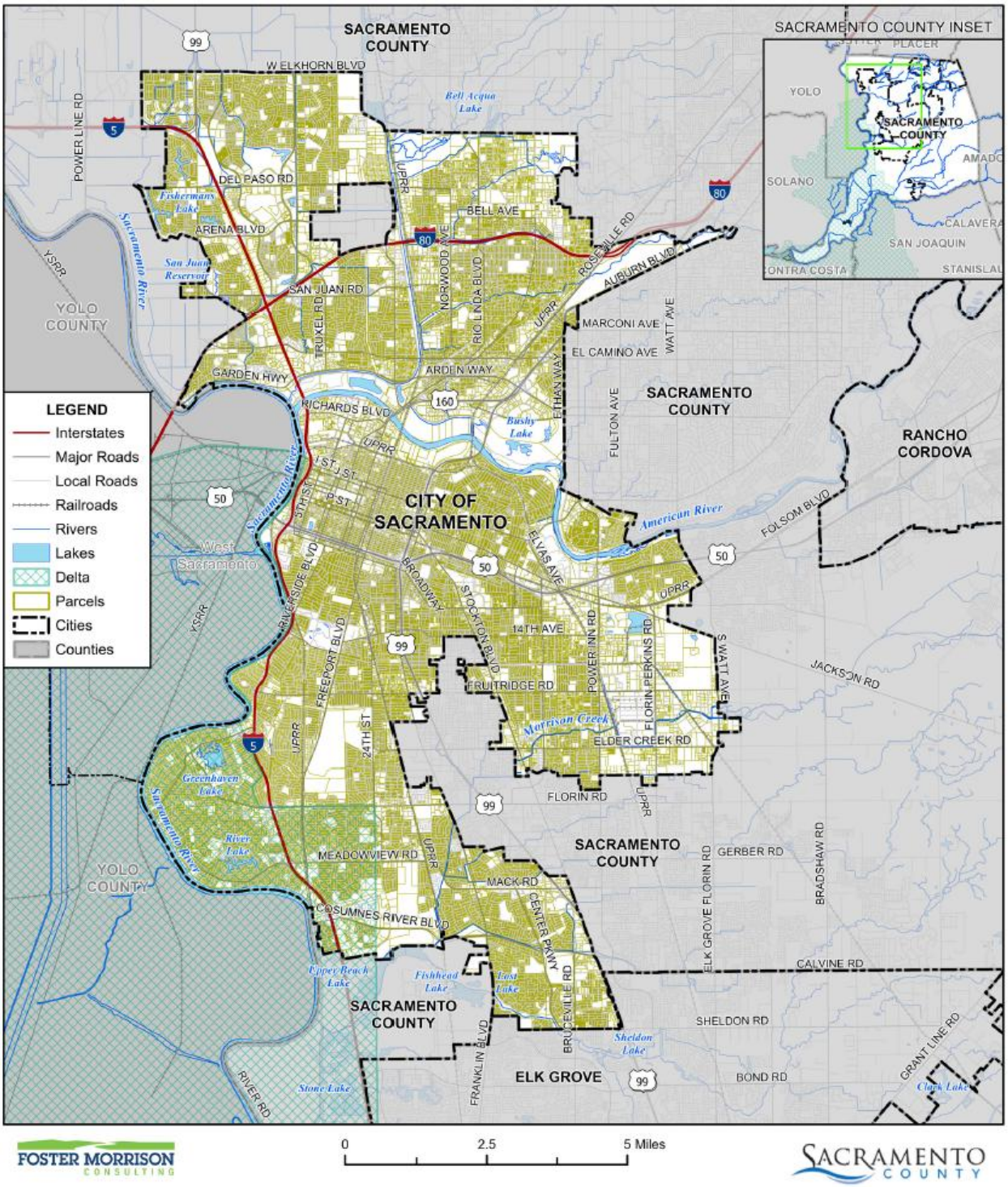
Planning Mechanism 2021 LHMP Was Incorporated or Implemented Through	Details
2040 General Plan	Goals and Policies related to fire prevention and suppression and flood protection have been incorporated into the Land Use and Placemaking, Public Facilities and Safety, and Environmental Resources and Constraints elements of the 2040 General Plan. The Public Facilities and Safety Goal 2.1 Hazard Mitigation Planning provides direction to continue to use the Local Hazard Mitigation Plan and related plans to guide actions and investments addressing the major hazards facing the city of Sacramento
City Emergency Operations Plan/ Department of Utilities Emergency Action Plan	The City developed emergency operations plans based on the hazard and vulnerability findings that are identified in the Sacramento County Multi-Hazard Mitigation Plan. The analysis of these threats included both natural and technological hazards that affect the operational area.
Comprehensive Flood Management Plan	Another planning mechanism for the City that addresses flooding related hazards identified in the 2021 LHMP. This Plan discusses future development, internal drainage, Community Rating System program, National Flood Insurance Program, levee security, and flood control projects.
Repetitive Loss Area Analysis	A plan to further analyze repetitive loss properties that have flooded because of a high hazard – flooding, which was identified in the 2021 LHMP.

Planning Mechanism 2021 LHMP Was Incorporated or Implemented Through	Details
City of Sacramento Climate Action & Adaptation Plan	The City incorporated a number of actions identified in the 2021 LHMP as supporting actions to implement newly defined Adaptation goals intended to guide City efforts to mitigate the effects of increasing extreme heat, flood risk, wildfire smoke and other air quality impacts, and impacts to water supply availability related to drought and changing precipitation patterns.
Sacramento Transportation Infrastructure Adaptation Plan	The Sacramento Transportation Infrastructure Adaptation Plan (SacAdapt) incorporated a number of actions identified in the 2021 LHMP as implementing actions for recommended transportation adaptation strategies. These transportation adaptation strategies aim to support resilience of the City's transportation infrastructure in the face of extreme heat, flood risk, wildfire smoke and other air quality impacts.

F.3 Community Profile

The community profile for the City of Sacramento is detailed in the following sections. Figure F-1 displays a City map and the location of City of Sacramento within Sacramento County.

Figure F-1 City of Sacramento



Data Source: Sacramento County, Cal-Atlas; Map Date: 1/29/2026.

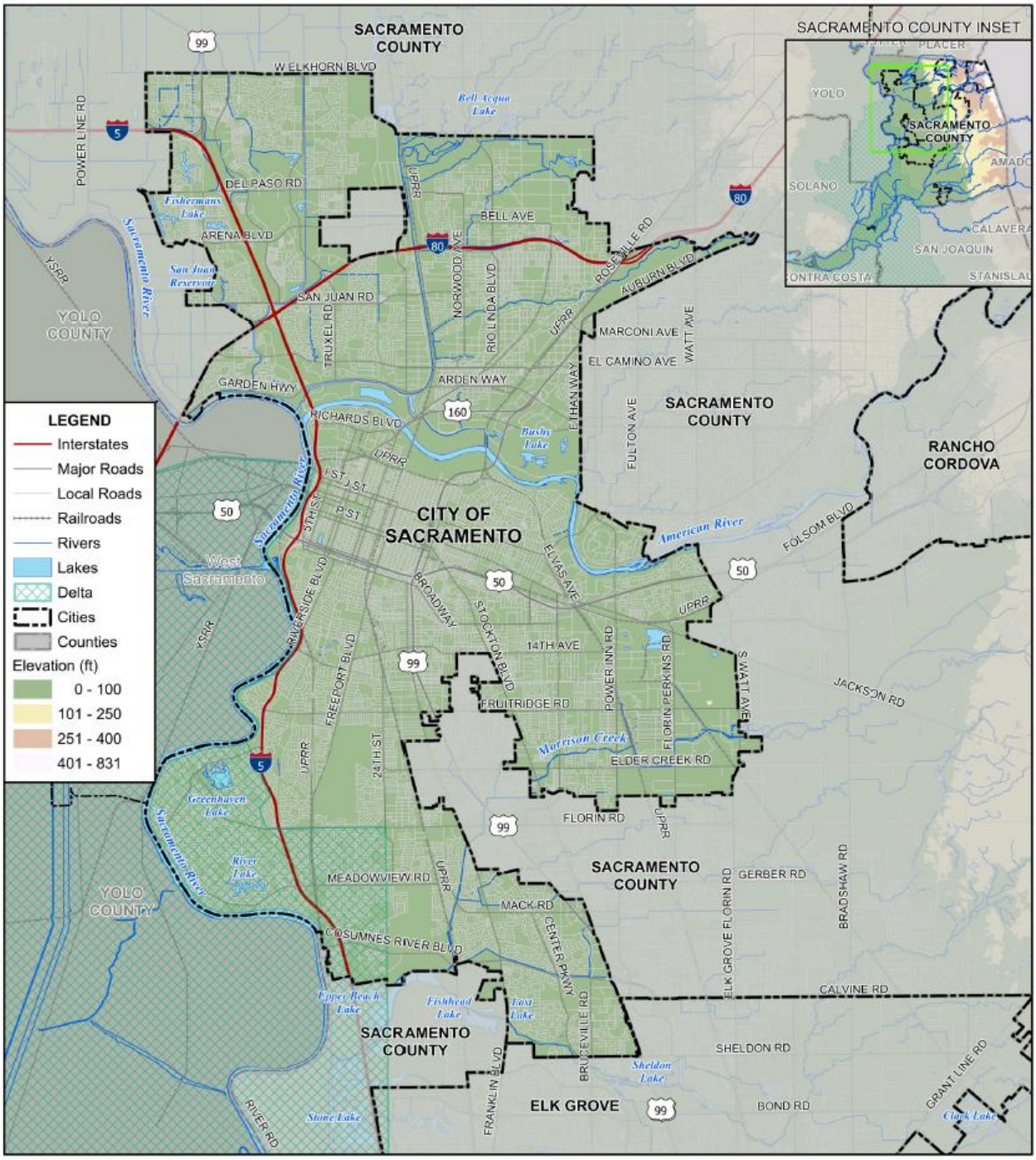
F.3.1. Geography and Climate

Sacramento and American Rivers. The Central Valley is a flat alluvial plain approximately 50 miles wide and 400 miles long in the central portion of California. Its northern part is the Sacramento Valley drained by the Sacramento River, and its southern part is the San Joaquin Valley drained by the San Joaquin River. It is surrounded by the Sierra Nevada to the east, the Tehachapi Mountains to the south, Coastal Range to the west, and Cascade Range to the north. The topography of the area is relatively flat (as shown in Figure F-2). There is a gradual slope rising from elevations as low as sea level in the southwestern portion of the City up to approximately 75 feet above sea level in the northeastern portion.

Sacramento is the cultural and economic center of its six-county metropolitan area (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties) and the largest city in the Central Valley. The regional location of Sacramento, as shown on the map above, is roughly halfway between San Francisco to the west and Lake Tahoe to the east. Sacramento covers a total area of approximately 99 square miles and is the seventh most populous city in California with a 2020 estimated population of 510,931. Sacramento is accessible from Interstate 80 and U.S. Highway 50 (running east/west) and Interstate 5 and U.S. Highway 99 (running north/south). Amtrak serves Sacramento's passenger rail needs, while Sacramento International Airport (SMF) provides domestic and international flights through most major airlines. Within the city and surrounding region, Sacramento Regional Transit provides bus and light rail service.

Sacramento has a Mediterranean climate that is characterized by mild winters and dry, hot summers. Rain typically falls between November and March, with the rainy season tapering off almost completely by the end of April. Average daily high temperatures range from the 50s in December and January to the 90s in July (with many days of over 100).

Figure F-2 City of Sacramento – Elevations

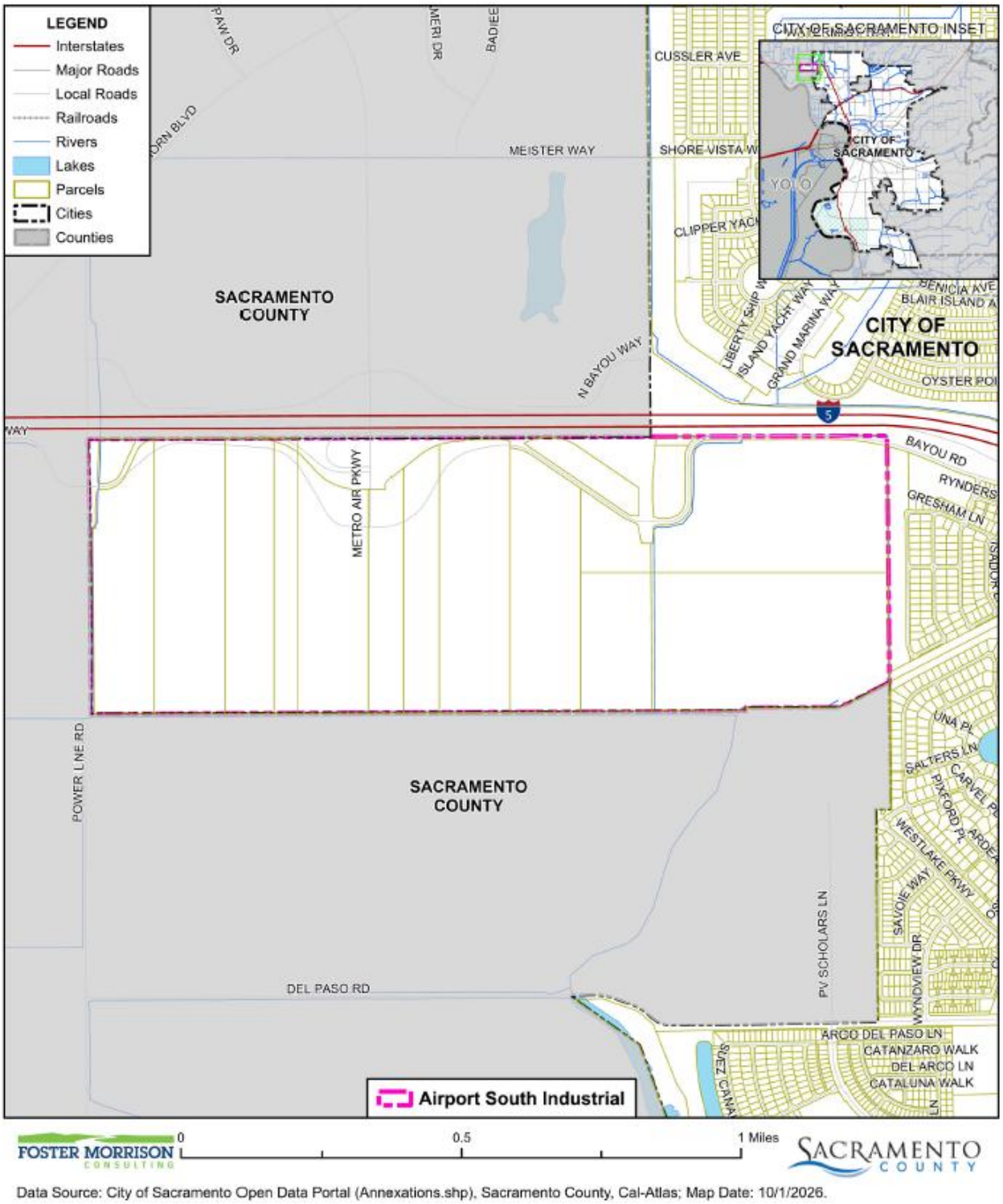


Data Source: Sacramento County, Cal-Atlas; Map Date: 1/29/2026.

F.3.2. Airport South Industrial Annexation

During the creation of this LHMP Update, the Sacramento City Council approved the Airport South Industrial (ASI) entitlements on December 2, 2025. Sacramento LAFCo approved the reorganization on March 4, 2026, and the annexation took effect on July 22, 2026. This area can be seen on Figure F-3.

Figure F-3 City of Sacramento – ASI Annexation



Data Source: City of Sacramento Open Data Portal (Annexations.shp), Sacramento County, Cal-Atlas; Map Date: 10/1/2026.

The ASI area covers 447.2 acres in the Natomas Basin. It lies south of Interstate 5 and east of Power Line Road, about one mile southeast of Sacramento International Airport. It is vacant, uninhabited farmland with

no occupied buildings. The entitlements allow up to about 5.2 million square feet of light industrial and warehouse space and about 98,000 square feet of highway commercial uses, including a hotel.

No building permits have been issued as of September 2026. The applicant expects to begin Phase 1 in summer 2027, pending FEMA issuance of a Conditional Letter of Map Revision and the airport approving a Wildlife Hazard Management Plan for the site's stormwater basins. Full development of the site is anticipated to take at least ten years. Because the site is close to the airport, the basins must be designed and managed so they do not attract birds that could strike aircraft.

Flooding is the primary hazard. The entire site is mapped as a FEMA Zone A Special Flood Hazard Area. The eastern portion is also designated Zone A99 until the Natomas levee improvements are complete and accredited. A levee failure could produce flood depths greater than three feet. Most of the site also lies within Reclamation District 1000's local 100-year floodplain.

Other mapped and non-mapped priority hazards to the City, including dam failure, earthquake, extreme heat, drought, sea level rise, wildfire, and severe weather, apply to the ASI site in a manner similar to the rest of North Natomas. This can be seen in Table F-3 for mapped hazards and includes the applicable hazard zone or area by hazard. Of the mapped priority hazards to the City, only dam failure and flood/levee failure have associated hazard zones of concern to the City's ASI annexation. Maps showing potential dam inundation areas and DFIRM flood/levee zones in the ASI annexation can be seen in Figure F-4 and Figure F-5, respectively. It should also be noted, while Folsom dam inundation mapping was not available for this LHMP Update, based on previous 2021 and 2016 Sacramento County LHMPs, the ASI area is also potentially at risk and vulnerable to a future Folsom Dam incident.

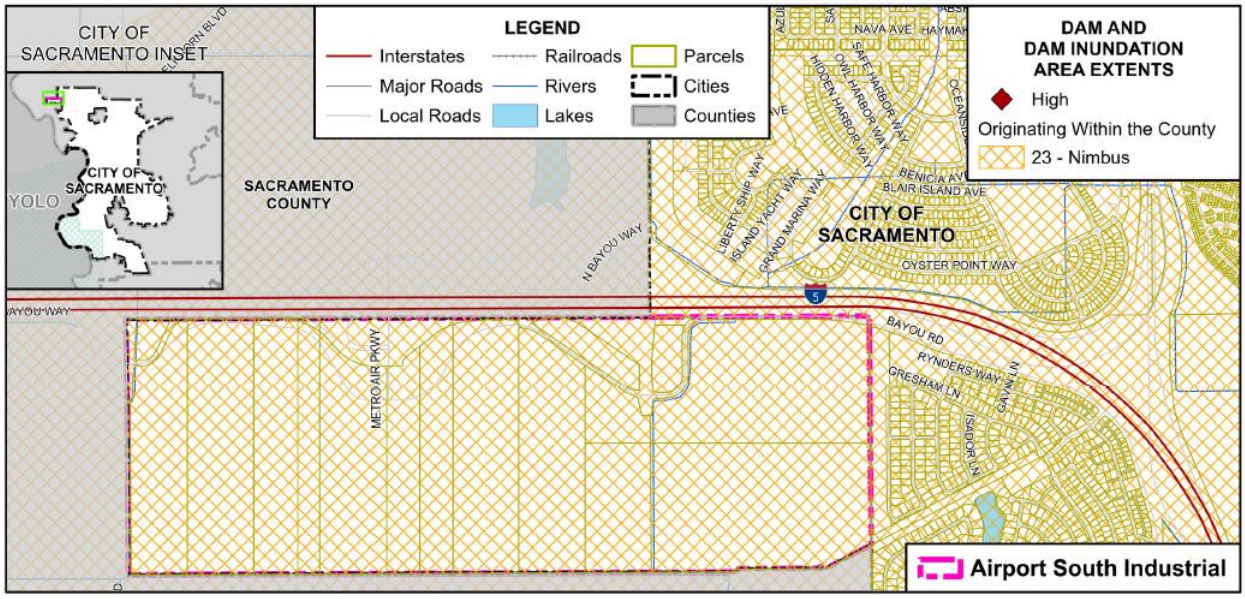
Table F-3 City of Sacramento – Airport South Industrial Property - Mapped Hazards by Detailed Hazard Zones

Priority Hazard/Hazard Zones Present
Dam Failure
High Hazard Dams (originating from inside the County) – Nimbus Dam, Folsom Dam*
Earthquake Liquefaction
Outside a CGS Liquefaction Zone
Flood: 1%/0.5%/0.2%
1% Annual Chance – Zone A and A99
Levee Failure
1% Annual Chance – A99
Sea Level Rise
Outside SLR scenarios
Wildfire
LRA FHSZ – Non-Wildland Outside of SRA/FRA FHSZ

Source: DSOD, CGS, FEMA 02/2024 DFIRM, CGS, CAL FIRE

* While the Folsom Dam did not have a mapped inundation layer available for this LHMP Update, based on past inundation mapping conducted for the 2021 and 2016 Sacramento County LHMPs, the City is at risk and vulnerable to a future High Hazard Folsom Dam incident.

Figure F-4 City of Sacramento – ASI Annexation in High Hazard Dam (Inside the County) Inundation Areas



FOSTER MORRISON CONSULTING

SACRAMENTO COUNTY

Data Source: City of Sacramento Open Data Portal (Annexations.shp),
DWR DSOD dam inventory (updated 7/2025; data downloaded 10/2025),
CalOES CIP dam inundation data (3/2017),
Sacramento County, Cal-Atlas; Map Date: 10/1/2026.

Figure F-5 City of Sacramento – ASI Annexation in FEMA DFIRM Flood Zones



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SACRAMENTO COUNTY

Data Source: City of Sacramento Open Data Portal (Annexations.shp),
FEMA Effective DFIRM 02/22/2024 (NFHL 10/13/2025 database),
Sacramento County, Cal-Atlas; Map Date: 10/1/2026.

F.3.3. History

Prior to European settlement, Nisenan (Southern Maidu) and Plains Miwok Indians lived in the area. In the early 1800s, the Spanish explorer Gabriel Moraga "discovered" and named the Sacramento Valley and the Sacramento River after the Spanish term for "sacrament." Sacramento was founded during the California Gold Rush and grew quickly due to the protection of Sutter's Fort, which was established by John Sutter in 1839.

The citizens of Sacramento adopted a city charter in 1849 and became the first incorporated city in California on February 27, 1850. During the California Gold Rush and through the 1800s, Sacramento became a major distribution point, a commercial and agricultural center, a terminus for wagon trains, stagecoaches, riverboats, the telegraph, the Pony Express, and the First Transcontinental Railroad, and in 1854 the state capital of California.

The City's current charter was adopted by voters in 1920, establishing a city council-and-manager form of government, still used today. The City expanded continuously over the years in the first half of the 1900s and in 1964 merged with the city of North Sacramento, just north of the American River. Large annexations of the Pocket area on the south and Natomas area on the north eventually led to significant population growth throughout the 1970s, 1980s, and 1990s.

Sacramento experienced a massive growth in population in the 1990s and early 2000s. Primary sources of population growth are migration from the San Francisco Bay Area due to lower housing costs, as well as immigration from Asia, Central America, Mexico, Ukraine, and the rest of the former Soviet Union.

F.3.4. Economy and Tax Base

US Census estimates show economic characteristics for the City of Sacramento. These are shown in Table F-4 and Table F-5. Mean household income in the City was $114,906. Median household income in the City was $91,387.

Table F-4 City of Sacramento – Civilian Employed Population 16 years and Over

Industry	Estimated Employment	Percent
Agriculture, forestry, fishing and hunting, and mining	2,900	1.1%
Construction	18,282	6.9%
Manufacturing	13,896	5.2%
Wholesale trade	4,318	1.6%
Retail trade	22,421	8.4%
Transportation and warehousing, and utilities	20,795	7.8%
Information	2,865	1.1%
Finance and insurance, and real estate and rental and leasing	14,090	5.3%
Professional, scientific, and management, and administrative and waste management services	34,301	12.9%

Industry	Estimated Employment	Percent
Educational services, and health care and social assistance	61,825	23.3%
Arts, entertainment, and recreation, and accommodation and food services	36,909	10.1%
Other services, except public administration	11,820	4.4%
Public administration	31,421	11.8%

Source: US Census Bureau American Community Survey 2023 Estimates

Table F-5 City of Sacramento – Income and Benefits

Income Bracket	Percent
<$10,000	4.8%
$10,000 – $14,999	2.8%
$15,000 - $24,9999	5.4%
$25,000 – $34,999	5.0%
$35,000 – $49,999	8.8%
$50,000 – $74,999	15.3%
$75,000 – $99,999	12.5%
$100,000 – $149,999	20.4%
$150,000 – $199,999	10.7%
$200,000 or more	15.2%

Source: US Census Bureau American Community Survey 2023 Estimates

The largest employers in the City of Sacramento are shown on Table F-6.

Table F-6 City of Sacramento – Largest Employers

Employer Name	Location	Industry
California State Lottery	Sacramento	Lottery Agents
California State University Sacramento	Sacramento	Schools-Universities & Colleges Academic
Colliers International, Ltd.	Sacramento	Real Estate
California Department-Corrections	Sacramento	State Govt-Correctional Institutions
Disabled American Veterans	Sacramento	Veterans' & Military Organizations
Division of Fiscal Services	Sacramento	Services NEC
Employment Development Dept	Sacramento	Outplacement Consultants
Environmental Protection Agency	Sacramento	State Government-Environmental Programs
Golden 1 Credit Union	Sacrament	Credit Union
L A Care Health Plan	Sacramento	Health Plans
Mercy General Hospital	Sacramento	Hospitals
Myoutdesk	Sacramento	Real Estate Support

Employer Name	Location	Industry
Sacramento Bee	Sacramento	Newspapers (publishers/Mfrs)
Sacramento Municipal Utility	Sacramento	Electric Contractors
Securitas Security Svc USA	Sacramento	Security Guard & Patrol Service
SMUD	Sacramento	Electric Companies
State Compensation Insurance Fund	Sacramento	Insurance
Summit Funding Inc	Sacramento	Financing
Water Resource Dept	Sacramento	Government Offices-State

Source: California Economic Development Department. Retrieved 7/15/2026.

The City has a wide and varied tax base. Tax base information is tracked and maintained by the Sacramento County Assessor's Office. The following tables show the tax base for the City. Tax base information is tracked and maintained by the Sacramento County Assessor's Office. The following table show the tax base for the City. Table F-7 shows the secured real property value for the City (along with the other cities in the County) for the 2024-2025 and 2025-2026 tax years.

Table F-7 Local Assessment Roll Totals for the City (and other County jurisdictions) for 2024/2025 and 2025/2026

Jurisdiction	2025-26	2024-25	Net Increase	% Increase
Citrus Heights	10,025,689,554	9,655,026,938	370,662,616	4%
Elk Grove	30,447,141,962	28,732,989,483	1,714,152,479	6%
Folsom	21,947,218,449	20,668,487,354	1,278,731,095	6%
Galt	3,447,832,371	3,232,113,014	215,719,357	7%
Isleton	90,177,374	86,380,870	3,796,504	4%
Rancho Cordova	14,722,242,063	13,444,934,790	1,277,307,273	10%
Sacramento City	78,585,412,259	75,396,324,743	3,189,087,516	4%
Unincorporated Area	86,211,221,031	81,920,304,075	4,290,916,956	5%
Totals	**245,476,935,063**	**233,136,561,267**	**12,340,373,796**	**5%**

Source: Sacramento County Assessor's Office – 2025 Assessor's Annual Report

F.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 City of Sacramento 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 City'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 Community Profile above, a risk assessment was performed for the City utilizing the existing City boundaries. This includes the following sections:

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

F.4.1. Assets Inventory and Growth and Development Trends

This section provides an inventory of the City of Sacramento'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 City of Sacramento'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 City, potentially at risk to identified hazards as discussed in Section F.4.3 Hazard Profiles and Vulnerability to Specific Hazards.
- **Growth and Development Trends** – A discussion of growth and development trends in the City, both current and future, is presented.

Assets Inventory

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

- People and Populations
- Structures
- 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 F.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 City, and also discusses vulnerable populations and underserved communities as a subsection of people and populations located within the City and potentially at risk to hazards. Information from the City, US Census Bureau, California Department of Finance, and other sources as detailed below form the basis of this discussion.

Historic Population Trends and Current Population

Population growth can increase the number of people living in hazard prone areas. The California Department of Finance reported that the City of Sacramento has 527,979 residents, as of January 1, 2025. The City of Sacramento has seen growth rates as shown in Table F-8. As shown, the City has grown consistently since 1950, with growth slowing recently since the 2021 LHMP.

Table F-8 City of Sacramento – Population Changes Since 1950

Year	Population	% Change
1950	137,572	–
1960	191,667	39.3%
1970	257,105	34.1%
1980	282,400	9.8%
1990	366,500	29.8%
2000	407,018	11.1%
2010	466,488	14.6%
2020	510,931	9.5%
2025	527,979	3.3%

Source: US Census Bureau, California Department of Finance (2025)

Underserved and Vulnerable Populations and Disadvantaged Communities

The City has a socially and economically diverse community, and many residents that are socially or economically disadvantaged or vulnerable due to varying reasons reside within the City. The City and surrounding County are no strangers to large natural disasters which have had a direct impact on the populations of the area. Thus, it is important to consider the potential effects of hazard events and disasters on these more vulnerable populations. Underserved and vulnerable populations and disadvantaged communities in the City are discussed by the following sources:

- US Center for Disease Control (CDC) Social Vulnerability Index
- California Department of Water Resources (CA DWR) Special Populations and Disadvantaged Community Mapping
- City Planning Team Input

CDC Social Vulnerability Index

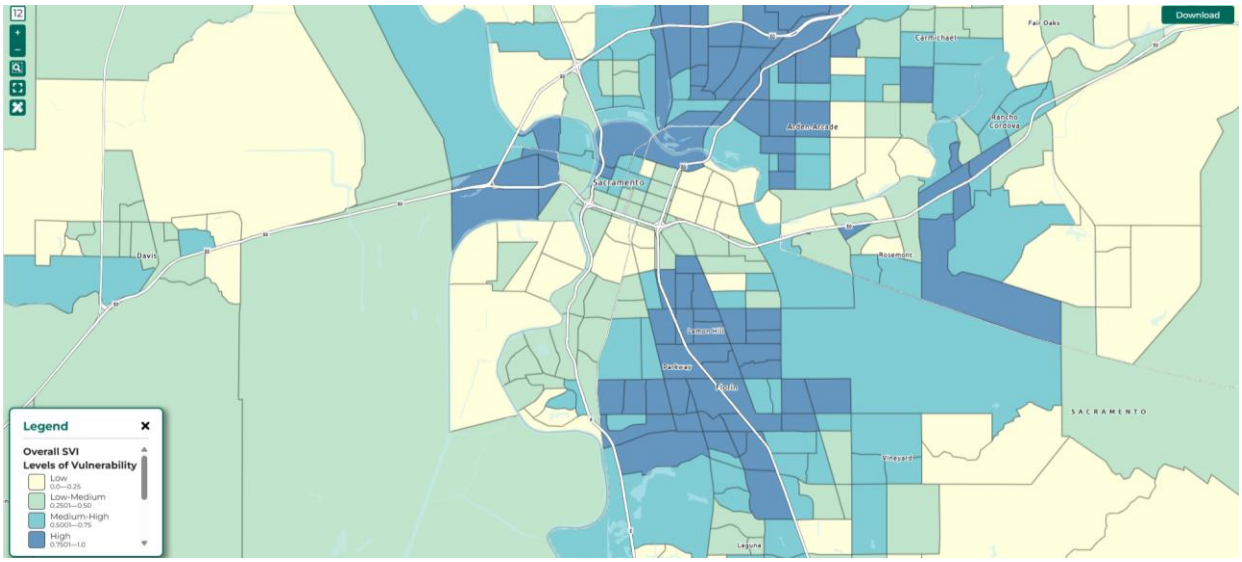
Every community must prepare for and respond to a hazard event, including the range of natural hazards addressed in this Plan, from severe weather extremes to large potentially catastrophic events such as floods or wildfires. A number of factors, including poverty, lack of access to transportation, and crowded housing may weaken a community's ability to prevent human suffering and financial loss in a disaster. These factors are known as social vulnerability.

Social vulnerability refers to the potential negative effects on communities caused by external stresses on human health. Such stresses include natural or human-caused disasters, or disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss. The Agency for Toxic Substances and Disease Registry (ATSDR) Geospatial Research, Analysis & Services Program (GRASP) created databases to help emergency response planners and public health officials identify and map communities that will most likely need support before, during, and after a hazardous event. The CDC used these databases to create the CDC Social Vulnerability Index (CDC SVI), which uses 15 U.S. census variables to help local officials identify communities that may need additional support before, during, or after disasters.

CDC SVI uses U.S. Census data to determine the social vulnerability of every census tract. Census tracts are subdivisions of counties for which the Census collects statistical data. The CDC SVI ranks each tract on 15 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into four related themes. Each tract receives a separate ranking for each of the four themes, as well as an overall ranking. Maps of the four themes for the City are shown in the figures below.

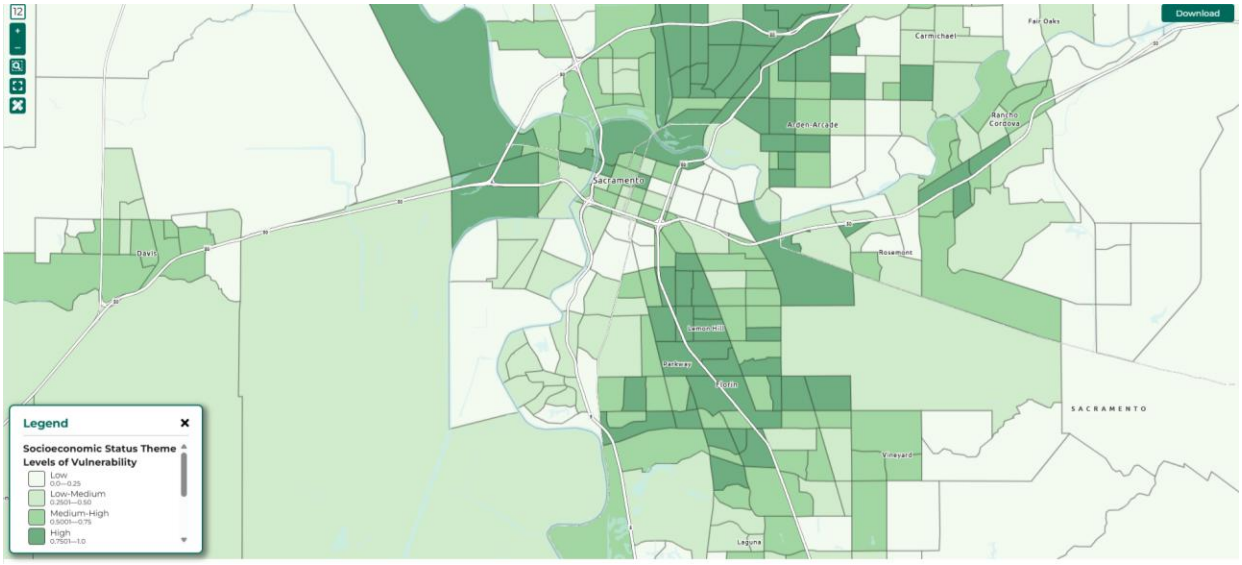
The overall SVI map is shown in Figure F-6; the socioeconomic SVI for the census tracts in and around the City are shown in Figure F-7; the household composition SVI is shown in Figure F-8; the minority and language SVI is shown in Figure F-9; and the housing and transportation SVI is shown in Figure F-10. Overall, the maps indicate that, in general, there are moderate changes in each SVI across the City.

Figure F-6 City of Sacramento – Overall Social Vulnerability



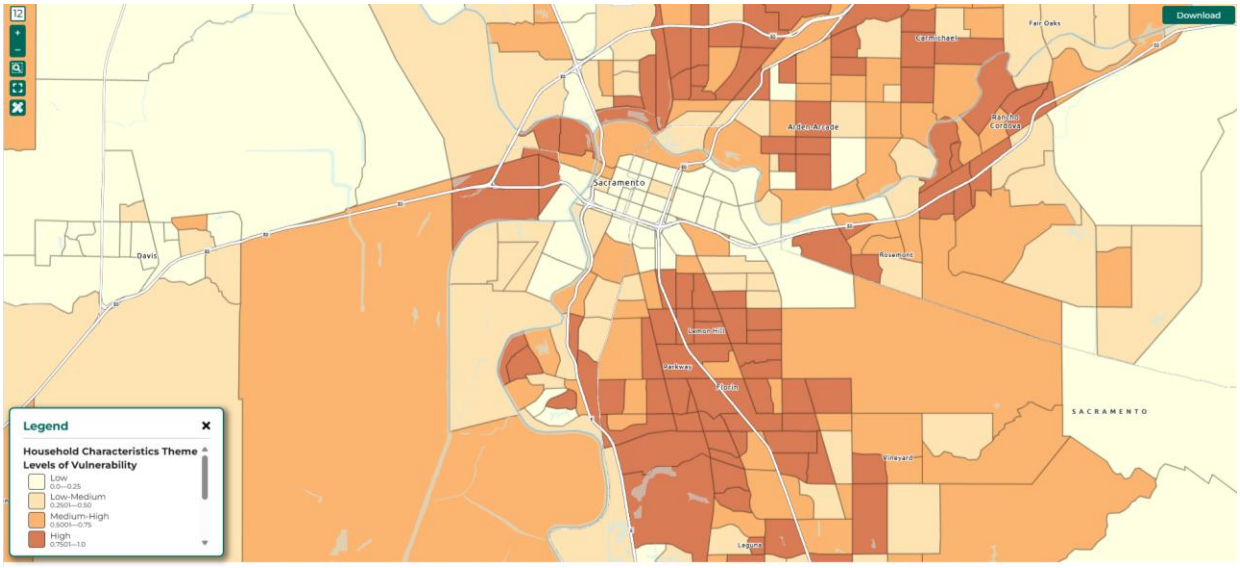
Source: CDC Social Vulnerability Index – map retrieved 7/15/2026
Level of Vulnerability Rating: **Yellow** – Low; **Green** – Low/Medium; **Aqua** – Medium/High; **Blue** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Figure F-7 City of Sacramento – Socioeconomic Status Vulnerability



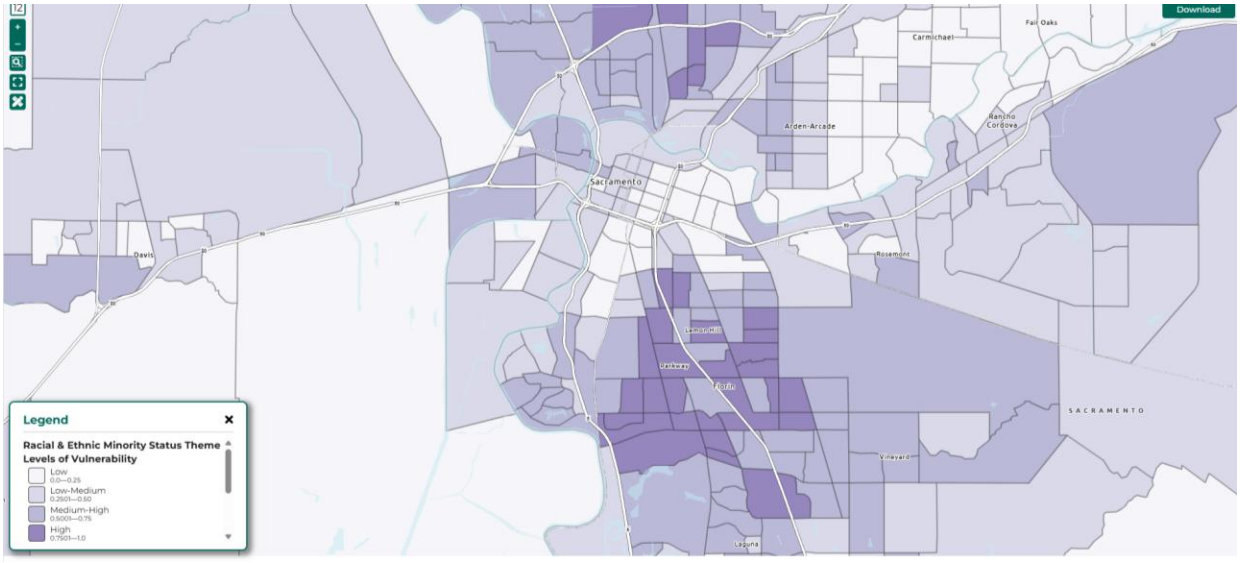
Source: CDC Social Vulnerability Index – map retrieved 7/15/2026
Level of Vulnerability Rating: **Faint Green** – Low; **Light Green** – Low/Medium; **Green** – Medium/High; **Dark Green** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Figure F-8 City of Sacramento – Household Characteristics



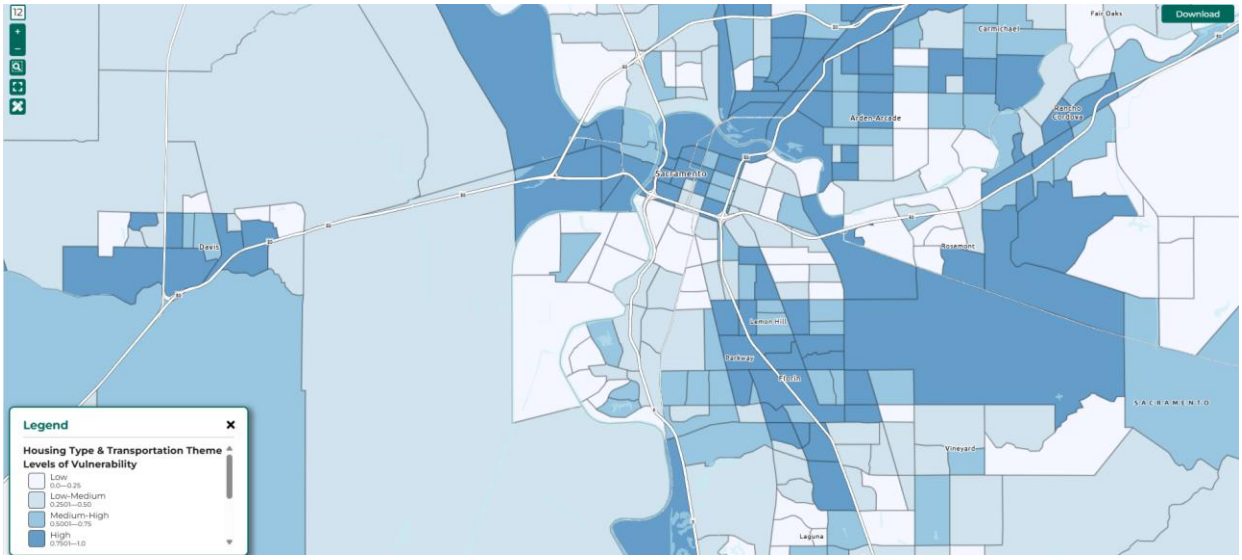
Source: CDC Social Vulnerability Index – map retrieved 7/15/2026
Level of Vulnerability Rating: **Faint Orange** – Low; **Light Orange**– Low/Medium; **Orange** – Medium/High; **Dark Orange** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Figure F-9 City of Sacramento – Racial and Ethnic Minority Status



Source: CDC Social Vulnerability Index – map retrieved 7/15/2026
Level of Vulnerability Rating: **Faint Purple** – Low; **Light Purple** – Low/Medium; **Purple** – Medium/High; **Dark Purple** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Figure F-10 City of Sacramento – Housing Type and Transportation



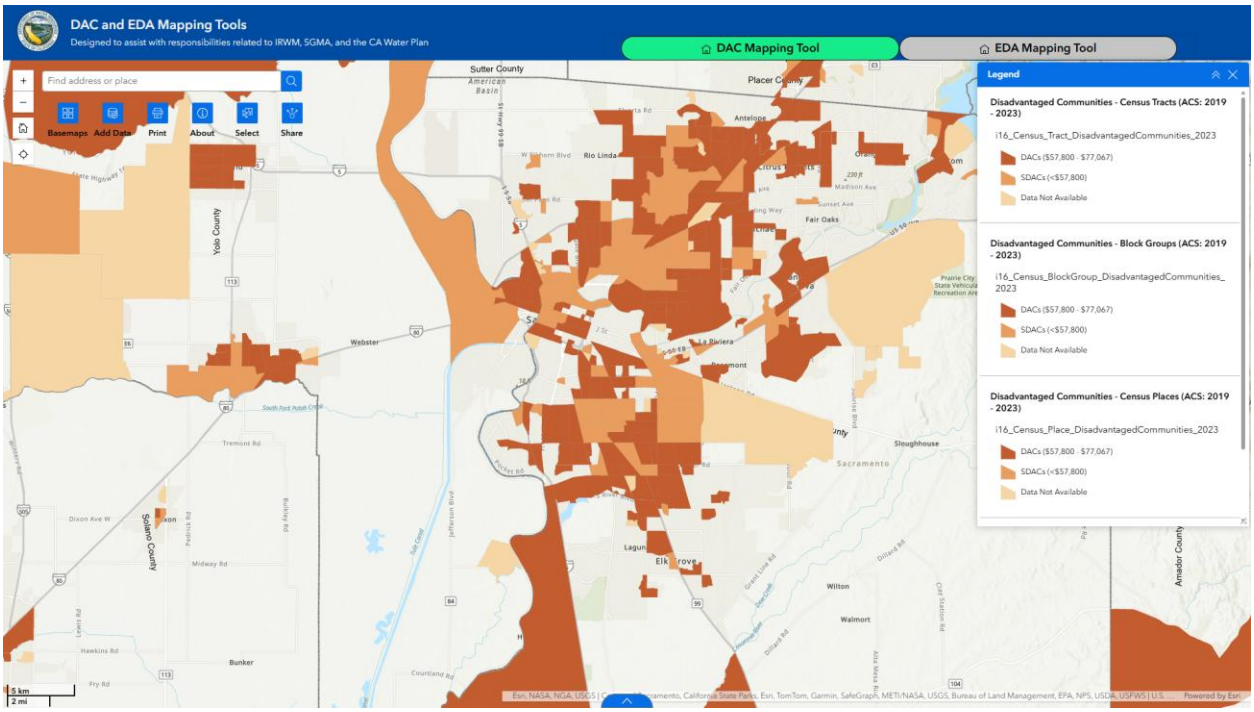
Source: CDC Social Vulnerability Index – map retrieved 7/15/2026
Level of Vulnerability Rating: **Faint Blue** – Low; **Light Blue** – Low/Medium; **Blue** – Medium/High; **Dark Blue** – High; **Grey Hatched** – No Data; **Grey** – Not Available

California DWR Disadvantaged Community Mapping Tool

The State of California's Proposition 1 Disadvantaged Community (DAC) Involvement Program is designated to ensure the involvement of DACs as well as Economically Distressed Areas and Underrepresented Communities, which DWR collectively refers to as DACs. The Cal DWR definition for a Disadvantaged Community is a community with an annual median household income (MHI) that is less

than 80% of the Statewide annual MHI (PRC Section 75005(g)), and those census geographies with an annual MHI less than 60% of the Statewide annual MHI are considered "Severely Disadvantaged Communities". Those areas in the City considered disadvantaged are shown in Figure F-11. As shown, portions of the City falls in these DAC areas.

Figure F-11 City of Sacramento – Disadvantaged Areas



Source: Cal DWR DAC Mapping Tool – map retrieved 7/15/2026

City Planning Team Input

The City Planning Team provided additional local input on the vulnerable and underserved populations in the City. This is included in the sections below.

Certain populations are particularly vulnerable to hazards and may require additional interventions. The following section describes the different groups who are at risk, which include children (aged 14 and below), older adults (aged 65 and over), individuals with disabilities, low-income households, outdoor workers, linguistically isolated households, and communities of color.

Children

Children's vulnerability to hazards arises primarily from their physiological characteristics and lifestyles, as well as their position of dependency on adults. Increased time spent outdoors increases children's exposure to high temperatures. Newborns are also highly susceptible to temperature extremes because their capacity for body temperature regulation is limited. Children also have fewer opportunities than the average adult to make independent choices with regard to housing conditions, transportation, money management, medical treatment, and political representation. This means that children generally have fewer opportunities to take independent actions that might reduce their vulnerability. Disruptions caused by hazards can be

traumatic events which may result in injury, death, or displacement. Exposure to traumatic events can impact children's ability to regulate emotions, undermine cognitive development, and contribute to PTSD, anxiety, depression, and other psychiatric disorders, to which children are highly susceptible[1]. Poverty can exacerbate the effect of these traumatic exposures, as children in poverty may encounter financial barriers to receiving proper medical care and social-emotional support and may be less able to escape or recover from extreme weather events.[2] Furthermore, children's ongoing lung development, airway size, level of physical activity, and body weight increase their susceptibility to respiratory hazards including ozone and wildfire smoke.[3]

Particularly high concentrations of young children occur in neighborhoods such as Valley Hi/ North Laguna, Meadowview, Del Paso Heights, Strawberry Manor, and Gardenland. These are primarily single-family neighborhoods in close proximity to schools such as Grant Union High School, Castori Elementary School, Fairbanks Elementary School, Smythe Academy of Arts and Sciences, Jefferson Elementary School, Valley High School, John Reith Elementary School, Samuel Jackman Middle School, and Prairie Elementary School.

Older Adults

Older adults are a diverse population whose potential vulnerability to hazards is influenced by such factors as underlying health status, economic situation, and level of social isolation. The body's natural aging processes and the effects of mental illness may interact to make the elderly especially vulnerable to the effects of heat. Aging can impair the body's ability to regulate internal temperature. In addition, many older adults on fixed incomes may be especially affected by increases in costs for energy during high heat events.[4]

Older adults with cognitive or physical impairments may have difficulty responding to and recovering from hazard events such as flooding. Elders residing in assistive care facilities or with limited mobility also face additional complications during evacuations and may be adversely affected by interruptions in care for chronic medical conditions. Respiratory function often declines with age. The elderly thus may be more sensitive to the effects of wildfire smoke and other air pollution, airborne pathogens, and allergens than the general population.[5]

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1 https://www.cdph.ca.gov/Programs/OHE/CDPH%20Document%20Library/CHVIs/Children0to4_788_Narrative.pdf

2 U.S. Global Change Research Program, 2016.

3 U.S. Global Change Research Program, 2016.

4 Gamble JL, et.al., 2013.

5 Gamble JL, et.al., 2013.

Race/Ethnicity

Factors such as race, immigration status, income level, educational attainment, and housing and employment opportunities have and continue to intersect to systematically affect access to resources, societal advantages, and environmental exposures in ways that are consistently associated with race.[6] As a result, being a racial or ethnic minority in the United States is correlated with lower income, poorer physical health, living in an area with sparse vegetation and more heat-absorbing surfaces, lower air conditioning ownership, and higher rates of participation in outdoor and farming work[7], all factors which increase vulnerability to hazard events.

Communities of color are disproportionately impacted by poor air quality, such as that which may arise from wildfire, industrial and transportation emissions, and the urban heat island effect, due to both disproportionate levels of exposure to air pollutants and elevated rate of diseases such as asthma and COPD, whose symptoms are exacerbated by climate change.

Sacramento is one of America's most racially diverse cities. Approximately 48.5 percent of the city is white, 18.7 percent Asian, 13.4 percent Black or African American, 1.6 percent Native Hawaiian or Pacific Islander, and 0.7 percent Native American. Approximately 17.1 percent identified as belonging to two or more races or a race not identified in the U.S. Census.

Low-Income Households

Low-income people can be more vulnerable to hazard events as a result of pre-existing health conditions, reduced mobility options, reduced access to health care, and limited ability to purchase the goods and services that could mitigate the negative effects of hazard events.

During high heat events, concerns about utility costs may inhibit a low-income household's ability to stay cool and receive necessary medical care.[8] Lower income households are also more likely to suffer from chronic illnesses such as diabetes, heart disease, and stress.[9] Moreover, studies have shown that lower-income residents tend to have less access to working home air conditioners, transportation, and cool environments during prolonged heat events, leading to substantially higher risk of heat-related deaths.

Unhoused Individuals

Unhoused individuals, who experience elevated levels of exposure to environmental stressors such as high heat, poor air quality from wildfire smoke, and flooding, may lack a secure place to shelter in the event of

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[6] Bolin B and Kurtz LC, 2017.

[7] Gronlund CJ, 2014.

[8] Gronlund CJ, 2014..

[9] CalBrace, "Poverty Rate."

a climate emergency and experience especially high levels of exposure to extreme weather. The needs of unhoused individuals may be overlooked in disaster planning initiatives, and they may be more difficult to contact via emergency alert systems.

Linguistically Isolated Households

Linguistically isolated households are those in which there is no one aged 14 years or older who speaks English fluently.[10] Linguistic isolation may hinder protective behaviors during extreme weather events or disasters by limiting access to or understanding of health and safety warnings and health information[11] such as the City's emergency response materials. Studies have shown that people who live in linguistically isolated households are more likely to make heat-related calls to 911 during extreme heat events. In the aftermath of a disaster event, language barriers can present barriers to proper care and recovery services.[12]

City of Sacramento 2021-2029 Housing Element

The City Planning Team noted that the Sacramento 2021-2029 Housing Element discusses special populations in the City. Unique elements from the City's Housing Element are included here. Discussions for seniors, those with disabilities, developmental disabilities, people experiencing homelessness, large households, female headed households, farmworkers, and extremely low-income housing were included. These are discussed below.

Seniors

In Sacramento, the older adult population is rising rapidly. As of 2018, there were about 62,776 older adults living in the City, up 27 percent since 2010. Older adults also represent an increasing proportion of the total population, from 10 percent in 2010 to 13 percent in 2018.

Older adults, as a group, have lower incomes than the population at large. The median income in 2018 of households headed by older adults was $45,878, about 78 percent of the median income of all households in the City. In contrast to City households as a whole, who had a 48 percent ownership rate in 2018, 65 percent of older adult households were homeowners in 2018.

As Sacramento's population continues to age, there will be increasing demand for age-friendly housing built with universal design principles. A few universal design elements include: zero-step entrances, single-floor living, wide halls and doorways, and electronic controls reachable from a wheelchair. Housing design features that increase accessibility and safety can allow those with mobility disabilities much more independence in their home.

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[10] CalBRACE, "Linguistic Isolation." Nov 8 2019.

[11] CalBRACE, "Linguistic Isolation.".

[12] U.S. Global Change Research Program, 2016.

Disabled Citizens

In 2018, over 57,000 Sacramento residents over age five had one or more disability. This number represents about 11 percent of the City's population over age five. The likelihood of a person experiencing multiple disabilities also increases with age. Of the residents living with one or more disabilities in 2018, about 40 percent were age 65 or older.

Persons living with disabilities, especially with severe living or self-care difficulties, generally live with low to extremely low incomes. Figure 4-7 compares the percentage of groups living at or below the poverty line. Overall 18 percent of the population lives below the poverty level in Sacramento. However, 26 percent of people with disabilities live below the poverty line, and only 13 percent of older adults live in poverty.

People Experiencing Homelessness

On the night of the 2019 Sacramento County Homeless Count, an estimated 5,570 people experienced homelessness throughout the county. However, this figure is a snapshot in time and does not account for different individuals entering, exiting, and returning to a state of homelessness. The results suggest that an estimated 10,000 to 11,000 residents in Sacramento County experienced homelessness in 2019. Nearly 70 percent of people experiencing homelessness were unsheltered.

Over the past several years, Sacramento has made significant investments to increase access to and availability of shelter, services, and permanent housing for people and families experiencing homelessness. For example, the City and County have made significant strides in adding capacity in the homeless crisis system by allocating funding for almost 300 new shelter beds for single adults and 90 new shelter beds for families.

Extremely Low-Income Households

The City of Sacramento's share of the regional housing need was determined through a methodology prepared by the Sacramento Area Council of Governments (SACOG). The City must plan to accommodate a total of 45,580 housing units between June 30, 2021 and August 31, 2029. This is equal to a yearly average of 5,581 housing units. Of the 45,580 total units, the City must plan to accommodate 10,463 units for extremely low- and very low-income households, 6,306 units for low-income households, 8,545 units for moderate-income households, and 20,266 units for above moderate-income households.

Structures

This section inventories the parcels (and associated structures) that make up the built environment of the City. The 2025 Sacramento County Assessor's data and the associated parcel layer was used as the basis of this inventory. The methodology used to derive the number of total and improved parcels (i.e., those with an improved structure value) and land and improved property values (as well as content replacement values) follows the same methodology detailed in Section 4.2.1 of the Base Plan. This data should only be used as a guideline to overall values in the City, as the information has some limitations. The most significant limitation is created by Proposition 13, which limits annual assessment increases to 2% or the Consumer Price Index, whichever is higher. Property values are not reassessed to fair market value until a property transfer occurs or new construction is completed on the property. As a result, overall value

information is most likely low and does not reflect current market value of properties within the City. It is also important to note, in the event of a disaster, it is often the value of the infrastructure or improvements to the land that is of concern or at risk. Generally, the land itself is not a loss. However, depending on the type of hazard and impact of any given hazard event, land values may be adversely affected; thus, land values are included as appropriate. Table F-9 shows the Sacramento County Parcel/Assessor Data land and structure values, and content replacement values (e.g., the values at risk) broken down by property use for the City.

Table F-9 City of Sacramento – Total Value of Parcels and Structures by Property Use

Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Agricultural	14	3	$4,149,488	$876,194	$876,194	$5,901,876
Care / Health	157	131	$126,959,831	$2,016,584,891	$2,016,584,891	$4,160,129,613
Church / Welfare	551	445	$175,978,263	$1,061,547,038	$1,061,547,038	$2,299,072,339
Industrial	2,100	1,868	$996,509,763	$3,311,030,567	$4,966,545,851	$9,274,086,181
Miscellaneous	3,384	9	$6,656,766	$4,160,188	$4,160,188	$14,977,142
Office	1,777	1,397	$1,341,746,831	$4,799,903,594	$4,799,903,594	$10,941,554,019
Public / Utilities	696	0	$602,256	$0	$0	$602,256
Recreational	123	67	$63,398,405	$436,799,847	$436,799,847	$936,998,099
Residential	141,532	139,527	$16,338,177,275	$44,579,434,724	$22,289,717,362	$83,207,329,361
Retail / Commercial	2,915	2,330	$1,662,403,084	$3,021,342,692	$3,021,342,692	$7,705,088,468
Unknown	156	3	$238,249	$312,876	$0	$551,125
Vacant	5,584	182	$1,277,432,568	$63,386,651	$0	$1,340,819,219
Sacramento Total	**158,989**	**145,962**	**$21,994,252,779**	**$59,295,379,262**	**$38,597,477,657**	**$119,887,109,698**

Source: 2025 Sacramento County Parcel/Assessor Data

Critical Facilities and Infrastructure

Beyond just the buildings and structures that comprise the built environment, it is important to identify the critical facilities and infrastructure that are critical for life safety and property protection. This is done for the City of Sacramento below.

For purposes of this plan, a critical facility is defined as:

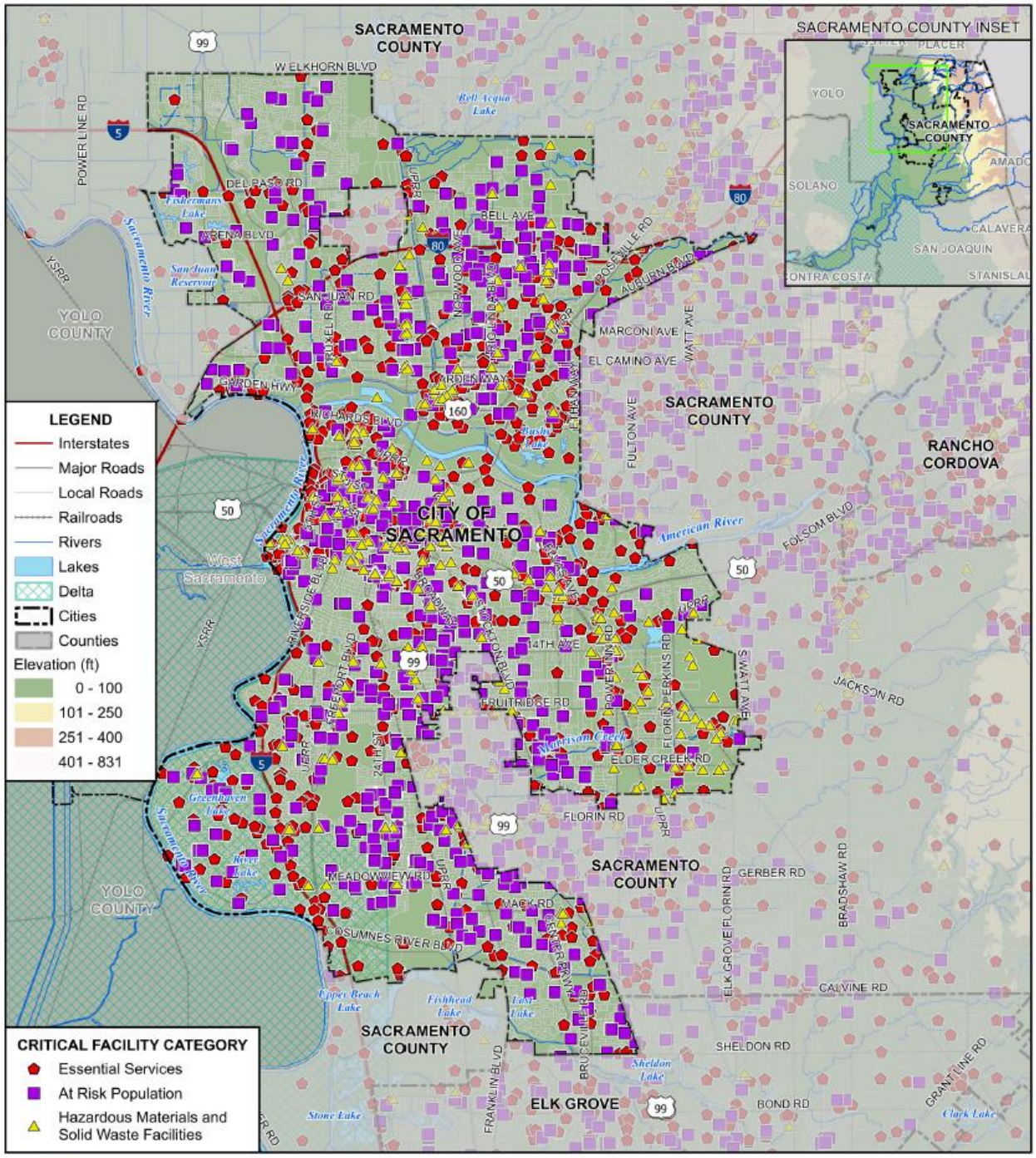
> ***Any facility, including without limitation, a structure, infrastructure, property, equipment or service, that if adversely affected during a hazard event may result in severe consequences to public health and safety or interrupt essential services and operations for the community at any time before,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

- Essential Services Facilities include, without limitation, public safety, emergency response, emergency medical, designated emergency shelters, communications, public utility plant facilities and equipment, and government operations facilities.
- At Risk Population Facilities include, without limitation, pre-schools, public and private primary and secondary schools, before and after school care centers with 12 or more students, daycare centers with 12 or more children, group homes, and assisted living residential or congregate care facilities with 12 or more residents.
- Hazardous Materials and Solid Waste Facilities include, without limitation, any facility that could, if adversely impacted, release of hazardous materials or waste in sufficient amounts during a hazard event that would create harm to people, the environment and property.

An inventory of critical facilities in the City of Sacramento from Sacramento County GIS is shown on Figure F-12. Table F-10 gives summary information about the critical facilities in the City. Table F-11 details the facility categories and breaks them down by facility type.

Figure F-12 City of Sacramento – Critical Facilities



Data Source: Sacramento County, Cal-Atlas; Map Date: 4/17/2026.

Table F-10 City of Sacramento – Critical Facilities by Category

Critical Facility Category	Facility Count
Essential Services Facilities	1,284
At Risk Population Facilities	843
Hazardous Materials and Solid Waste Facilities	249
Sacramento Total	**2,376**

Source: Sacramento County GIS

Table F-11 City of Sacramento – Critical Facilities by Category and Type

Critical Facility Category	Critical Facility Type	Facility Count
Essential Services Facilities	Airport	1
	Bridge	26
	Cellular Tower	2
	Emergency Evacuation Center	91
	EMS Stations	26
	FDIC Insured Banks	82
	Fire Station	22
	Floodgate	43
	Hospital or Urgent Care	16
	Law Enforcement	27
	Microwave Service Towers	501
	Port Facilities	6
	Power Plants	7
	Public Transit Stations	41
	Pump Station	200
	Sewage Treatment Plant	9
	State Government Buildings	33
	Water Well	151
	Total	**1,284**
At Risk Population Facilities	Colleges, Universities, and Professional Schools	11
	Community Center	2
	Day Care Center	140
	Major Sports Venues	3
	Mobile Home Parks	22
	Places of Worship	427
	School	238
	Total	**843**
	EPA ER FRP Facility	2

Critical Facility Category	Critical Facility Type	Facility Count
Hazardous Materials and Solid Waste Facilities	EPA ER TRI Facility	39
	EPA ER TSCA Facility	3
	Leaky Underground Storage Tank	173
	Solid Waste Facility	23
	Tank Farm	4
	Waste Transfer Station	5
	Total	**249**
Sacramento Total		**2,376**

Source: Sacramento County GIS

Community Lifelines

Assessing the vulnerability of the City of Sacramento 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 City'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 City 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

Assessing the vulnerability of the City of Sacramento to natural hazards and disasters also involves inventorying the natural, historic, and cultural assets of the area. This step is important for the following reasons:

- Environmental and natural resources add to a community's identity and quality of life. They also help the local economy through agriculture, tourism, and recreation. They support ecosystem services, such as clean air and water.
- Conserving the environment may help people mitigate risk. It can also protect sensitive habitats, develop parks and trails, and build the economy.
- The community may decide that these types of resources warrant a greater degree of protection due to their unique and irreplaceable nature and contribution to the overall economy.
- If these resources are impacted by a disaster, knowing so ahead of time allows for more prudent care in the immediate aftermath, when the potential for additional impacts are higher.
- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources.
- Natural resources can have beneficial functions that reduce the impacts of natural hazards, such as wetlands and riparian habitat, which help absorb and attenuate floodwaters.

Natural Resources

The City contains a variety of natural resources. Natural resources are unique to each area, often provide an important function, and are difficult to replace. Should a natural disaster occur, these species, resources, and locations are at risk.

Habitats

The City of Sacramento has a variety of natural resources of value to the community:

- Annual Grassland
- Ruderal Habitats
- Riparian Woodland
- Oak Woodlands
- Wetlands
- Rivers, Creeks, and Canals
- Freshwater Marsh
- Vernal Pools and Seasonal Wetlands
- Ornamental Landscaping

Special Status Species

The following special-status species are known to occur within the natural habitats most likely to be present within the Policy Area boundaries. These and other species potentially occurring in the Policy Area can be found in Table F-12.

Table F-12 Special-Status Species Potentially Occurring in the City of Sacramento

Scientific Name	Common Name	Status	Habitat
Plants			
Astragalus tener var. tener	Alkali milk-vetch	1B.2	Vernal pools, playas and Valley grasslands on adobe clay and/or alkaline soils.
Atriplex depressa	Brittlescale	1B.2	Chenopod scrub, meadows, playas, valley grassland, vernal pools. Usually in alkali scalds or alkali clay in meadows or annual grassland.
Atriplex joaquiniana	San Joaquin saltbush	1B.2	Chenopod scrub, alkali meadow, valley and foothill grassland.
Balsamorhiza macrolepis var. macrolepis	Big-scale balsamroot	1B.2	Grassland
Chloropyron molle ssp. hispidum	Hispid bird's beak	1B.1	Grassland/ vernal pool.
Chloropyron palmatum	Palmate-bracted bird's-beak	FE, CE, 1B.1	Chenopod scrub, valley and foothill grassland. usually on alkaline clay, with Distichlis, Frankenia, etc.
Downingia pusilla	Dwarf downingia	2.2	Vernal pool
Gratiola heterosepala	Boggs Lake hedge-hyssop	CE, 1B.2	Vernal pool
Hibiscus lasiocarpus	Woolly rose-mallow	2.2	Freshwater marshes and swamps in the Central Valley.
Juglans hindsii	Northern California black walnut	1B.1	Riparian forest, and woodland. Few extant native stands remain; but is widely naturalized from rootstock plants
Juncus leiospermus var. ahartii	Ahart's dwarf rush	1B.2	Vernal pool
Legenere limosa	Legenere	1B.1	Vernal pool
Lepidium latipes var. heckardii	Heckard's pepper-grass	1B.2	Valley and foothill grassland and vernal pools on alkaline soils
Navarretia myersii ssp. myersii	Pincushion navarretia	1B.1	Vernal pool
Orcuttia tenuis	Slender orcutt grass	FT/CE/1B.1	Vernal pool
Orcuttia viscida	Sacramento orcutt grass	FE, 1B.1	Vernal pool and occasionally seasonal wetlands
Sagittaria sanfordii	Sanford's arrowhead	1B.2	Marshes and swamps (assorted shallow fresh water).
Invertebrates			
Branchinecta lynchi	Vernal pool fairy shrimp	FT	Vernal pools and seasonal wetlands in grassland habitats

Scientific Name	Common Name	Status	Habitat
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	FT (under review for de-listing)	Elderberry shrubs, typically in or near riparian areas.
Lepidurus packardi	Vernal pool tadpole shrimp	FE	Vernal pools and seasonal wetlands in grassland habitats
Fish			
Archoplites interruptus	Sacramento Perch	CSC	Historically found in the sloughs, slow-moving rivers, and lakes of the central valley. Prefer warm water. Aquatic vegetation is essential for young. Tolerant of a wide range of physiochemical water conditions.
Acipenser medirostris	Green Sturgeon	FT, CSC	Long-lived anadromous species that migrates through the Sacramento River to spawning grounds in the Feather and upper Sacramento rivers. Occurs in low numbers in the San Francisco Estuary and Sacramento River. Thought to spawn in deep holes with fast moving water over cobble substrates. Larvae develop within freshwater systems, migrate downstream and remain in the estuaries for between one and four years before migrating to the ocean. Mature adults move into estuaries in the spring, and spawning adults continue into natal rivers in late spring/early summer. Post spawning adults return to the estuary before migrating back to the ocean in late fall. Sub-adult fish are also thought to enter estuaries during the summer and fall months. The Sacramento River adjacent to the Policy Area does not support spawning habitat for adult fish or rearing habitat for juveniles.
Hypomesus transpacificus	Delta smelt	FT, CE	Occurs in Sacramento-San Joaquin Delta most of the year. Spawns in tidally influenced freshwater wetlands and seasonally submerged uplands along the Sacramento River, downstream from its confluence with the American River
Oncorhynchus mykiss	Central Valley steelhead	FT	Occurs in the Pacific Ocean for most of its life. Travels to clean gravel beds in the upper Sacramento and portions of the American River for spawning
Oncorhynchus tshawytscha	Central Valley spring run Chinook salmon	FT, CT	Occurs in the Pacific Ocean for most of its life. Travels to clean gravel beds in the upper Sacramento and portions of the American River for spawning

Scientific Name	Common Name	Status	Habitat
Oncorhynchus tshawytscha	Central Valley Winter run Chinook salmon	FE, CE	Occurs in the Pacific Ocean for most of its life. Travels to clean gravel beds in the upper Sacramento and portions of the American River for spawning.
Pogonichthys macrolepidotus	Sacramento splittail	SC/CSC	Endemic to the lakes and rivers of the central valley, but now confined to the Delta, Suisun Bay & associated marshes. Prefers slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning & foraging for young.
Amphibians			
Spea hammondii	Western spadefoot	CSC	Breeds in seasonal wetlands and large vernal pools, spends most of the year underground in adjacent upland areas.
Reptiles			
Actinemys marmorata	Western pond turtle	CSC	Ponds, streams, rivers, marshes and canals with suitable basking sites and vegetative cover. Nests and aestivates in adjacent uplands.
Phrynosoma coronatum frontale	California horned lizard	CSC	Annual grassland, chaparral, saltbush scrub, alkali flats, oak woodland, riparian woodland, and coniferous forest; open habitats with loose fine (often sandy) soils.
Thamnophis gigas	Giant garter snake	FT, CT	Cattail and tule marshes, low gradient streams, rice fields and canals on the Valley floor
Birds			
Agelaius tricolor	Tricolor blackbird	CSC (nesting)	Nest in dense stands of cattails, thickets of willows, blackberries, or tall herbs adjacent to open grasslands
Athene cunicularia	Burrowing owl	CSC (burrow sites)	Grassland, deserts and other open habitats. Requires ground squirrel or other small mammal burrows for nesting
Buteo swainsoni	Swainson's hawk	CT	Nests in riparian trees; forages in open fields
Circus cyaneus	Northern harrier	CSC (nesting)	Nests in freshwater marsh and agricultural fields; forages in marshes, grasslands and agricultural fields
Elanus leucurus	White-tailed kite	CFP (Nesting)	Nests colonially in large trees adjacent to open grasslands for foraging.
Lanius ludovicianus	Loggerhead shrike	CSC (nesting)	Nests in woodlands adjacent to grassland foraging habitat
Melospiza melodia	Song sparrow "Modesto" population	CSC (year round)	Associated with emergent freshwater marshes, irrigation canals, riparian scrub, riparian woodland.

Scientific Name	Common Name	Status	Habitat
Progne subis	Purple martin	CSC (nesting)	Nest in cavities in trees, under bridges and other human-made structures
Riparia riparia	Bank swallow	CT	Nests in sandy banks or cliffs, usually over water (typically rivers and streams).
Mammals			
Antrozous pallida	Pallid bat	CSC	Roosts in crevices in caves, mines, large rock outcrops, under bridges and in abandoned buildings. Forages on or near the ground in a wide variety of open habitats
Corynorhinus townsendii townsendii	Pacific western big eared bat	CSC	Roosts in the open in large caves, abandoned mines and buildings. Very sensitive to roost disturbance
Lasiurus blossevillii	Western red bat	CSC	Roosts primarily in tree foliage, especially in cottonwood, sycamore, and other riparian trees or orchards. Although potential habitat for these species is present within the Policy Area, none have been recorded. Distribution of special-status bat species is difficult to study and therefore poorly known. Bat colonies that may harbor some or all of these special status species are present in several of the older buildings in downtown Sacramento and in humanmade structures along the American and Sacramento rivers.
Taxidea taxus	American Badger	CSC	Principal habitat requirements include: sufficient prey base; friable soils; and relatively open, uncultivated ground such as grasslands. Prey primarily on burrowing rodents such as gophers, ground squirrels, marmots, and kangaroo rats. Badgers survive only in low numbers in peripheral parts of the Central Valley. The CNDDB includes one recorded occurrence in the Policy Area near Power Inn and Fruitridge roads.

Scientific Name	Common Name	Status	Habitat
Notes: Status = **Federal**: FE = Endangered, legally protected by the Federal Endangered Species Act (ESA) FT = Threatened, legally protected by the Federal Endangered Species Act (ESA) **State**: CE = Endangered, legally protected by the California Endangered Species Act (CESA) CFP = Fully Protected species (legally protected under Fish and Game Code) CSC = California Species of Concern by DFG (no formal protection other than CEQA consideration) CT = Threatened, legally protected by the California Endangered Species Act (CESA) SA = Animal included on the CDFW's Special Animal List. **California Rare Plant Ranks (no formal protection other than CEQA consideration)**: 1B - Plant species that is rare or endangered in California or elsewhere. 2 - Plant species that is rare or endangered in California, but is more common elsewhere. ***Threat code extensions:*** .1 - Seriously endangered in California .2 – Fairly endangered in California .3 – Not very endangered in California			

Source: California Department of Fish and Game 2011, California Natural Diversity Database, 2007.

Wetlands and their Natural and Beneficial Functions

Wetlands are habitats in which soils are intermittently or permanently saturated or inundated. Wetland habitats vary from rivers to seasonal ponding of alkaline flats and include swamps, bogs, marshes, vernal pools, and riparian woodlands. Wetlands are considered to be waters of the United States and are subject to the jurisdiction of the U.S. Army Corps of Engineers as well as the California Department of Fish and Wildlife (CDFW). Where the waters provide habitat for federally endangered species, the U.S. Fish and Wildlife Service may also have authority.

Wetlands are a valuable natural resource for communities providing beneficial impact to water quality, wildlife protection, recreation, and education, and play an important role in hazard mitigation. Wetlands provide drought relief in water-scarce areas where the relationship between water storage and streamflow regulation is vital and reduce flood peaks and slowly release floodwaters to downstream areas. When surface runoff is dampened, the erosive powers of the water are greatly diminished. Furthermore, the reduction in the velocity of inflowing water as it passes through a wetland helps remove sediment being transported by the water.

Wetlands are often found in floodplains and depressional areas of a watershed. Many wetlands receive and store floodwaters, thus slowing and reducing downstream flow. Wetlands perform a variety of ecosystem functions including food web support, habitat for insects and other invertebrates, fish and wildlife habitat, filtering of waterborne and dry-deposited anthropogenic pollutants, carbon storage, water flow regulation (e.g., flood abatement), groundwater recharge, and other human and economic benefits.

Wetlands, and other riparian and sensitive areas, provide habitat for insects and other invertebrates that are critical food sources to a variety of wildlife species, particularly birds. There are species that depend on these areas during all parts of their lifecycle for food, overwintering, and reproductive habitat. Other species use wetlands and riparian areas for one or two specific functions or parts of the lifecycle, most commonly

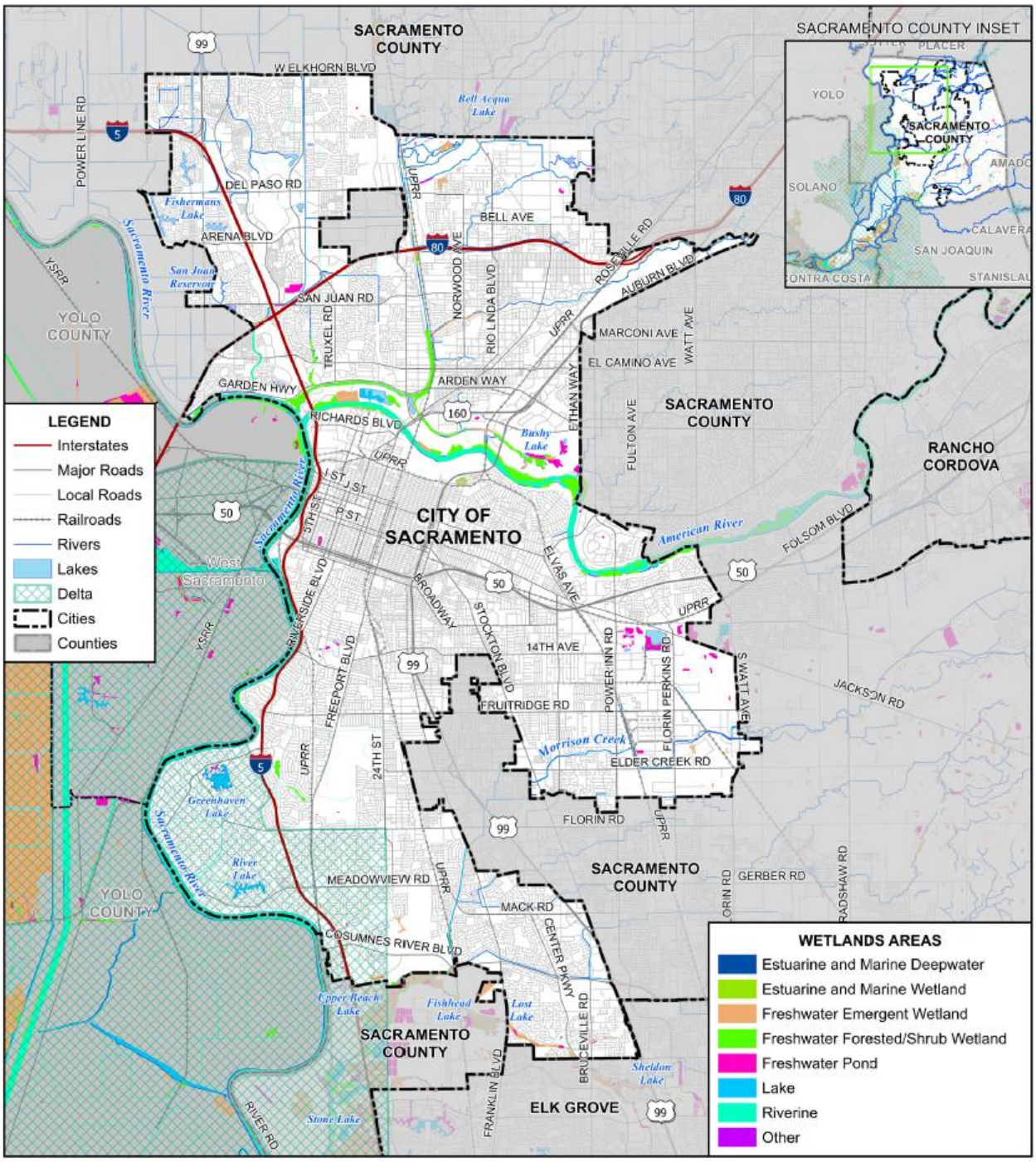
for food resources. In addition, these areas produce substantial plant growth that serves as a food source to herbivores (wild and domesticated) and a secondary food source to carnivores.

Wetlands slow the flow of water through the vegetation and soil, and pollutants are often held in the soil. In addition, because the water is slowed, sediments tend to fall out, thus improving water quality and reducing turbidity downstream.

These natural floodplain functions associated with the natural or relatively undisturbed floodplain that moderates flooding, such as wetland areas, are critical for maintaining water quality, recharging groundwater, reducing erosion, redistributing sand and sediment, and providing fish and wildlife habitat. Preserving and protecting these areas and associated functions are a vital component of sound floodplain management practices for the City.

Wetlands in the City are shown in Figure F-13 and detailed in Table F-13.

Figure F-13 City of Sacramento – Wetlands Areas



FOSTER MORRISON CONSULTING

SACRAMENTO COUNTY

Data Source: U.S. Fish and Wildlife Service National Wetlands Inventory 10/2024 (downloaded 01/2025), Sacramento County, Cal-Atlas; Map Date: 1/29/2026.

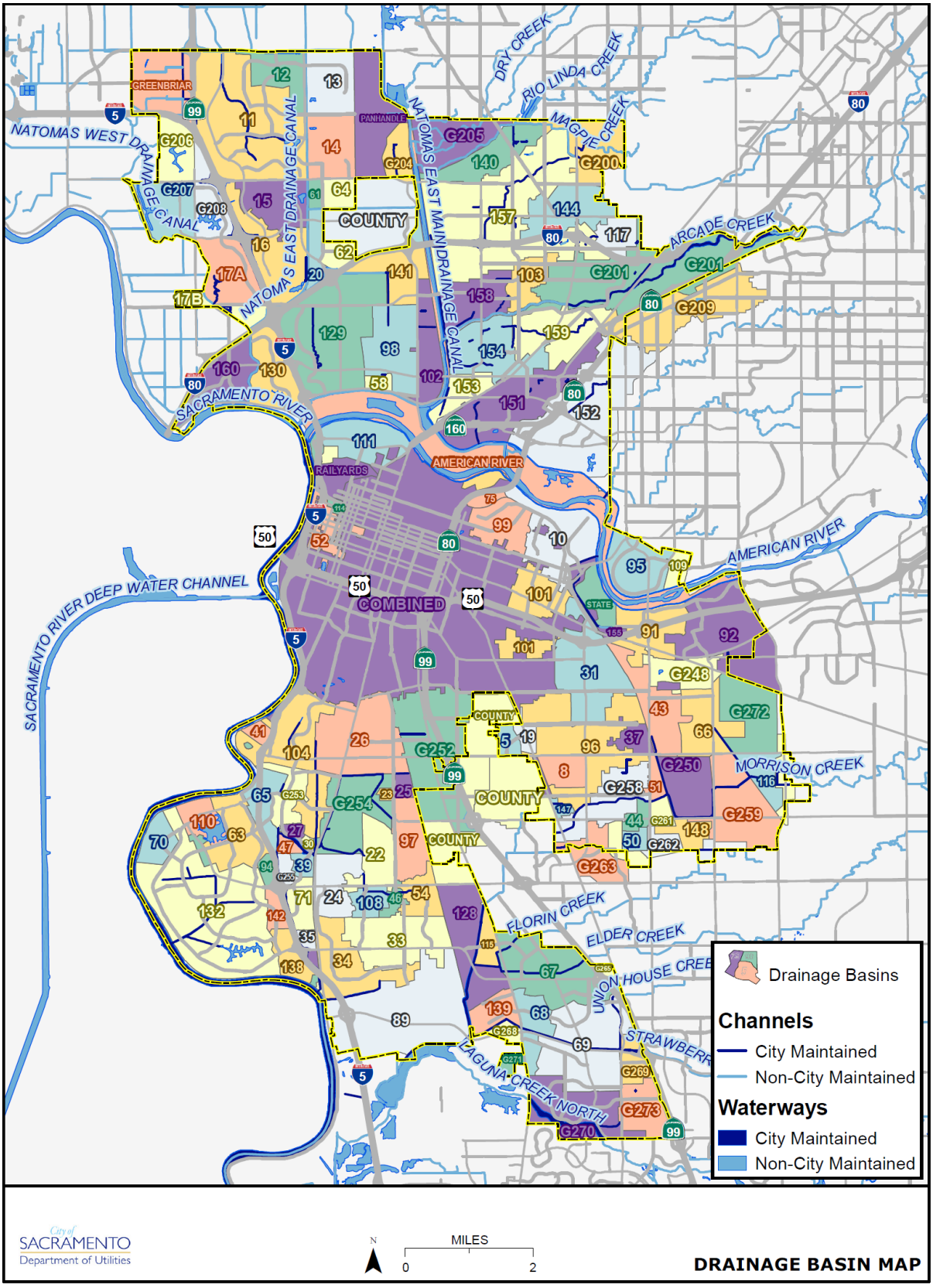
Table F-13 City of Sacramento – Wetland Types and Acreages

Jurisdiction / Wetlands Area Type	Wetlands Count	Wetlands Area (in Acres)	% of Total Acres of the Planning Area*	% of Total Acres of the Jurisdiction**
Freshwater Emergent Wetland	523	268	0.6%	17%
Freshwater Forested/Shrub Wetland	436	525	1.2%	34%
Freshwater Pond	120	186	0.4%	12%
Lake	141	112	0.3%	7%
Riverine	2,223	449	1.0%	29%
Sacramento Total	**3,443**	**1,540**	**3.6%**	**100%**

Source: US Fish and Wildlife Service, 2025.

In addition to these wetlands, the City noted it has many drainage and detention basins that serve as wetlands during times of heavy rains. These are shown on Figure F-14.

Figure F-14 City of Sacramento – Drainage Basins and Waterways



Historic and Cultural Resources

Historic and cultural resources are difficult to replace. Should a natural disaster occur, these properties and locations can be at risk. The City of Sacramento has a stock of historically significant homes, public buildings, and landmarks. The California Department of Parks and Recreation Office of Historic Preservation (OHP) was the primary source of information. OHP administers the National Register of Historic Places, the California Register of Historical Resources, California Historical Landmarks, and the California Points of Historical Interest programs. Each program has different eligibility criteria and procedural requirements. These requirements are detailed in Section 4.2.1 of the Base Plan. Table F-14 shows the bevy of historic buildings in the City from the OHP Database.

Table F-14 City of Sacramento – Historic Resources

Name (Landmark Plaque Number)	National Register	State Landmark	California Register	Point of Interest	Date Listed	City/Area
A. W. Clifton House, Compton Mansion (C17)			X		2/1/2002	Sacramento
Adams And Company Building (607)		X			5/22/1957	Sacramento
Alkali Flat Central Historic District (N1294)	X				7/26/1984	Sacramento
Alkali Flat North Historic District (N1279)	X				4/19/1984	Sacramento
Alkali Flat West Historic District (N1295)	X				7/26/1984	Sacramento
B. F. Hastings Building (606)		X			5/22/1957	Sacramento
Blue Anchor Building (N1171)	X				2/3/1983	Sacramento
Brighton School (N952)	X				4/3/1981	Sacramento
Business & Professional Building, Consumer Affairs Building (C8)			X		2/10/2000	Sacramento
California Almond Growers Exchange Processing Facility (967)		X			10/1/1985	Sacramento
California Governor's Mansion (N60)	X				11/10/1970	Sacramento
California State Capitol (N222)	X				4/3/1973	Sacramento
California's Capitol Complex (872)	X	X			5/6/1974	Sacramento
California's First Passenger Railroad (526)		X			3/7/1955	Sacramento
Calpak Plant No. 11 (N1285)	X				5/17/1984	Sacramento
Camp Union, Sacramentoville (666)		X			11/5/1958	Sacramento
Capitol Extension District (N1288)	X				5/24/1984	Sacramento
Chevra Kaddisha (Home Of Peace Cemetery) (654)		X			7/28/1958	Sacramento
Coloma Road at Sacramento's Fort (745)		X			7/5/1960	Sacramento

Name (Landmark Plaque Number)	National Register	State Landmark	California Register	Point of Interest	Date Listed	City/Area
Coolot Company Building (N671)	X				9/20/1978	Sacramento
Cranston--Geary House (N2010)	X				1/23/1998	Sacramento
Crocker, E. B., Art Gallery (N86)	X	X			5/6/1971	Sacramento
Curran Farmhouse (P666)				X	12/17/1985	Sacramento
D. O. Mills Bank Building (609)		X			5/22/1957	Sacramento
Dunlap's Dining Room (N1764)	X				4/2/1992	Sacramento
Eagle Theater (595)		X			5/22/1957	Sacramento
Eastern Star Hall (P754)	X			X	8/8/1991	Sacramento
Ebner's Hotel (602)		X			5/22/1957	Sacramento
Fire Station No. 6 (N1686)	X				4/25/1991	Sacramento
Firehouse No. 3 (N1743)	X				10/29/1991	Sacramento
First Transcontinental Railroad (780)		X			11/20/1962	Sacramento
First Transcontinental Railroad-Western Base of The Sierra Nevada (780)		X			11/20/1962	Sacramento
Five Mile House-Overland Pony Express Route in California (697)		X			9/11/1959	Sacramento
Galarneaux, Mary Haley, House (N2121)	X				2/12/2001	Sacramento
George Hack House (P800)				X	8/5/1994	Sacramento
Goethe House (N1036)	X				2/19/1982	Sacramento
Governor's Mansion (823)		X			6/7/1968	Sacramento
Greene, John T., House (N1092)	X				4/15/1982	Sacramento
Headquarters of The Big Four (600)		X			5/22/1957	Sacramento
Heilbron House (N462)	X				12/12/1976	Sacramento
Hotel Regis (N1147)	X				10/29/1982	Sacramento
Hotel Senator (N782)	X				5/30/1979	Sacramento
Howe, Edward P., Jr., House (N1037)	X				2/19/1982	Sacramento
Hubbard-Upson House (N543)	X				12/2/1977	Sacramento
I Street Bridge (N1094)	X				4/22/1982	Sacramento
J Street Wreck (N1692)	X				5/16/1991	Sacramento
Joe Mound (N121)	X				10/14/1971	Sacramento
Johnson, J. Neely, House (N438)	X				9/13/1976	Sacramento
Joseph Hampton Kerr Homesite (P126)				X	6/6/1969	Sacramento
Judah, Theodore, School (N1985)	X				7/25/1997	Sacramento
Kuchler Row (N1121)	X				6/25/1982	Sacramento

Name (Landmark Plaque Number)	National Register	State Landmark	California Register	Point of Interest	Date Listed	City/Area
Lady Adams Building (603)		X			5/22/1957	Sacramento
Lais, Charles, House (N1350)	X				2/28/1985	Sacramento
Libby Mcneil And Libby Fruit and Vegetable Cannery (N1050)	X				3/2/1982	Sacramento
McClatchy, C.K., Senior High School (N2148)	X				11/2/2001	Sacramento
Merchants National Bank of Sacramento (N1936)	X				2/16/1996	Sacramento
Merrium Apartments (N1654)	X				9/13/1990	Sacramento
Mesick House (N1002)	X				1/21/1982	Sacramento
Michigan (468)		X			8/30/1950	Sacramento
Motor Vehicle Building, Department of Food & Agriculture (C4)			X		11/5/1999	Sacramento
New Helvetia Cemetery (592)		X			5/22/1957	Sacramento
Nisipowinan Village Site (900)	X	X			6/16/1976	Sacramento
Old Elk Grove Hotel Site (P532)				X	6/29/1979	Sacramento
Old Folsom Powerhouse-Sacramento Station A (633)		X			3/3/1958	Sacramento
Old Sacramento (812)	X	X			12/30/1965	Sacramento
Old Tavern (N1242)	X				9/15/1983	Sacramento
Original Sacramento Bee Building (611)		X			5/22/1957	Sacramento
Overton Building (610)		X			5/22/1957	Sacramento
Pioneer Telegraph Station (366)		X			10/9/1939	Sacramento
Pony Express Terminal (N66000220)	X				10/15/1966	Sacramento
Public Works Office Building, Caltrans Building (C5)			X		11/5/1999	Sacramento
River Mansion (P149)				X	11/3/1969	Sacramento
Ruhstaller Building (N1003)	X				1/21/1982	Sacramento
Sacramento Bank Building (N1004)	X				1/21/1982	Sacramento
Sacramento City Cemetery (566)		X			2/25/1957	Sacramento
Sacramento City Library (N1784)	X				7/30/1992	Sacramento
Sacramento Hall of Justice (N2067)	X				9/24/1999	Sacramento
Sacramento Junior College Annex and Extensions (N1874)	X				8/22/1994	Sacramento
Sacramento Masonic Temple (N2131)	X				5/17/2001	Sacramento

Name (Landmark Plaque Number)	National Register	State Landmark	California Register	Point of Interest	Date Listed	City/Area
Sacramento Memorial Auditorium (N566)	X				3/29/1978	Sacramento
Site of China Slough (594)		X			5/22/1957	Sacramento
Site of Congregational Church (613)		X			5/22/1957	Sacramento
Site of First and Second State Capitols at Sacramento (869)		X			1/11/1974	Sacramento
Site of Home of Newton Booth (596)		X			5/22/1957	Sacramento
Site of Orleans Hotel (608)		X			5/22/1957	Sacramento
Site of Sacramento Union (605)		X			5/22/1957	Sacramento
Site of Sam Brannan House (604)		X			5/22/1957	Sacramento
Site of Stage and Railroad (First) (598)		X			5/22/1957	Sacramento
Site of The First African American Episcopal Church Established on The Pacific Coast (1013)		X			5/5/1994	Sacramento
Site of The First Jewish Synagogue Owned by A Congregation on The Pacific Coast (654)		X			7/28/1958	Sacramento
Site of Pioneer Mutual Volunteer Firehouse (612)		X			5/22/1957	Sacramento
Southern Pacific Railroad Company's Sacramento Depot (N353)	X				4/21/1975	Sacramento
St. Elizabeth's Church (P611)				X	3/2/1983	Sacramento
Stanford-Lathrop House (614)		X			5/22/1957	Sacramento
Sacramento's Fort (525)		X			11/1/1954	Sacramento
Sacramento's Landing (591)		X			5/22/1957	Sacramento
Sacramentoville (593)		X			5/22/1957	Sacramento
Temporary Detention Camps for Japanese Americans-Sacramento Assembly Center (934)		X			5/13/1980	Sacramento
Tower Bridge (N1116)	X				6/24/1982	Sacramento
Travelers' Hotel (N680)	X				10/19/1978	Sacramento
U.S. Post Office, Courthouse and Federal Building (N855)	X				1/25/1980	Sacramento
Van Voorhies House (N535)	X				11/17/1977	Sacramento
Wagner, Anton, Duplex (N923)	X				11/10/1980	Sacramento
Western Hotel (601)		X			5/22/1957	Sacramento
Westminster Presbyterian Church (N2203)	X				5/22/2003	Sacramento

Name (Landmark Plaque Number)	National Register	State Landmark	California Register	Point of Interest	Date Listed	City/Area
Wetzlar, Julius, House (N1183)	X				3/31/1983	Sacramento
What Cheer House (597)		X			5/22/1957	Sacramento
Whitter Ranch (Originally Saylor Ranch), Witter Ranch (P744)				X	5/8/1991	Sacramento
Winters House (N2046)	X				1/25/1999	Sacramento
Witter, Edwin, Ranch (N1675)	X				3/14/1991	Sacramento
Woodlake Site (N88)	X				5/6/1971	Sacramento

Source: California Department of Parks and Recreation Office of Historic Preservation. Retrieved 12/15/2025.

It should be noted that these lists may not be complete, as they may not include those currently in the nomination process and not yet listed. Additionally, as defined by the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), any property over 50 years of age is considered a historic resource and is potentially eligible for the National Register. Thus, in the event that the property is to be altered, or has been altered, as the result of a major federal action, the property must be evaluated under the guidelines set forth by CEQA and NEPA. Structural mitigation projects are considered alterations for the purpose of this regulation.

Economic Assets and Community Activities of Value

Assessing the vulnerability of the City of Sacramento to natural hazards and disasters also involves inventorying the economic assets and community activities of value in the City.

Economic Assets

After a disaster, economic resiliency is one of the major drivers of a speedy recovery. Each community has specific economic drivers. These include:

- Primary Economic Sectors
- Major employers
- Commercial Centers

CAN THE CITY PROVIDE THIS INFO? RISK ASSESSMENT WORKSHEET HAD NOTHING HERE.

Note: This inventory of economic assets is only included in this overall asset inventory for the City. To limit redundancy, it is not discussed further in the hazard profiles and vulnerability assessments in Section F.4.3 below. However, depending on the type, location, magnitude and extent of future hazard events and disasters, these City's economic assets may be vulnerable.

Community Activities of Value

Inventorying economic assets in the City 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. Some areas rely on

seasonal industries to sustain them throughout the year. Many of these activities also provide economic benefits to the City. A hazard event that cancels or shortens these can affect a community's livelihood and can make disaster recovery more difficult or prolonged. This includes activities such as:

- Festivals and Fairs
- Sporting Events
- Tourism
- Local Pools

The City noted the following community activities of value:

CAN THE CITY PROVIDE THIS INFO? RISK ASSESSMENT WORKSHEET HAD NOTHING HERE.

Note: This inventory of community activities of value only occurs in this overall asset inventory for the City. To limit redundancy, it is not discussed further in the hazard profiles and vulnerability assessments in Section F.4.3 below. However, depending on the type, location, magnitude and extent of future hazard events and disasters, the City's community activities of value may be vulnerable.

Growth and Development Trends

As part of the planning process, the City 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.

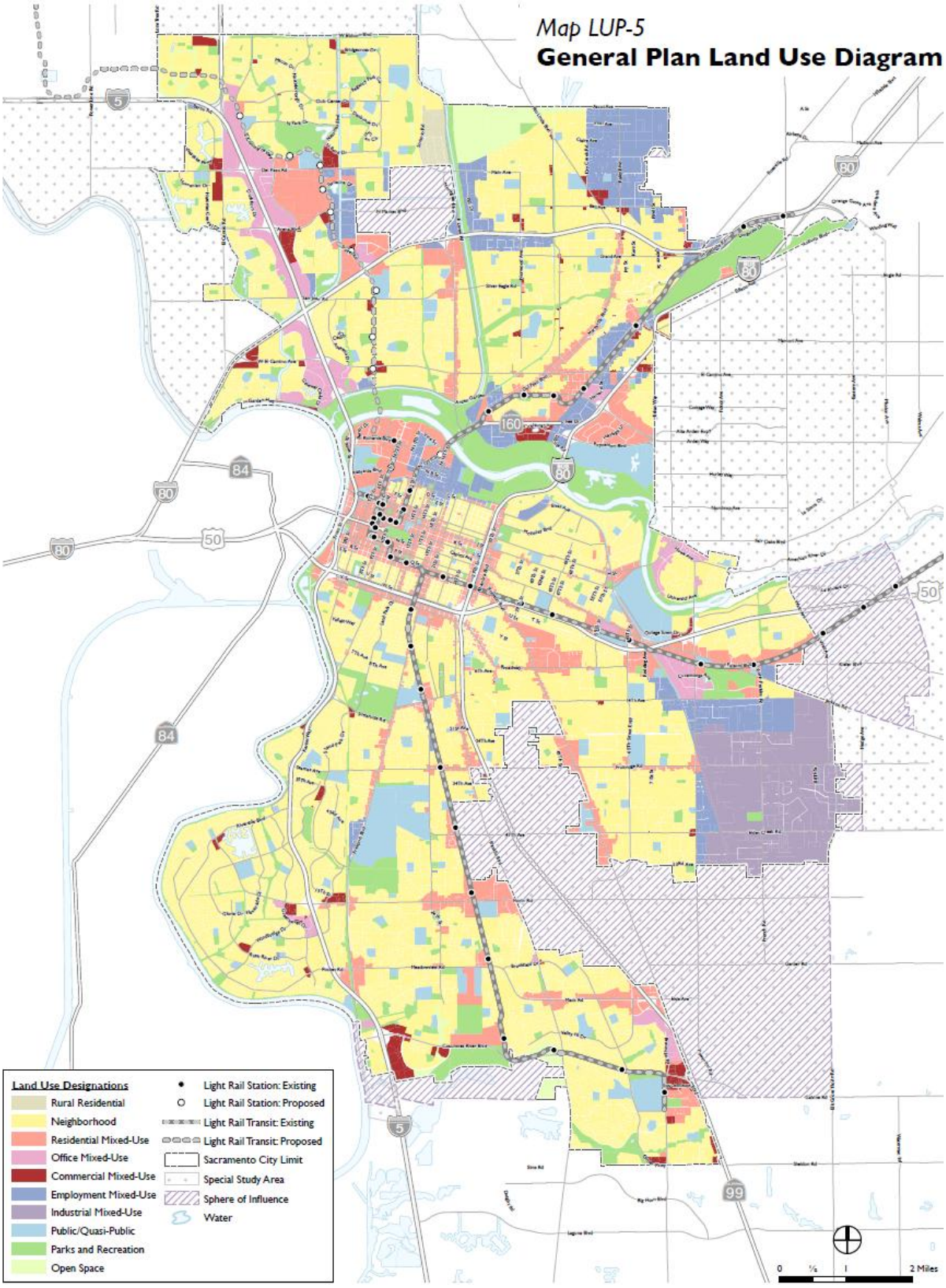
Land Use

State planning law requires that a land use element of a general plan include a statement of the standard population density, building intensity, and allowed uses for the various land use designations in the plan (Government Code Section 65302(a)). The City's land use designations are generally described below and mapped on the Land Use Diagram (Figure F-15). The City of Sacramento Municipal Code provides detailed land use and development standards for development.

The Municipal Code works hand in hand with the City's General Plan Land Use Element. The purpose of the Land Use Element is to provide goals, policies, actions diagrams and standards to guide future land use decisions in the City of Sacramento. While all elements of the General Plan have equal weight under California law, in some respects this Element is the most far-reaching. It informs all other elements of the General Plan, shaping the future transportation network and the location of future housing sites, and influencing public facility requirements and park and recreation needs. It defines the City's future open space system and responds to natural resource conservation issues and safety hazards. It establishes the basic pattern of development in the City for the next 20-25 years, including land uses and densities, and presents the policies and actions to ensure that future development will enhance the quality of life for all City of Sacramento residents.

Future land use for the City of Sacramento from the 2040 City of Sacramento General Plan Land Use Element (adopted in February 2024 and last updated in November 2025) is shown on Figure F-15.

Figure F-15 City of Sacramento – Land Use Diagram



Source: City of Sacramento 2040 General Plan Land Use Element. Retrieved 1/22/2026.

Population Trends and Projections

The City of Sacramento General Plan Draft Environmental Impact Report contains growth projections for the City. This can be seen for 2040 population estimates for the City in Figure F-16.

Figure F-16 City of Sacramento – Growth Projections for Sacramento (2040) General Plan

	Baseline Adjusted (2018)[1]	Projected 2040 Citywide Buildout[2]	Growth Attributed to 2040 General Plan
Housing Units	197,753	266,765	69,012
Jobs	315,214	391,826	76,612
Population	472,693[3]	638,433[4]	165,740

Notes and sources:

1 U.S. Census Bureau 2018, as modified by Dyett & Bhatia.
2 See Table 2-5.
3 SACOG 2019, Table 14-1, Population, Housing Units, and Employees by Jurisdiction (2016).
4 SACOG 2021.

Development since 2021 Plan

Development has occurred in the City since the last plan. Some of this has occurred in hazard prone areas. The City Planning Department tracked total building permits issued since 2021 for the City. These are tracked by total development, property use type, and hazard risk area. These are shown in Table F-15 and Table F-16. Table F-15 show the development by property use. Residential properties are shown in this table by the number of residential properties built. Commercial, industrial, and other properties are shown in this table not by the number of properties built, but by the number of square feet of this type of property. The total line on this table totals the square footage of these three categories. Table F-16 shows how many of these properties were built in hazard zones.

Table F-15 City of Sacramento – Total Development Since 2021

Property Use	2021	2022	2023	2024	2025
Residential*	3,730	2,880	2,735	2,387	2,737
Commercial**	728,972	707,565	476,911	2,234,635	1,348,999
Industrial**	595,408	0	107,588	179,052	828
Other**	133,977	428,235	34,422	2,420,899	690,287
Total**	**1,458,357**	**1,135,800**	**218,921**	**4,834,586**	**2,040,104**

Source: City of Sacramento Planning Department
* In number of units
**In square footage

Table F-16 City of Sacramento – Development in Hazard Areas since 2021

Development Type	1% Annual Chance Flood	X-Protected by Levee Flood Zone*	Moderate or Higher Fire Hazard Severity Zones	Other
Property Use (Units)				
Residential Permits	1,120	765	0	641

Development Type	1% Annual Chance Flood	X-Protected by Levee Flood Zone*	Moderate or Higher Fire Hazard Severity Zones	Other
Commercial Permits	2,184	4,918	0	895
Residential Total	**3,304**	**5,683**	**0**	**1,536**
Property Use (Square Footage)				
Commercial	3,056,349.60	1,923,951.00	93,922.00	516,782.00
Industrial	388,452.00	308,358.00	0.00	186,066.00
Other	2,223,808.00	616,157.00	0.00	689,896.00
Total	**5,668,609.60**	**2,848,466.00**	**93,922.00**	**1,392,744.00**

Source: City of Sacramento Planning Department

*Any property in both 1% Annual Chance of Flood AND X-Protected by Levee Flood Zone were counted in the 1% Annual Chance Flood (total 6 units)

Recent development since the 2021 LHMP has been primarily occurring outside of identified hazard areas. All development was completed in accordance with current and applicable development codes, including floodplain ordinances, and other applicable standards and should be adequately protected. Thus, with the exception of more people living in the area potentially exposed to natural hazards, this growth should not cause a significant change in vulnerability of the City to identified priority hazards.

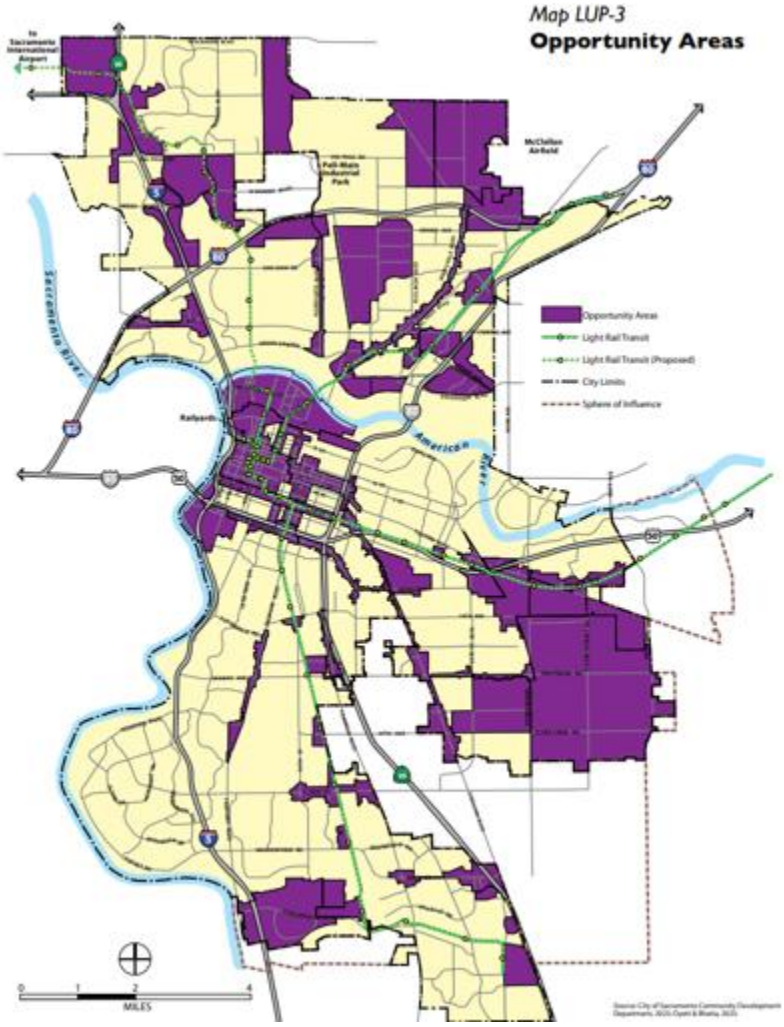
Future Development Areas

It is important to review future development plans for the City. 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.

The Sacramento Council of Governments (SACOG) and Bay Area Economics (BAE) modeled household and employment projections for the City of Sacramento and other areas of the region in 2018 for a Metropolitan Transportation Plan/Sustainable Communities Strategy update. Bay Area Economics (BAE) refined these projections further to be used for the City's 2040 General Plan Update, which was adopted in 2024. According to the City's 2040 General Plan, it is projected that Sacramento will add 77,000 jobs and 69,000 new residential units by 2040, focusing infill development in established centers, corridors, and neighborhoods.

Figure F-17 is the 2040 General Plan Land Use Map that also details Opportunity Areas identified by the City. These Opportunity Areas are those areas where future development is anticipated to occur over the next 25 years in different parts of the City.

Figure F-17 City of Sacramento – Future Opportunity Areas



Source: City of Sacramento 2040 General Plan

In addition to the future development areas provided by the City, the Airport South Industrial property was officially annexed into the City in July 2026. Full development of the property is anticipated to take at least ten years. The ASI annexation, including plans for development, was discussed above in section F.3.2, and is not discussed further in the future development sections of the City of Sacramento's Annex.

GIS Analysis

The City of Sacramento provided 61 future development areas which were used as the basis for the inventory of future development for the City. These were mapped in GIS. Figure F-18 show the locations of the future development areas. Table F-17 shows the details of the future development areas organized by future development type (property use) and status, and by map identification area, parcel counts, and acreage.

Figure F-18 City of Sacramento – Future Development by Opportunity Areas

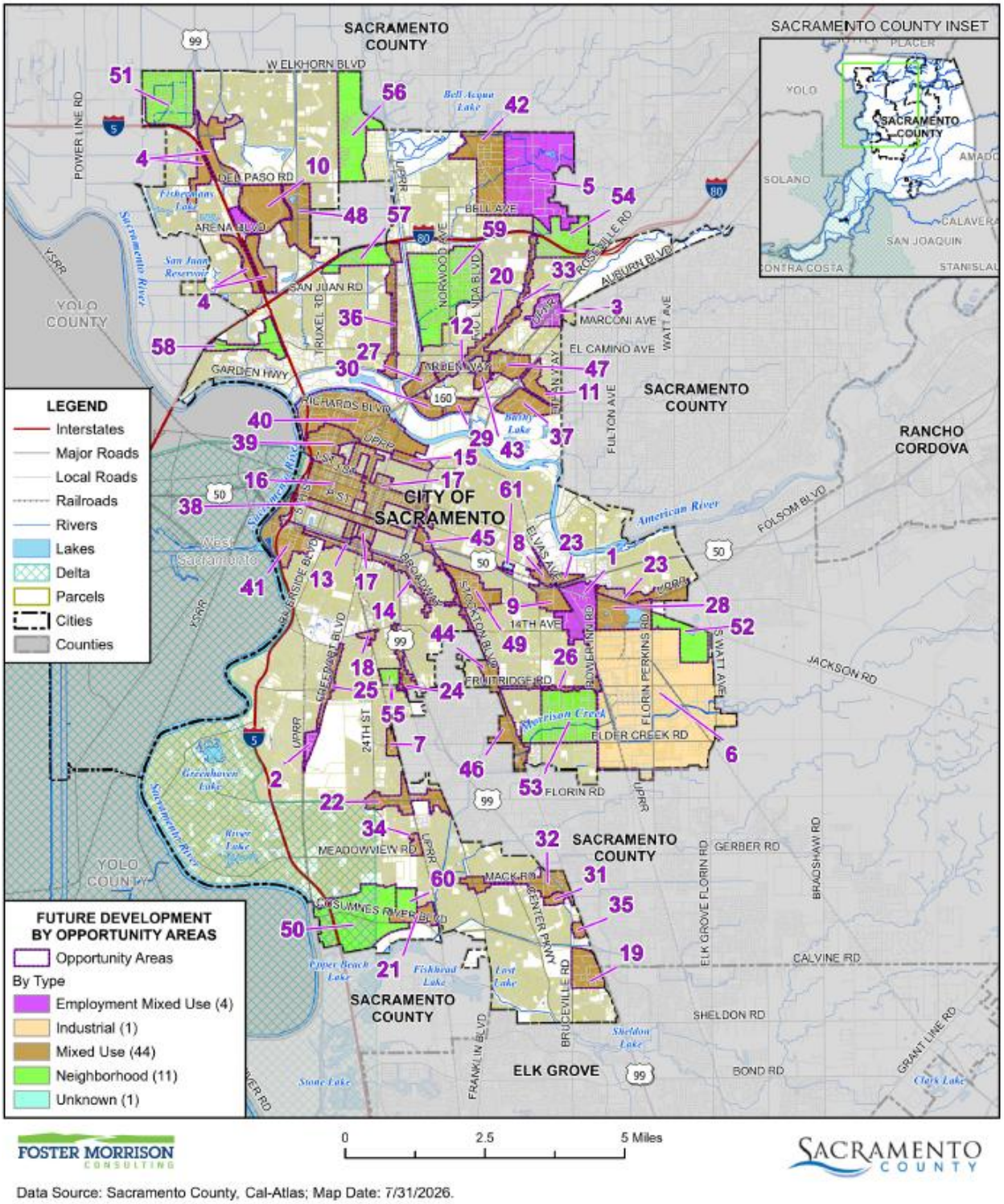


Figure F-19 City of Sacramento – Future Development by Opportunity Area Legend



Table F-17 City of Sacramento – Future Development Areas by Development Type and Status with Parcels and Acres

Future Development Type / Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Employment Mixed Use							
1	CSUS Village	212	125	87	321	222	100
2	Freeport South	50	38	12	48	33	14
3	Marconi	356	259	97	148	80	68
4	North Natomas EC	3	2	1	76	68	8
5	Raley	593	410	183	1,077	538	539
Employment Mixed Use Total		**1,214**	**834**	**380**	**1,669**	**941**	**728**
Industrial							
6	Power Inn/Army Depot	1,088	742	346	2,790	2,046	744

Future Development Type / Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Industrial Total		**1,088**	**742**	**346**	**2,790**	**2,046**	**744**
Mixed Use							
4	North Natomas EC	461	377	84	596	98	498
7	47th	69	51	18	48	30	18
8	65th North	74	49	25	61	39	22
9	65th South	107	86	21	110	73	38
10	Arco Arena	257	236	21	345	225	119
11	Arden Fair	85	67	18	125	119	7
12	Arden/Del Paso	139	92	47	37	22	15
13	Broadway	310	263	47	80	65	15
14	Broadway East	467	365	102	86	60	26
15	C Street	132	87	45	91	15	77
16	CBD	1,218	755	463	397	146	251
17	Central City Corridors	2,206	1,876	330	349	281	68
18	City College	112	55	57	24	13	11
19	Cosumnes River	463	357	106	185	113	72
20	Del Paso	439	368	71	114	89	25
21	Delta Shores Transit Center	2	0	2	41	0	41
22	Florin	178	98	80	207	121	87
23	Folsom East	106	68	38	241	151	90
24	Franklin	207	159	48	81	65	16
25	Freeport North	159	147	12	79	65	14
26	Fruitridge	173	151	22	54	44	10
27	Globe LRT	213	144	69	120	68	52
28	Granite Park	54	18	36	299	52	247
29	Johnston East	55	33	22	93	71	22
30	Johnston West	33	25	8	79	48	31
31	Kaiser Med Center	4	4	0	42	42	0
32	Mack	135	110	25	195	145	50
33	Marysville	210	122	88	69	33	36
34	Meadowview	93	81	12	39	7	32
35	Methodist Med Center	15	7	8	37	23	13

Future Development Type / Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
36	Northgate	189	137	52	144	115	29
37	Point West	61	57	4	184	182	2
38	R Street Central City Housing	669	521	148	134	98	36
39	Railyards	96	30	66	124	16	109
40	Richards Boulevard	495	219	276	845	335	510
41	Riverfront	661	505	156	306	59	248
42	Robla	820	687	133	437	235	202
43	Royal Oaks	88	55	33	54	29	25
44	Stockton	72	58	14	88	68	20
45	Stockton North	234	181	53	102	67	35
46	Stockton South	102	67	35	181	137	44
47	Swanston Station	231	149	82	144	109	35
48	Truxel	325	267	58	316	196	120
49	UCD Med Center	275	127	148	239	36	203
Mixed Use Total		**12,494**	**9,311**	**3,183**	**7,625**	**4,004**	**3,621**
Neighborhood							
50	Delta Shores	926	203	723	780	113	667
51	Greenbriar	2,047	1,356	691	432	178	254
52	Jackson	25	9	16	573	241	332
53	Lemon Hill	2,196	2,031	165	593	474	119
54	McClellan Heights/Parker Homes	1,053	953	100	353	288	65
55	North City Farms	121	98	23	55	46	9
56	Panhandle	465	3	462	597	135	461
57	Parkerbridge	555	524	31	251	66	185
58	Southwest Natomas	202	174	28	160	105	55
59	Strawberry Manor	2,878	2,508	370	885	501	383
60	102-Acre Site	1	0	1	102	0	102
Neighborhood Total		**10,469**	**7,859**	**2,610**	**4,780**	**2,148**	**2,632**

Future Development Type / Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Unknown							
61	SMUD	12	0	12	20	0	20
Unknown Total		**12**	**0**	**12**	**20**	**0**	**20**
Grand Total		**25,277**	**18,746**	**6,531**	**16,884**	**9,139**	**7,745**

Source: City of Sacramento

F.4.2. Hazard Identification

The City of Sacramento identified the hazards that affect the City and summarized their location, extent, likelihood of future occurrence, potential magnitude, and significance specific to the City (see Table F-18). Those hazards identified as a high or medium significance in Table F-18 are considered City of Sacramento priority hazards for mitigation planning. Those hazards that occur infrequently or have little or no impact in the City were determined to be of low significance and not considered a priority hazard. Significance was determined based on the hazard data and 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 City to focus resources where they are most needed.

Table F-18 City of Sacramento—Hazard Identification Assessment

Hazard	Geographic Extent	Likelihood of Future Occurrences	Magnitude/ Severity	Significance	Climate Change Influence
Aquatic Nuisance Species (plant/animal)	Limited	Occasional	Limited	Medium	Low
Climate Change	Extensive	Highly Likely	Critical	High	–
Dam Failure	Significant	Unlikely	Catastrophic	High	Medium
Drought & Water Shortage (w/tree mortality)	Extensive	Likely	Limited	Medium	High
Earthquake (w/subhazards)	Extensive	Occasional	Catastrophic	Medium	Low
Flood: 1%/0.5%/0.2% annual chance	Significant	Occasional	Critical	High	Medium
Flood: Localized Stormwater	Extensive	Highly Likely	Limited	Medium	Medium
Landslides, Mudslides, and Debris Flow	Limited	Unlikely	Negligible	Low	Medium
Levee Failure	Extensive	Unlikely	Critical	High	Medium
Sea Level Rise	Limited	Likely	Negligible	Medium	High
Severe Weather: Extreme Cold and Freeze	Extensive	Unlikely	Critical	High	Medium
Severe Weather: Extreme Heat	Extensive	Highly Likely	Limited	Medium	High
Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)	Extensive	Highly Likely	Critical	High	Medium
Severe Weather: High Winds and Tornadoes	Extensive	Highly Likely	Limited	Medium	Low
Subsidence	Significant	Likely	Limited	Low	Medium
Wildfire (with smoke and air quality)	Extensive	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

F.4.3. Hazard Profiles and Vulnerability to Specific Hazards

This section includes the hazard profiles and vulnerability assessment for hazards ranked of medium or high significance specific to the City of Sacramento (as identified in the Significance column of Table F-18) and also includes a hazard profile and vulnerability assessment to the four primary hazards to the State of California: dam failure, earthquake, flood, and wildfire, regardless of the significance ranking by the City. 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 City 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. NCDC events are also discussed. Other past occurrences data specific to the City follow the disaster declarations and NCDC 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 City 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:

- **General Vulnerability Discussion** – A general discussion of the hazard and its vulnerability on the City is provided.
- **Local Concerns** – This includes City provided information on how the City 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 F.4.1 above, with a few exceptions. This includes sections on: People and Populations; Structures; Critical Facilities and Infrastructure, 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 fully covered in Section F.4.1 above and in Chapter 4 of the Base Plan.
- **Impacts** – A discussion on hazard impacts follows. Impacts describe how each hazard can affect the City 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 is addressed specifically for mapped hazards, and in more general terms for those hazards that are unmapped.

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

An impact or vulnerability 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. 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 recently 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. SMUD noted that it has had no PSPS events for its service territories. PG&E noted no PSPS events have occurred since the 2021 LHMP.

Local Concerns

There have been periodic (though rare) unintentional power outages in the City since 2021. There have been no intentional (including PSPS events) power outage issues associated with hazard events affecting the City since 2021. However, with an increase in climate change related issues (e.g., extreme heat conditions, atmospheric river storms) occurring in the City and larger 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 F.4.2 Hazard Identification.

Aquatic Nuisance Species (plant/animal)

Likelihood of Future Occurrence–Highly Likely
Vulnerability–High

Hazard Profile

Invasive and nuisance species are organisms that cause economic or environmental harm. A non-indigenous species is considered an invasive species when it becomes established in a new location, causing impacts. Invasive species may be introduced intentionally or unintentionally as a result of human activity. Once introduced, they can become a permanent part of an ecosystem, creating environmental imbalances, presenting risks to human health, and causing significant economic problems.

Under certain conditions, species that are native to an area or that are found worldwide may become a nuisance. Native species and cosmopolitan species (those found worldwide) may be classified as nuisance species when they become out of balance. Invasive and nuisance species vary widely, and their impacts can range from clogging water pipes to killing wildlife, from harming crops and forests to posing a human health hazard. The introduction of non-indigenous species into California's marine, estuarine, and freshwater environments can cause significant economic, human health, and ecological impacts.

Location and Extent

All of the waterways in the County are at risk to aquatic invasive species. There is no scientific scale to measure aquatic invasive species. The speed of onset can be quite short once an aquatic invasive species is introduced into a river or water body. The duration of the aquatic invasive species infestation can range from short term to long term, until measures are taken to reduce the presence of the offending species.

Past Occurrences

Disaster Declaration History

There have been no past federal or state disaster declarations due to aquatic invasive species, according to the Base Plan. There have also been no USDA disaster declarations from nuisance species.

NCDC Events

The NCDC does not track aquatic nuisance species.

City of Sacramento Events

THERE WAS NO INFORMATION IN THE RISK ASSESSMENT WORKSHEET FOR THIS. CAN YOU LIST PAST EVENTS AFFECTING THE CITY, ESPECIALLY THOSE SINCE THE 2021 LHMP. INCLUDE INFORMATION ON IMPACTS AND DAMAGES AS AVAILABLE? IF NO PAST EVENTS, PLEASE STATE THAT.

Climate Change and Aquatic Invasive Species

According to the 2024 CAS, addressing climate change will encompass reducing vulnerability through adapting to the ongoing and predicted impacts of climate. Waterways in California are vulnerable to predicted impacts of climate change, including less reliable water supplies, increased temperatures, and increased aquatic invasive species.

The 2023 California State Hazard Mitigation Plan noted that California farmers, water providers, and those who recreate or use water bodies contend with a wide range of aquatic invasive pests. Continued climate change is likely to alter the abundance and types of many aquatic invasive species, lengthen aquatic invasive pests' breeding season, and increase pathogen growth rates. It also noted that change in climate can directly impact new temperature patterns and northward shifts of previously unseen aquatic invasive species. Additionally, longer growing seasons may enable invasive species to complete more reproductive cycles, which can increase severity of infestations.

It also noted that climate change, which is warming marine waters, freshwater, and estuarine environments and altering the water chemistry (such as changes to water salinity and pH), can also bolster invasive species populations and range. The changes in marine environment can weaken native species not accustomed to warmer temperatures or altered water chemistry. Non-indigenous species tend to be more tolerant and resilient to changes in their environment; therefore, shifts in species composition due to climate change events can favor invasive non-indigenous species over native species.

Finally, the 2023 State Plan noted that temperature is not the only climatic influence on pests. For example, some aquatic invasives thrive or become more troublesome during periods of extreme drought. Furthermore, while warming speeds up the life cycles of many aquatic invasive species, suggesting that problems could increase, some aquatic invasive species may grow more slowly as elevated carbon dioxide levels decrease the protein content of the leaves on which they feed.

Vulnerability to Aquatic Invasive Species

According to historical hazard data, aquatic invasive and nuisance species are an annual occurrence in the Sacramento County Planning Area. If left unchecked, invasive and nuisance species can threaten native species, biodiversity, ecosystem services, recreation, water resources, agricultural production, cultural resources, economies and property values, public safety, and infrastructure.

An assessment of a community's vulnerability to climate change begins with an understanding of local exposure to aquatic invasive species. This is included in the Local Concerns section below followed by a discussion of the City's assets at risk and impacts to this hazard.

Local Concerns

The City is concerned about the following:

- Beaver and burrowing rodents (i.e. ground squirrel) are a concern within the City. These species cause damage to levee and waterway banks that can increase flooding risk.
- Three invasive species are a primary concern.
  - ✓ Primrose must be managed and removed in a very controlled manner. This plant species must be chemically sprayed before removal.
  - ✓ Privet and Red Sesbania species must be bagged following removal to prevent seeding.
  - ✓ Sanford's Arrowhead and Woolly Rose Mallow are protected species that are removed and relocated by DOU staff.

The City also noted that there has been an increase in the occurrence of harmful algal blooms (HABs) in the stormwater detention basins, channels such as Pocket Canal, and City Park ponds such as McKinley Park and others during drought periods. This is primarily due to low flows, stagnant water and increased temperatures, all conditions that are more common with increased average temperatures and decreased precipitation. HABs have the potential to produce algal toxins that pose a risk to drinking water, as well as people and pets recreating in the waterbodies. Once established, these blooms are difficult to treat, and require monitoring and public outreach to mitigate the risks they pose.

Assets at Risk

Assets at risk from climate change include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

Aquatic nuisance species have a minimal effect on people and populations in the City, including vulnerable populations. Damage from aquatic invasive species can cause economic issues for water companies, who then must pass those costs on to customers. Water price increases could affect populations in the City. In addition, those species contributing to increased flooding conditions in the City may also affect populations in flood prone areas. Also to note, nuisance animal species can cause damage to area levees further increasing the flood potential.

Structures

Structures in the City may be indirectly affected by aquatic nuisance species. Some species can impact vegetation and can result in stream bank instability, erosion, and increased sedimentation, impacting ground stabilization and possibly causing foundation issues for nearby structures. If species cause trees and other vegetation to die, there is an increased risk of damage to roadways, powerlines, and buildings, and increased risk to wildfire. Some invasive plants have been shown to destabilize soil due to high densities and shallow root systems, negatively impacting nearby buildings and septic systems. Other nuisance plant species have been known to clog culverts and streams, increasing flooding risk.

Critical Facilities and Infrastructure

Critical facilities and infrastructure in the City may be affected by aquatic nuisance species, though these effects are expected to be limited. The 2023 State of California Hazard Mitigation Plan noted that water treatment plants could be impacted by invasive and nuisance species. Water that becomes polluted due to increased sedimentation and erosion will require additional treatment. If the system becomes clogged with these pollutants or with nuisance aquatic species, the ability of water treatment plants to operate may become impaired. Additionally, soil that becomes unstable due to decaying vegetation can impact critical facilities that are built on or around these soils.

Natural, Historic, and Cultural Resources

Natural resources can be affected by aquatic nuisance species hazards. Negative impacts of these species to natural resources include the following:

- Loss of wildlife habitat and reduced wildlife numbers;
- Loss of native plant species;
- Increased soil erosion and topsoil loss;
- Diminished water quality and fish habitat.

Historic and cultural resources have a more limited risk from aquatic invasive species.

Impacts from Aquatic Invasive Species

According to the California Invasive Plants Council, California annually suffers over $3 billion in agricultural losses due to invasive and nuisance species. The magnitude of this problem cannot be understated, as both the United States and California Departments of Agriculture are mandated to protect against the invasion of exotic pests and diseases.

Potable water supply can be degraded due to the proliferation of algae blooms. Water treatment plants could be impacted by invasive and nuisance species. Water that becomes polluted due to increased sedimentation and erosion will require additional treatment. If the system becomes clogged with these pollutants or with invasive aquatic species, the ability of water treatment plants to operate may become impaired. Additionally, soil that becomes unstable due to decaying vegetation can impact critical facilities that are built on or around these soils. Invasive and nuisance species are as harmful to native species and

ecosystems in the environment as they are to the agricultural and built environments associated with human activities.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City 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 hazard 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 City include the following:

- Climate change is likely to exacerbate future conditions that may impact the waterways in the City. This was discussed in greater detail in the Climate Change and Aquatic Nuisance Species section of the Hazard Profile above.
- Future population growth should be considered as having more or less people in a community affects the overall hazard vulnerability to the City. The City has 61 areas where growth is expected over the next five years. Population growth in the City is expected to increase. Population changes are unlikely to affect the vulnerability of the City to this hazard unless the population growth significantly increases, causing additional pressure on water companies. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. The City has 61 areas where growth is expected over the next five years. As the City continues to add new development, land uses may change resulting in a changes to waterways. However, for the next five years covered by this LHMP Update, changes in land use and development will likely not increase the impacts and associated vulnerabilities of the City to this hazard.

Future Development

Future development in the City is not likely to have an impact on aquatic invasive species in the City. The City is expected to continue to grow. With additional development in the City, there may be additional competition for water resources.

Climate Change

Likelihood of Future Occurrence–Highly Likely
Vulnerability–High

Hazard Profile

Climate change adaptation is a key priority of the State of California. The 2023 State of California Multi-Hazard Mitigation Plan noted that climate change is affecting California. Sea levels have risen by as much as seven inches along the California coast over the last century, increasing erosion and pressure on the State's infrastructure, water supplies, and natural resources. The State has also seen increased average temperatures, more extreme hot days, fewer cold nights, a lengthening of the growing season, shifts in the water cycle with less winter precipitation falling as snow, and earlier runoff of both snowmelt and rainwater in the year. In addition to changes in average temperatures, sea level, and precipitation patterns, the intensity of extreme weather events is also changing.

California's Adaptation Planning Guide: Understanding Regional Characteristics (from 2017) has divided California into 11 different regions based on political boundaries, projected climate impacts, existing environmental setting, socioeconomic factors and regional designations. The City falls in the North Central Valley Region. A map and climate projections for this region are shown in Section 4.3.7 of the Base Plan and include an increase in temperatures, moderate changes in rainfall, and increased risk to wildfire.

Location and Extent

Climate change is a global phenomenon; as such, it will continue to affect the whole of the City of Sacramento, the Sacramento County Planning Area, surrounding counties, and State of California. There is no scale to measure the extent of climate change. Climate change exacerbates other hazards, such as drought, extreme heat, flooding, wildfire, and others. Impacts from climate change are already impacting the Sacramento region and are expected to increase and intensify over the coming decades. The speed of onset of climate change is slow. The duration of climate change impacts is projected to be hundreds of years.

Past Occurrences

Disaster Declaration History

Climate change has never been directly linked to any declared disasters. Under state and federal law, formal disaster declarations are issued for specific, acute natural hazards – such as extreme heat, severe wildfires, winter storms, floods, and droughts – to release emergency resources and recovery funding. While formal disaster declarations are legally invoked to respond to an immediate event, scientific assessments have explicitly attributed the increasing frequency, severity, and magnitude of many extreme weather events to climate change. In December 2019, the City of Sacramento adopted a resolution declaring a climate emergency (Resolution No. 2019-0465). The declaration explicitly attributes the escalating severity of several natural hazards – including increased extreme weather events, extreme heat, droughts, flooding, and wildfires –to human-caused climate change and greenhouse gas emissions.

NCDC Events

NCDC does not track climate change events.

City of Sacramento Events

These sections first show historic hazard events occurring since the 2021 LHMPs and then those occurring prior to the 2021 LHMP.

Events since 2021 LHMP

No declared disasters have been directly attributed to climate change; however, climate change is altering the frequency and intensity of several types of extreme weather. The City declared a climate emergency in December 2019 in light of continued impacts of hotter temperatures and an extreme, extended wildfire season. The City and HMPC members noted that the strength of storms does seem to be increasing and the temperatures are getting hotter. The American River Basin Study shows that the City may experience an increase of up to 8°F and up to 58 days with temperatures above 100°F by 2070. The American River temperature may rise up to 7°F, affecting its ecosystem. Flows from the Sierra Nevada snowpack to Folsom Reservoir, which have typically peaked in May, will instead peak earlier in January, February, and March.

Extreme heat has impacted Sacramento in a similar fashion to global trends, with the three warmest years since modern records began in 1850 occurring in **2023**, **2024**, and **2025**. Sacramento experienced its highest temperature on record, 116 degrees, in **September 2022**. Sacramento experienced its hottest summer on record in 2024, with 11 days exceeding 104 degrees. Meanwhile, 2022 was the third hottest summer on record in Sacramento.

The City and HMPC members noted that the strength of storms does seem to be increasing and the temperatures are getting hotter. A study on the American River Basin Study shows that the City may experience an increase of up to 8°F and up to 58 days with temperatures above 100°F by 2070. The American River temperature may rise up to 7°F, affecting its ecosystem. Flows from the Sierra Nevada snowpack to Folsom Reservoir, which have typically peaked in May, will instead peak earlier in January, February, and March.

Sacramento has also experienced multiple atmospheric river storms that align with projected precipitation changes due to climate change

Events prior 2021

While the City declared a climate emergency in December 2019, no specific impacts of climate change could be recalled.

Vulnerability to Climate Change

The whole of the City is at some measure of vulnerability to climate change. The City Planning Team has concerns that the vulnerability of the City to climate change will continue to increase in the future. An assessment of a community's vulnerability to climate change begins with an understanding of local

exposure to climate change. This is included in the Local Concerns section below followed by a discussion of the City's assets at risk from and impacts to this hazard.

Local Concerns

The City 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.

The City's primary climate change concerns are:

- temperature increases, including increased heat waves, increased urban heat island effects, warmer average temperatures, and warmer nighttime temperatures.
- precipitation changes that include increased extreme storms, increased flood risk, snowpack reduction and associated impacts to summer water availability, drought, reduced groundwater recharge, increased water temperature, and deteriorated water quality.
- Wildfires, elsewhere in the state, leading to air quality impacts in Sacramento

In addition, the City is concerned about the impact of climate change on local ecosystems and human life, as well as climate equity (i.e. considering both protection from environmental hazards as well as access to environmental benefits for all people, regardless of income, race, location, and other characteristics).

Finally, the City noted that climate change exacerbates other hazards. The effect of climate change on other natural hazards is discussed in each Hazard Profile in this Annex.

Assets at Risk

Assets at risk from climate change include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

Climate change affects people and populations within a community, especially as it relates to increases in temperature over time. While all populations can be affected by temperature extremes, populations that are particularly vulnerable include the very old and very young, people with medical conditions that make them more sensitive to heat, people with inadequate in-home air conditioning, people without means of shelter or transportation, people who work outdoors, people who are socially isolated and other vulnerable or underserved populations (as shown in the discussion in Section F.4.1). Acclimatization to extreme temperatures and other weather extremes may help reduce impacts from these extreme events, such as from heat waves, in the healthy general population but may not be sufficient to protect those with underlying medical conditions.

Structures

Climate change, on its own, does not generally impact structures. However, structures in areas of increased flood, wildfire smoke, heat exposure, or drought exacerbated by the effects of climate change would be at increased risk, as described in the other hazard sections throughout this LHMP.

Critical Facilities and Infrastructure

As with structures, critical facilities and infrastructure in areas of increased wildfire, flood, or other areas due to the effects of climate change would be at increased risk. Climate change is expected to increase the vulnerability of critical facilities and infrastructure to many natural hazards.

Natural, Historic, and Cultural Resources

The rivers, streams, agricultural areas, and open space areas of the City support rich biodiversity, including many special-status species and habitat areas. These are all at risk from the effects of climate change. In addition, if heat continues to contribute to changes in wildfire patterns, all areas (on land) of the City are at increased risk from fire – including natural, historic, and cultural resources. Furthermore, as climate change exacerbates the drought hazard, areas of wetlands in the City may be reduced or dry up temporarily, which could damage habitat areas for waterfowl and other species that depend on these areas.

Impacts from Climate Change

The California APG: Understanding Regional Characteristics identified the following impacts specific to the North Central Valley Region in which the City is part of:

- Increased temperatures
- Reduced precipitation
- Public health – heat and air pollution
- Reduced agricultural productivity
- Inland flooding
- Reduced tourism

In addition to these sources, the 2023 State of California Hazard Mitigation Plan noted that according to California's Fourth Climate Change Assessment (which was also used to inform the City's Climate Vulnerability Assessment), the State will experience the following climate impacts:

- Annual average daily high temperatures are expected to rise by 2.7° F by 2040, 5.8°F by 2070, and 8.8°F by 2100 compared to observed and modeled historical conditions. These changes are statewide averages.
- Heat waves are projected to become longer, more intense, and more frequent.
- Warming temperatures are expected to increase soil moisture loss and lead to drier conditions. Summer dryness may become prolonged, with soil drying beginning earlier in the spring and lasting longer into the fall and winter.
- Droughts are projected to become more frequent and persistent through 2100.
- The strength of the most intense precipitation and storm events affecting California is expected to increase.
- Snowpack levels are projected to decline significantly over the course of the century due to reduced snowfall and faster snowmelt.
- Marine layer clouds are projected to decrease.
- Extreme wildfires (i.e., fires larger than 24,710 acres) are projected to occur 50 percent more frequently. The maximum area burned statewide may increase 178 percent by the end of the century, generating significant air quality impacts in Sacramento.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City are projected to significantly increase in the future driven 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 City include the following:

- As climate change continues to accelerate over time, climate related impacts to the City will continue to increase.
- Climate change can influence population growth in the City over time. While the City is expected to see slow and steady growth, the City could see population fluctuations as a result of climate impacts relative to those experienced in other regions, and these fluctuations are expected to impact demand for housing and other development. The City has 61 areas where growth is expected over the next five years. Changes in population and population patterns that would come with the 33 future development areas would likely increase the impacts associated with this hazard.
- City land use planning should be proactive to address future hazard conditions. The City has 61 areas where growth is expected over the next five years. The increasing severity and frequency of storms and other weather events and natural hazards due to the changing climate should be taken into account while considering land use planning and development in the City. Changes in land use and development may or may not increase the impacts and associated vulnerabilities of the City to this hazard depending on where and how this future growth occurs, whether future development is designed with Sacramento's unique climate risk profile in mind, and the extent of future climate change influence in the City.

Future Development

Future development considerations should be ongoing and proactive. The City conducts comprehensive land use planning on a regular pattern, updating the City's General Plan every 5-10 years. The City ensures that regulatory requirements, such as building codes, are followed, ensuring that the next generation of buildings in Sacramento will be more resilient to climate change impacts than the existing built environment. The City considers the varying needs for different demographic groups that reside within the City, contributing to a more disaster resilient community.

Dam Failure

Likelihood of Future Occurrence–Unlikely
Vulnerability– Extremely High

Hazard Profile

Dams are manmade structures built for a variety of uses including flood protection, power generation, agriculture, water supply, and recreation. When dams are constructed for flood protection, they are usually engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any given year. If prolonged periods of rainfall and flooding occur that exceed the design requirements, that structure may be overtopped or fail. Overtopping is the primary cause of earthen dam failure in the United States. In addition, with storms increasing in volume and intensity, as seen with the atmospheric river events of recent years, controlled releases from dams can also impact downstream levees and flood control structures resulting in increased and widespread flooding.

Dam failures, for purposes of this Plan, can also result from any one or a combination of the following:

- Earthquake
- Overtopping and uncontrolled releases
- Controlled releases
- Inadequate spillway capacity resulting in excess overtopping flows
- Internal erosion caused by embankment or foundation leakage, or piping or rodent activity
- Improper design
- Improper maintenance
- Negligent operation
- Failure of upstream dams on the same waterway

Dam failure is a natural disaster from two perspectives. First, the inundation from released waters resulting from dam failure is related to naturally occurring floodwaters. Second, a total dam failure would most probably happen as a consequence of the natural disaster triggering the event, such as an earthquake.

Location and Extent

An inventory map of dams located within and around Sacramento County was shown in Section 4.3.8 in the Base Plan. Inundation mapping and analyses were conducted on Extremely High and High Hazard dams with inundation areas located in the Sacramento County Planning Area. Dams with an inundation area within the City of Sacramento are shown on Figure F-20 for Extremely High Hazard dams from outside the County, Figure F-21 for High Hazard dams from inside the County, and Figure F-22 for High Hazard dams from outside the County. The City is affected by eight Extremely High Hazard dams (Bowman, Camp Far West, French Lake, Jackson Meadows, New Bullards Bar, Oroville, Scotts Flat, and Union Valley), one High Hazard dam from within the County (Nimbus), and three High Hazard dams from outside the County (Rollins). In addition, based on the Folsom dam inundation analyses included in the 2021 and 2016 Sacramento County LHMPs, areas of the City fall within previous dam inundation areas for Folsom.

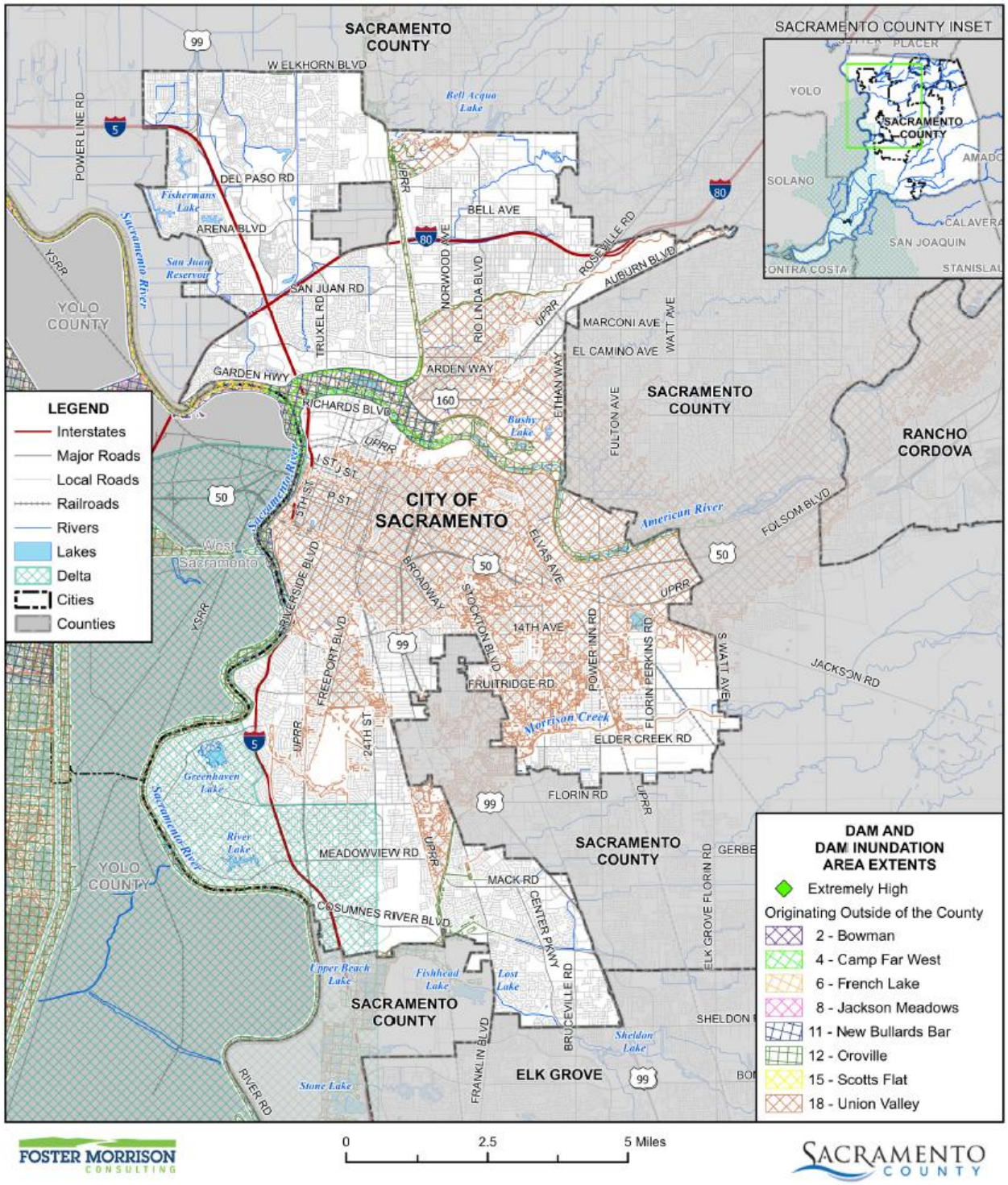
It is thus assumed that, while not quantified, the City remains at risk and vulnerable to a future Folsom dam incident.

There is no scale with which to measure dam failure. However, FEMA and CA DWR Division of Safety of Dams (DSOD) assign hazard potential classifications to dams within the State that provides information on the potential impact should a dam fail. The following two factors are considered when assigning hazard ratings: existing land use and land use controls (zoning) downstream of the dam. FEMA categorizes the downstream hazard potential into three categories in increasing severity: Low, Significant, and High. DSOD adds a fourth category of Extremely High. Dams are classified in these four categories that identify the potential hazard to life and property. These were discussed in more detail in Section 4.3.8 of the Base Plan.

While a dam may fill slowly with runoff from winter storms, a dam break has a very quick speed of onset. The duration of dam failure is generally not long – only as long as it takes to empty the reservoir of water the dam held back. For dam overtopping, the speed of onset is somewhat slower than that of a dam break, and the duration is longer (as evidenced in the 2017 Oroville Dam spillway event). The City would be affected for as long as the flood waters from the dam failure took to drain downstream.

An inventory map of dams located within and around Sacramento County was shown in Section 4.3.8 in the Base Plan. Inundation mapping and analyses were conducted on Extremely High and High Hazard dams with inundation areas located in the Sacramento County Planning Area. Geographic flood extent from the DSOD/NID dam inundation areas within the City of Sacramento are shown in Table F-19 for Extremely High Hazard dams originating from outside the County, in Table F-20 for High Hazard dams originating from inside the County, and in Table F-21 for High Hazard dams originating from outside the County.

Figure F-20 City of Sacramento – Extremely High Hazard Dam (Outside the County) Inundation Areas



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SACRAMENTO COUNTY

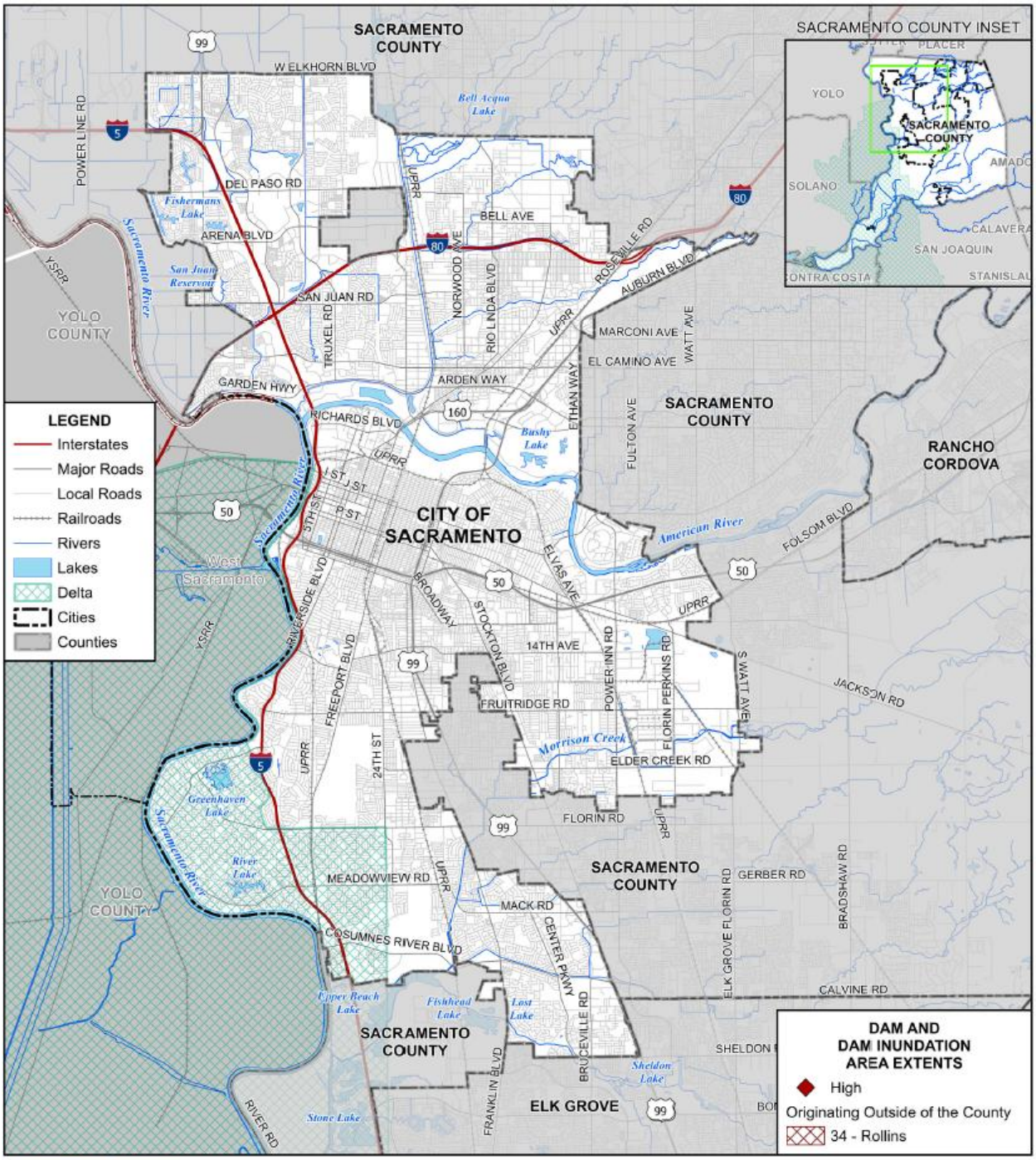
Data Source: DWR DSOD dam inundations (updated 7/2025; data downloaded 10/2025), NID dam inventory and inundation data (updated 11/6/2025; data downloaded 11/6/2025), Sacramento County, Cal-Atlas; Map Date: 4/2/2026.

Table F-19 City of Sacramento – Geographical Extents of Extremely High Hazard Dam (Outside the County) Inundation Areas

Dam Inundation Area	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Bowman	25	0.05%	5	0.01%	20	0.1%
Camp Far West	103	0.2%	1	0.003%	102	1%
French Lake	23	0.04%	4	0.01%	19	0.1%
Jackson Meadows	10	0.02%	1	0.002%	9	0.04%
New Bullards Bar	969	2%	14	0.04%	955	5%
Oroville	1,501	3%	25	0.1%	1,476	7%
Scotts Flat	8	0.01%	0	0.001%	7	0.04%
Union Valley	14,629	28%	8,366	26%	6,264	32%

Source: DWR DSOD, NID

Figure F-21 City of Sacramento – High Hazard Dam (Inside the County) Inundation Areas



Data Source: DWR DSOD dam inundations (updated 7/2025; data downloaded 10/2025), NID dam inventory and inundation data (updated 11/6/2025; data downloaded 11/6/2025), Sacramento County, Cal-Atlas; Map Date: 4/2/2026.

Table F-20 City of Sacramento – Geographical Extents of High Hazard Dam (Inside the County) Inundation Areas

Dam Inundation Area	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Nimbus	46,099	89%	29,263	91%	16,836	85%

Source: DWR DSOD, NID

Figure F-22 City of Sacramento – High Hazard Dam (Outside the County) Inundation Areas

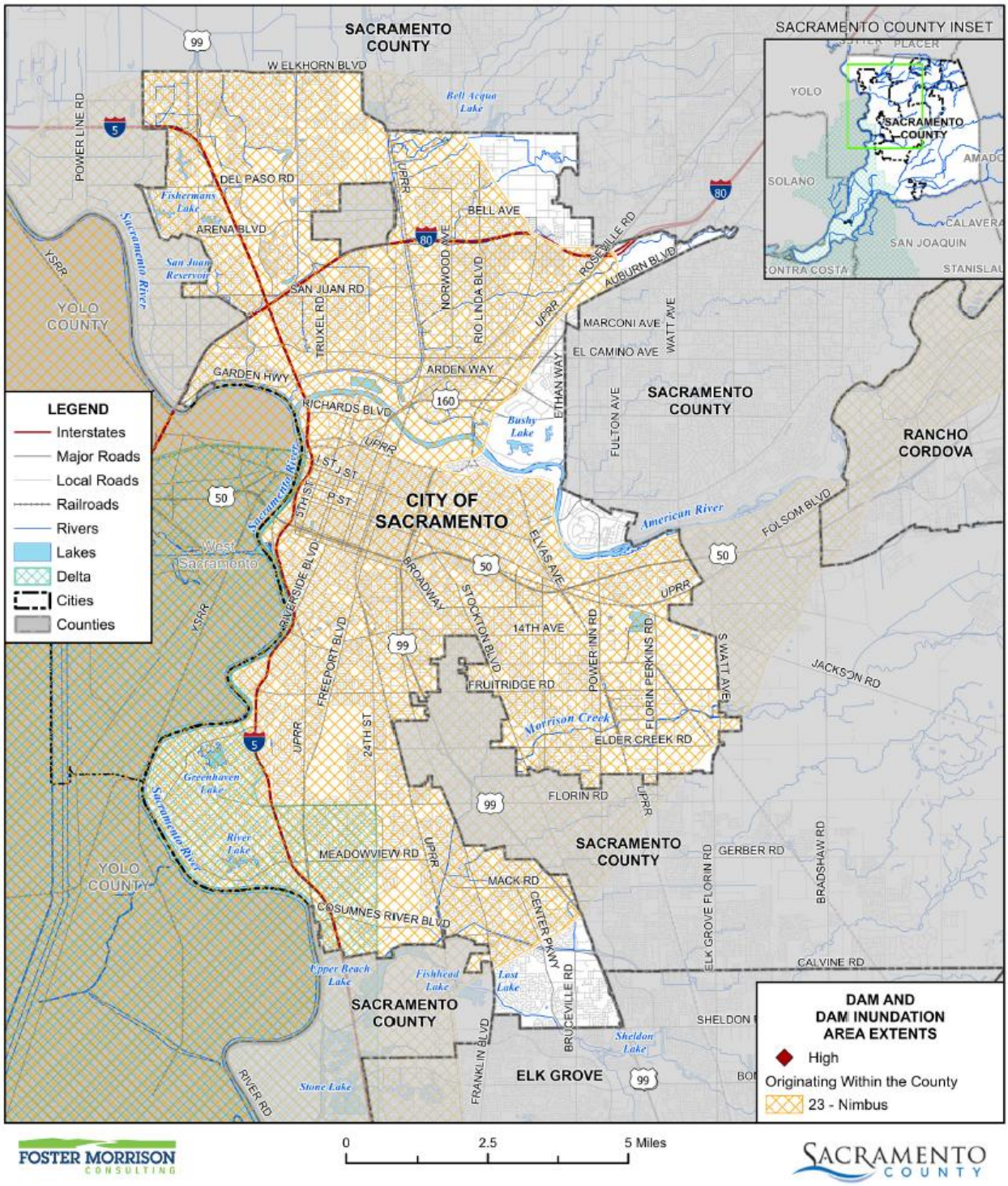


Table F-21 City of Sacramento – Geographical Extents of High Hazard Dam (Outside the County) Inundation Areas

Dam Inundation Area	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Rollins	8	0.02%	0.5	0.002%	8	0.04%

Source: DWR DSOD, NID

Past Occurrences

Disaster Declaration History

There have been no state or federal disaster declarations for dam failure in Sacramento County.

NCDC Events

The NCDC does not contain any dam failure events for Sacramento County.

City of Sacramento Events

These sections first show historic hazard events occurring since the 2021 LHMPs and then those occurring prior to the 2021 LHMP.

Events since 2021 LHMP

No events have occurred since 2021.

Events prior to 2021

The City Planning Team noted no past occurrences of dam failure to directly affect the City. It did note that indirect effects did occur in 2017:

February 2017: Oroville Dam Spillway – On Feb. 12, the Lake Oroville Dam emergency spillway structure suffered potentially catastrophic damage as a result of erosion secondary to water flow. The California Department of Water Resources increased exhaust water flow from the Gated Spillway to 100,000 cubic feet per second in an attempt to decrease Lake Oroville water levels. In response, the California Governor's Office of Emergency Services activated the State Operations Center in Sacramento in support of the Oroville Dam emergency spillway incident. Immediate evacuations were ordered for counties and cities near Lake Oroville, and Governor Brown issued state of emergency to help mobilize disaster response resources and support the local evacuations. The Sacramento Fire Department warned residents that the spillway failure could have effects, including flash flooding, downstream in Sacramento. The City also prepared to receive evacuees from Yuba and Butte counties. Ultimately, the dam held (though the spillway was damaged) and the City suffered no ill effects.

Climate Change and Dam Failure

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

The 2023 California State Hazard Mitigation Plan noted that modeling described in California's Fourth Climate Change Assessment projects less frequent but more extreme precipitation events. Year-to-year precipitation will become more volatile, and the number of dry years will increase by mid-century. As the climate continues to warm, atmospheric rivers will carry more moisture, and the frequency and extent of extreme precipitation events is projected to increase. Climate model projections indicate that Sacramento will see a modest increase in average annual precipitation over the course of the century, even as annual precipitation totals become less consistent. Increases in both precipitation and heat causing snow melt in areas upstream of dams could increase the potential for dam failure and uncontrolled releases in Sacramento County, affecting those areas of the City located within dam inundation areas.

The 2024 City of Sacramento CAAP noted that climate change is likely to lead to changes in the frequency, intensity, and duration of extreme weather events. The city 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 is 18.9 inches, and the historic average annual number of extreme precipitation events is four. The average annual precipitation in Sacramento may rise upwards of 27 inches, with the number of extreme precipitation events potentially exceeding 7 per year by the end of the century, depending on the level of 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 dam failure events.

The 2024 City of Sacramento Climate Action & Adaptation Plan noted that climate change may affect overall rainfall patterns, including an increasing likelihood of extreme storm events.

Vulnerability to Dam Failure

The vulnerability of the City to dam failure flooding would vary depending on which dam fails and the nature and extent of the dam failure and associated flooding. The primary danger associated with dam failure is the high velocity flooding of those properties downstream of the dam. A dam failure can range from a small, uncontrolled release to a catastrophic failure. Vulnerability to dam failures is generally

confined to the areas subject to inundation downstream of the facility. Secondary losses would include loss of the multi-use functions of the facility and associated revenues that accompany those functions. Dam failure flooding would vary by community depending on which dam fails and the nature and extent of the dam failure and associated flooding.

An assessment of a community's vulnerability to dam failure begins with an understanding of local exposure to dam failure. This is included in the Local Concerns section below followed by a discussion of the City's Assets at Risk to this hazard.

Local Concerns

The City 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.

In addition to the dam inundations analyzed for this LHMP Update, the Sacramento Municipal Utility District (SMUD) inundation map indicates that a failure of the Rancho Seco Dam would flow to the Laguna Creek Basin and stop approximately at Stockton Boulevard. Failure of Shasta Dam would affect populations south along the Sacramento River basin to about Knights Landing where the water would lose momentum. An Oroville Dam failure would impact populations southwest along the Feather River basin to about the Yolo Bypass.

Assets at Risk

Assets at risk from dam failure include people and populations; structures; 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 dam inundation areas are vulnerable to dam failure. Certain vulnerable populations may be at increased risk to dam failure, especially during a large event with minimal advance notice. These vulnerable populations may include: the unsheltered, those with limited mobility, and those that lack the resources to leave the area.

City residents that live in these dam inundation areas are often 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. To further evaluate the impact to the City of Sacramento's residential populations located in these hazard areas, a separate analysis was performed to determine residential populations in the dam inundation areas. The DSOD/NID dam inundation areas were overlayed on the parcel layer. Those residential parcel that intersect the dam inundation areas were counted and multiplied by the Census Bureau average household factors for the City of Sacramento – 2.59. This is shown in Table F-22. While not currently mapped, this includes those populations impacted by a future Folsom dam incident.

Table F-22 City of Sacramento – Improved Residential Parcels and Population by Dam Inundation Area

Dam Name	Improved Residential Parcels	Population at Risk
Extremely High Hazard Dams (Outside the County)		
Bowman	28	
Camp Far West	4	73
French Lake	28	73
Jackson Meadows	22	57
New Bullards Bar	30	78
Oroville	206	534
Scotts Flat	3	8
Union Valley	44,218	114,525
High Hazard Dam (Inside County)		
Nimbus	129,371	335,071
High Hazard Dams (Outside County)		
Rollins	4	10

Source: DSOD, Sacramento County 2025 Parcel/Assessor Data, 2023 US Census Bureau American Community Survey Average Household Size –City of Sacramento (2.59).

The City noted that the Critical Facilities and Infrastructure section below includes the facilities used by At-Risk populations that are threatened by this hazard. While this is not specific to what special populations reside in the City, it does speak to facilities that are used to serve (portions) of these populations.

Structures

Most structures in the City have some measure of risk to dam failure. Dam failure flooding can affect the built environment of the City. Structures in dam inundation areas are at risk and depending on flood depths, can range from slight damage to totally inundated. Analysis by Extremely High Hazard and High Hazard dam follows.

A GIS based analysis was used to determine the possible impacts of dam inundation flooding on parcels and structures within the City of Sacramento. The methodology described in Section 4.3.8 of the Base Plan was followed in determining City parcels and structures at risk to dam failure. Parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), personal property values, estimated content replacement values, and total values that fall within dam inundation areas in the City are presented below by hazard classification and by dam. The results are presented in Table F-23, Table F-24, and Table F-25 for the dams that affect the City. While not currently mapped, this includes those structures impacted by a future Folsom dam incident.

Table F-23 City of Sacramento – Count and Value of Parcels and Structures in Extremely High Hazard Dam (Outside the County) Inundation Area by Property Use

Dam Inundation Area / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Total Value	Estimated Contents Value	Total Value
Bowman							
Miscellaneous	5	0	$4,358	$0	$4,358	$0	$4,358
Office	2	1	$418,200	$1,061,300	$1,479,500	$1,061,300	$2,540,800
Public / Utilities	1	0	$9	$0	$9	$0	$9
Recreational	6	2	$1,275,207	$5,298,040	$6,573,247	$5,298,040	$11,871,287
Residential	31	28	$9,043,042	$15,770,156	$24,813,198	$7,885,078	$32,698,276
Unknown	1	0	$0	$0	$0	$0	$0
Vacant	8	0	$1,020,625	$0	$1,020,625	$0	$1,020,625
Bowman Total	**54**	**31**	**$11,761,441**	**$22,129,496**	**$33,890,937**	**$14,244,418**	**$48,135,355**
Camp Far West							
Agricultural	0	0	$0	$0	$0	$0	$0
Miscellaneous	44	0	$2,337	$0	$2,337	$0	$2,337
Public / Utilities	16	0	$9	$0	$9	$0	$9
Recreational	6	2	$1,275,207	$5,298,040	$6,573,247	$5,298,040	$11,871,287
Residential	6	4	$1,717,770	$7,109,313	$8,827,083	$3,554,657	$12,381,740
Vacant	10	0	$1,000,508	$0	$1,000,508	$0	$1,000,508
Camp Far West Total	**88**	**9**	**$8,181,787**	**$23,837,501**	**$32,019,288**	**$20,282,845**	**$52,302,133**
French Lake							
Miscellaneous	5	0	$4,358	$0	$4,358	$0	$4,358
Office	2	1	$418,200	$1,061,300	$1,479,500	$1,061,300	$2,540,800
Public / Utilities	1	0	$9	$0	$9	$0	$9
Recreational	6	2	$1,275,207	$5,298,040	$6,573,247	$5,298,040	$11,871,287
Residential	31	28	$9,043,042	$15,770,156	$24,813,198	$7,885,078	$32,698,276
Unknown	1	0	$0	$0	$0	$0	$0
Vacant	8	0	$1,020,625	$0	$1,020,625	$0	$1,020,625
French Lake Total	**54**	**31**	**$11,761,441**	**$22,129,496**	**$33,890,937**	**$14,244,418**	**$48,135,355**
Jackson Meadows							
Miscellaneous	5	0	$4,358	$0	$4,358	$0	$4,358

Dam Inundation Area / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Total Value	Estimated Contents Value	Total Value
Office	2	1	$418,200	$1,061,300	$1,479,500	$1,061,300	$2,540,800
Public / Utilities	1	0	$9	$0	$9	$0	$9
Recreational	6	2	$1,275,207	$5,298,040	$6,573,247	$5,298,040	$11,871,287
Residential	24	22	$7,214,561	$12,586,475	$19,801,036	$6,293,238	$26,094,274
Unknown	1	0	$0	$0	$0	$0	$0
Vacant	8	0	$1,020,625	$0	$1,020,625	$0	$1,020,625
Jackson Meadows Total	**47**	**25**	**$9,932,960**	**$18,945,815**	**$28,878,775**	**$12,652,578**	**$41,531,353**
New Bullards Bar							
Church / Welfare	2	0	$20	$0	$20	$0	$20
Industrial	6	3	$2,645,942	$9,081,450	$11,727,392	$13,622,175	$25,349,567
Miscellaneous	109	0	$6,782	$0	$6,782	$0	$6,782
Office	7	5	$10,251,137	$46,309,176	$56,560,313	$46,309,176	$102,869,489
Public / Utilities	29	0	$9	$0	$9	$0	$9
Recreational	11	2	$1,275,248	$5,298,040	$6,573,288	$5,298,040	$11,871,328
Residential	35	30	$12,720,312	$31,665,968	$44,386,280	$15,832,984	$60,219,264
Retail / Commercial	1	1	$490,376	$408,308	$898,684	$408,308	$1,306,992
Unknown	1	0	$0	$0	$0	$0	$0
Vacant	33	0	$6,393,101	$0	$6,393,101	$0	$6,393,101
New Bullards Bar Total	**234**	**41**	**$33,782,927**	**$92,762,942**	**$126,545,869**	**$81,470,683**	**$208,016,552**
Oroville							
Church / Welfare	3	1	$947,056	$1,183,794	$2,130,850	$1,183,794	$3,314,644
Industrial	3	0	$248,694	$0	$248,694	$0	$248,694
Miscellaneous	264	0	$169,332	$0	$169,332	$0	$169,332
Office	4	3	$4,185,946	$11,430,148	$15,616,094	$11,430,148	$27,046,242
Public / Utilities	39	0	$19	$0	$19	$0	$19
Recreational	15	2	$1,275,248	$5,298,040	$6,573,288	$5,298,040	$11,871,328
Residential	218	206	$39,231,525	$86,897,816	$126,129,341	$43,448,908	$169,578,249

Dam Inundation Area / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Total Value	Estimated Contents Value	Total Value
Retail / Commercial	3	0	$3	$0	$3	$0	$3
Unknown	1	0	$0	$0	$0	$0	$0
Vacant	49	0	$3,234,035	$0	$3,234,035	$0	$3,234,035
Oroville Total	**599**	**212**	**$49,291,858**	**$104,809,798**	**$154,101,656**	**$61,360,890**	**$215,462,546**
Scotts Flat							
Miscellaneous	4	0	$30	$0	$30	$0	$30
Office	2	1	$418,200	$1,061,300	$1,479,500	$1,061,300	$2,540,800
Public / Utilities	1	0	$9	$0	$9	$0	$9
Recreational	6	2	$1,275,207	$5,298,040	$6,573,247	$5,298,040	$11,871,287
Residential	5	3	$1,317,770	$3,209,313	$4,527,083	$1,604,657	$6,131,740
Unknown	1	0	$0	$0	$0	$0	$0
Vacant	1	0	$179,358	$0	$179,358	$0	$179,358
Scotts Flat Total	**20**	**6**	**$3,190,574**	**$9,568,653**	**$12,759,227**	**$7,963,997**	**$20,723,224**
Union Valley							
Agricultural	2	1	$7,271	$13,525	$20,796	$13,525	$34,321
Care / Health	78	66	$72,615,356	$1,221,155,400	$1,293,770,756	$1,221,155,400	$2,514,926,156
Church / Welfare	280	232	$108,952,481	$725,942,648	$834,895,129	$725,942,648	$1,560,837,777
Industrial	738	623	$343,207,329	$1,017,251,448	$1,360,458,777	$1,525,877,172	$2,886,335,949
Miscellaneous	961	5	$1,956,369	$81,119	$2,037,488	$81,119	$2,118,607
Office	1,233	960	$927,151,182	$3,381,660,682	$4,308,811,864	$3,381,660,682	$7,690,472,546
Public / Utilities	414	0	$20,016	$0	$20,016	$0	$20,016
Recreational	84	41	$49,608,210	$391,460,527	$441,068,737	$391,460,527	$832,529,264
Residential	44,714	44,218	$6,723,210,771	$16,206,300,148	$22,929,510,919	$8,103,150,074	$31,032,660,993
Retail / Commercial	1,871	1,401	$953,515,360	$1,490,612,611	$2,444,127,971	$1,490,612,611	$3,934,740,582
Unknown	48	2	$168,602	$276,900	$445,502	$0	$445,502
Vacant	1,395	85	$289,165,275	$4,318,234	$293,483,509	$0	$293,483,509
Union Valley Total	**51,818**	**47,634**	**$9,469,578,222**	**$24,439,073,242**	**$33,908,651,464**	**$16,839,953,758**	**$50,748,605,222**

Source: DSOD, Sacramento County 2025 Parcel/Assessor Data

Table F-24 City of Sacramento – Count and Value of Parcels and Structures in High Hazard Dam (Inside the County) Inundation Area by Property Use

Dam Inundation Area / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Nimbus						
Agricultural	14	3	$4,149,488	$876,194	$876,194	$5,901,876
Care / Health	149	123	$117,341,081	$1,903,722,001	$1,903,722,001	$3,924,785,083
Church / Welfare	528	426	$171,327,994	$1,012,352,068	$1,012,352,068	$2,196,032,130
Industrial	1,898	1,684	$924,988,096	$2,997,237,846	$4,495,856,769	$8,418,082,711
Miscellaneous	3,123	8	$6,326,964	$3,959,221	$3,959,221	$14,245,406
Office	1,604	1,232	$1,187,668,713	$4,335,567,427	$4,335,567,427	$9,858,803,567
Public / Utilities	653	0	$20,221	$0	$0	$20,221
Recreational	117	64	$62,820,419	$431,786,184	$431,786,184	$926,392,787
Residential	131,195	129,371	$15,211,216,729	$41,233,175,092	$20,616,587,546	$77,060,979,367
Retail / Commercial	2,786	2,206	$1,487,327,865	$2,595,169,010	$2,595,169,010	$6,677,665,885
Unknown	141	3	$238,249	$312,876	$0	$551,125
Vacant	5,150	170	$1,198,542,142	$61,186,771	$0	$1,259,728,913
Nimbus Total	**147,358**	**135,290**	**$20,371,967,961**	**$54,575,344,690**	**$35,395,876,420**	**$110,343,189,071**

Source: DSOD, Sacramento County 2025 Parcel/Assessor Data

Table F-25 City of Sacramento – Count and Value of Parcels and Structures in High Hazard Dam (Outside the County) Inundation Area by Property Use

Dam Inundation Area / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Rollins						
Miscellaneous	4	0	$30	$0	$0	$30
Office	2	1	$418,200	$1,061,300	$1,061,300	$2,540,800
Public / Utilities	1	0	$9	$0	$0	$9
Recreational	6	2	$1,275,207	$5,298,040	$5,298,040	$11,871,287
Residential	6	4	$1,509,164	$3,391,135	$1,695,568	$6,595,867
Unknown	1	0	$0	$0	$0	$0
Vacant	1	0	$179,358	$0	$0	$179,358
Rollins Total	**21**	**7**	**$3,381,968**	**$9,750,475**	**$8,054,908**	**$21,187,351**

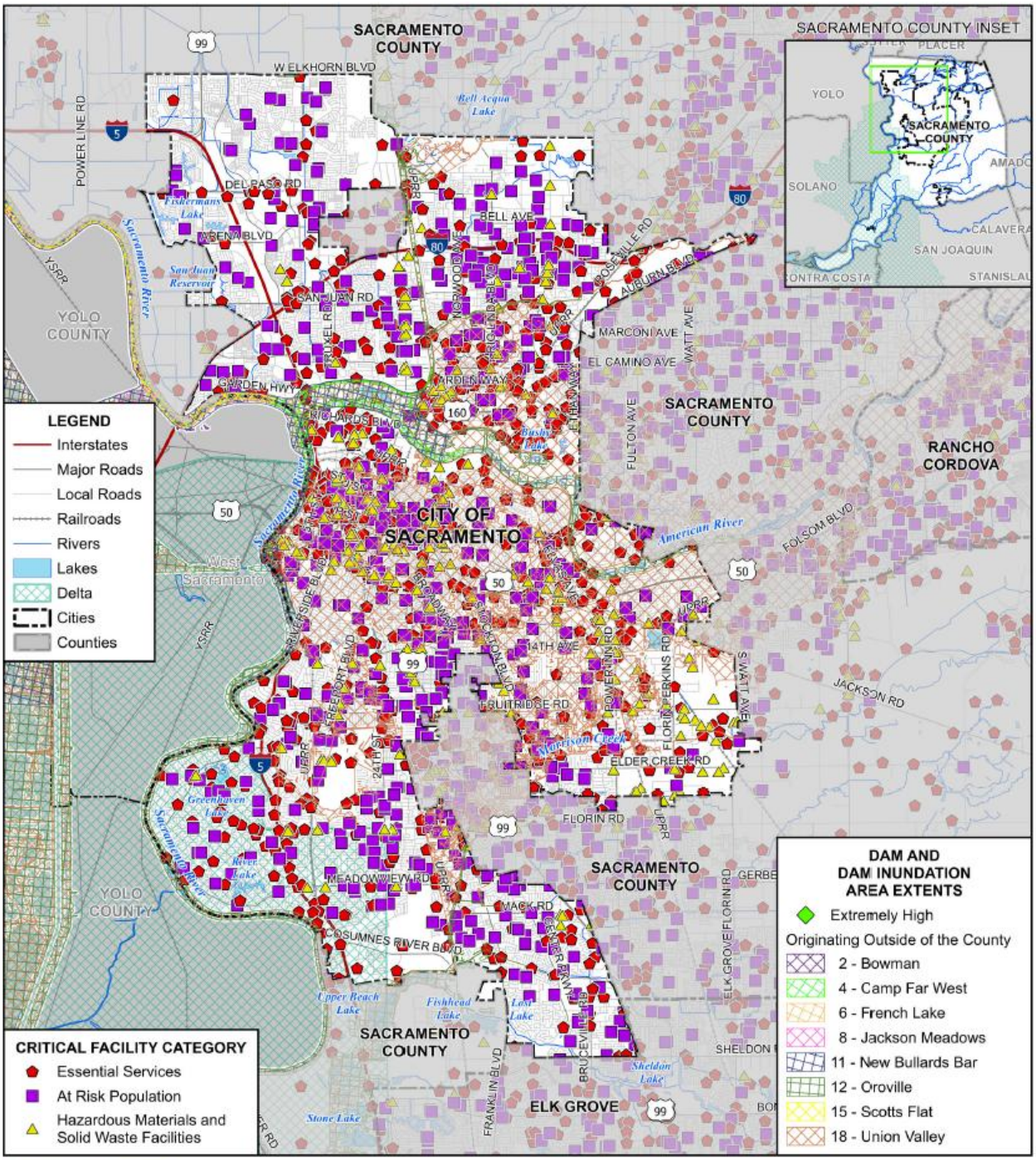
Source: DSOD, Sacramento County 2025 Parcel/Assessor Data

Critical Facilities and Infrastructure

Dam failure flooding presents a threat to critical facilities and infrastructure. For example, transportation routes, including bridges and highways, are vulnerable to dam inundation and have the potential to be

unpassable and even destroyed, creating isolation and supply chain issues. Those critical facilities that are most vulnerable include those that are already in poor condition and would not be able to withstand a large water surge. The following analysis was performed on the critical facility inventory in the City to determine which critical facilities fall into each DSOD dam inundation area. This was done separately for both Extremely High Hazard and High Hazard dam inundation areas. Using GIS, the dam inundation areas were overlayed on the critical facility GIS layer. This is shown on Figure F-23 and detailed in Table F-26 for those facilities that fall in the Extremely High Hazard (outside the County) dam inundation areas. This is shown on Figure F-24 and detailed in Table F-27 for those facilities that fall in the High Hazard (inside the County) dam inundation areas. This is shown on Figure F-25 and detailed in Table F-28 for those facilities that fall in the Extremely High Hazard dam inundation areas. While not currently mapped, this includes those critical facilities and infrastructure impacted by a future Folsom dam incident.

Figure F-23 City of Sacramento – Critical Facilities in Extremely High Hazard Dam (Outside the County) Inundation Areas



Data Source: DWR DSOD dam inundations (updated 7/2025; data downloaded 10/2025), NID dam inventory and inundation data (updated 11/6/2025; data downloaded 11/6/2025), Sacramento County, Cal-Atlas; Map Date: 4/17/2026.

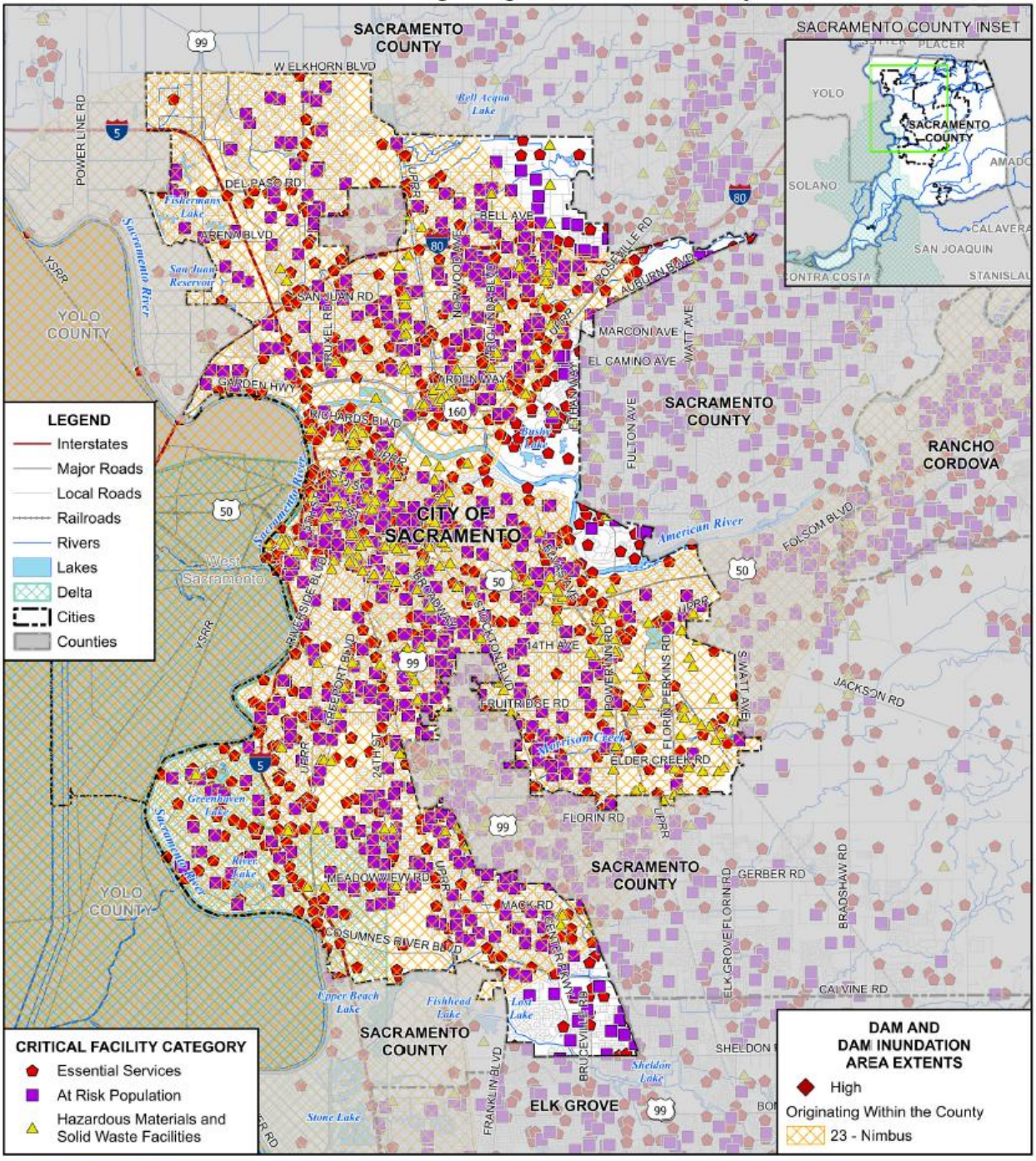
Table F-26 City of Sacramento – Critical Facilities in Extremely High Hazard Dam Inundation Areas by Category and Type

Critical Facility Category	Facility Count
Essential Services Facilities	
Bridge	7
Emergency Evacuation Center	30
EMS Stations	13
FDIC Insured Banks	52
Fire Station	12
Floodgate	22
Hospital or Urgent Care	7
Law Enforcement	10
Microwave Service Towers	194
Port Facilities	5
Power Plants	1
Public Transit Stations	20
Pump Station	60
Sewage Treatment Plant	3
State Government Buildings	25
Water Well	53
Essential Services Facilities Total	**514**
At Risk Population Facilities	
Colleges, Universities, and Professional Schools	3
Community Center	1
Day Care Center	49
Major Sports Venues	2
Mobile Home Parks	8
Places of Worship	190
School	78
At Risk Population Facilities Total	**331**
Hazardous Materials and Solid Waste Facilities	
EPA ER FRP Facility	1
EPA ER TRI Facility	11
EPA ER TSCA Facility	2
Leaky Underground Storage Tank	106
Solid Waste Facility	7
Tank Farm	4
Hazardous Materials and Solid Waste Facilities Total	131

Critical Facility Category	Facility Count
Sacramento Total	**976**

Source: DSOD, City of Sacramento

Figure F-24 City of Sacramento – Critical Facilities in High Hazard Dam (Inside the County) Inundation Areas



Data Source: DWR DSOD dam inundations (updated 7/2025; data downloaded 10/2025),
NID dam inventory and inundation data (updated 11/6/2025; data downloaded 11/6/2025),
CalOES CIP dam inundation data (3/2017),
Sacramento County, Cal-Atlas; Map Date: 4/17/2026.

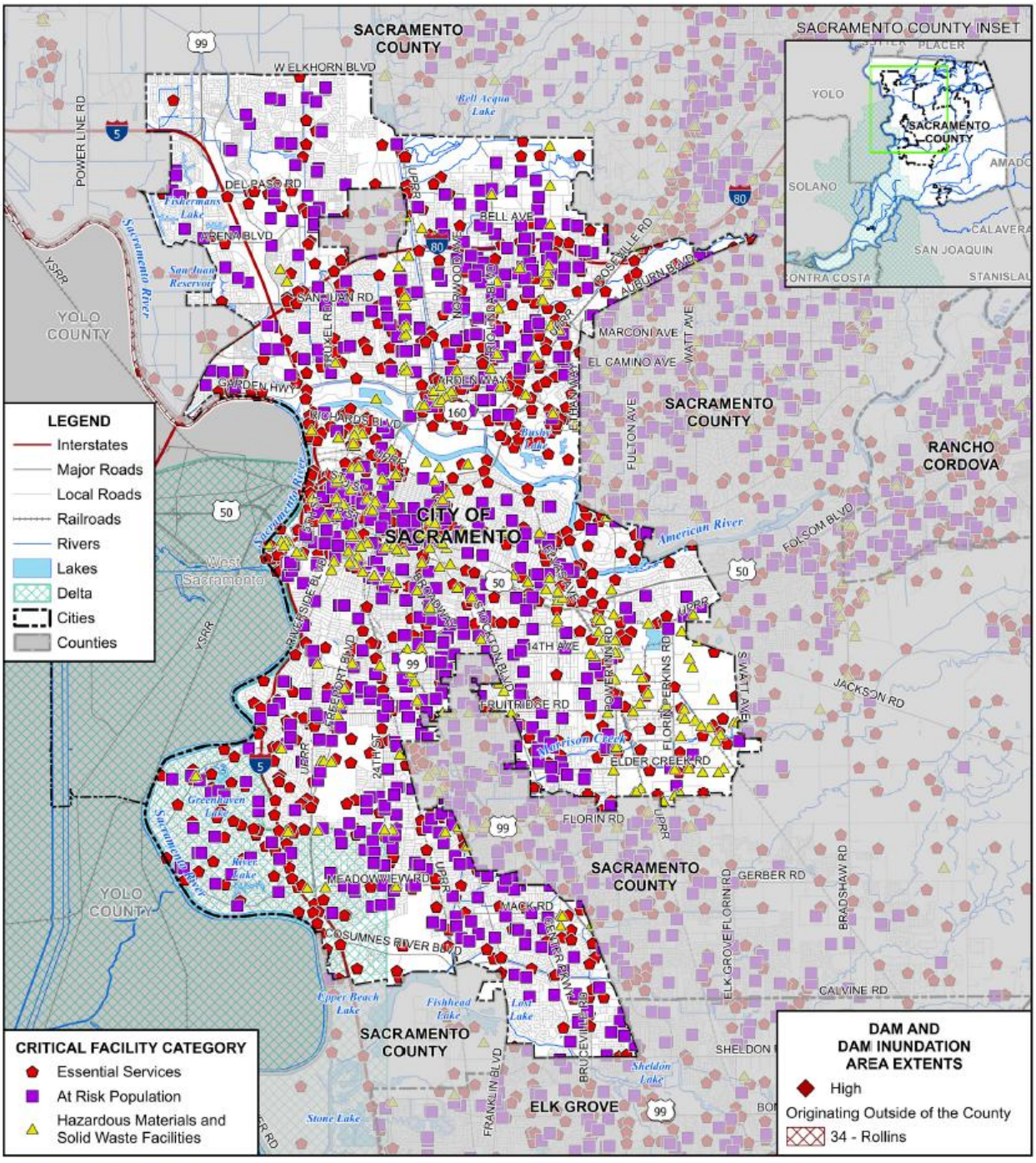
Table F-27 City of Sacramento – Critical Facilities by Category and Type in High Hazard Dam (Inside the County) Inundation Areas by Category and Type

Critical Facility Category	Facility Count
Essential Services Facilities	
Airport	1
Bridge	25
Cellular Tower	2
Emergency Evacuation Center	87
EMS Stations	24
FDIC Insured Banks	68
Fire Station	21
Floodgate	42
Hospital or Urgent Care	14
Law Enforcement	25
Microwave Service Towers	465
Port Facilities	6
Power Plants	7
Public Transit Stations	38
Pump Station	188
Sewage Treatment Plant	8
State Government Buildings	32
Water Well	120
Essential Services Facilities Total	**1,173**
At Risk Population Facilities	
Colleges, Universities, and Professional Schools	10
Community Center	2
Day Care Center	133
Major Sports Venues	3
Mobile Home Parks	18
Places of Worship	406
School	219
At Risk Population Facilities Total	**791**
Hazardous Materials and Solid Waste Facilities	
EPA ER FRP Facility	2
EPA ER TRI Facility	37
EPA ER TSCA Facility	3
Leaky Underground Storage Tank	168
Solid Waste Facility	23

Critical Facility Category	Facility Count
Tank Farm	4
Waste Transfer Station	5
Hazardous Materials and Solid Waste Facilities Total	**242**
Sacramento Total	**2,206**

Source: DSOD, City of Sacramento

Figure F-25 City of Sacramento – Critical Facilities in High Hazard Dam (Outside the County) Inundation Areas



Data Source: DWR DSOD dam inundations (updated 7/2025; data downloaded 10/2025), NID dam inventory and inundation data (updated 11/6/2025; data downloaded 11/6/2025), Sacramento County, Cal-Atlas; Map Date: 4/17/2026.

Table F-28 City of Sacramento – Critical Facilities in Extremely High Hazard (Outside the County) Dam Inundation Areas by Category and Type

Critical Facility Category	Facility Count
Essential Services Facilities	
Port Facilities	1
Essential Services Facilities Total	**1**
At Risk Population Facilities	
At Risk Population Facilities Total	**0**
Hazardous Materials and Solid Waste Facilities	
Hazardous Materials and Solid Waste Facilities Total	**0**
Sacramento Total	**1**

Source: DSOD, City of Sacramento

Natural, Historic, and Cultural Resources

A major dam failure event and associated flooding could have a devastating impact on the City. Large flood events can affect all natural, historic, and cultural resources that lie in the dam inundation areas. There are a number of ways floodwaters associated with a dam failure event 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 levées 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 survive 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 these structures within the inundated 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 dam failure flood events.

Impacts from Dam Failure

Impacts to the City from dam failure flooding could be extensive and widespread and include loss of life and injury, flooding and damage to property and structures, damage to critical facilities and infrastructure, loss of natural resources, and all other flood related impacts. Additionally, mass evacuations and associated economic losses can also be significant.

Other impacts associated with dam failure include landslides, bank erosion, and destruction of habitat. Dam failures can cause downstream flooding and can transport large volumes of sediment and debris and contaminants from the floodwaters. Other environmental impacts can include contamination from septic system failures and releases of contaminants from hazardous materials facilities, contamination of potable water supplies; changes in configurations of streams; loss of wildlife habitats; and degradation of wetlands. A large dam failure event could have significant and catastrophic impacts.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City may be affected in the future by climate change (which was discussed in the Climate Change and Dam Failure 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 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 City include the following:

- Climate change is likely to exacerbate future rain and storm conditions and associated impacts and vulnerability of the City to dam failure. This was discussed in greater detail in the Climate Change and Dam Failure section of the Hazard Profile above.
- The City is expected to see slow and steady growth, and this additional growth within the dam inundation areas of the City would place additional populations at risk to dam failure. Some of the 61 future development areas would fall in a dam inundation area, which would raise the population residing or working on those areas. Additional population growth would likely bring continued diversity to the City. Vulnerable population groups could face disproportionate effects from a dam failure and should be planned for. Changes in population and population patterns that will come from new development will place more people within the dam inundation areas and would likely increase the impacts and vulnerability of the City to this hazard, though the City could seek to mitigate risk through requirements and support for flood-resilient design of future development.
- Land use planning should be proactive to address future hazard conditions. Locating new development, structures, and critical facilities and infrastructure within or near areas of dam failure risk will put additional development at risk. 61 locations are expected to be developed in the next five years. Many of these fall inside of the dam inundation areas. City building codes are in effect to partially reduce this risk and should be updated as necessary to continue to address future dam failure conditions. Changes in land use and future development is likely to increase the impacts and associated vulnerabilities of the City to this hazard.

Future Development

Future dam failure events may occur in the City. Given the number of affected parcels and structures, future development in the City would likely be affected by dam failures and associated flooding. Siting of future development areas should take dam failure flooding into account. The City enforces its floodplain ordinance, which helps to reduce risk to flooding by requiring structures to be above the base flood elevation which, depending on inundation depths, may provide some relief.

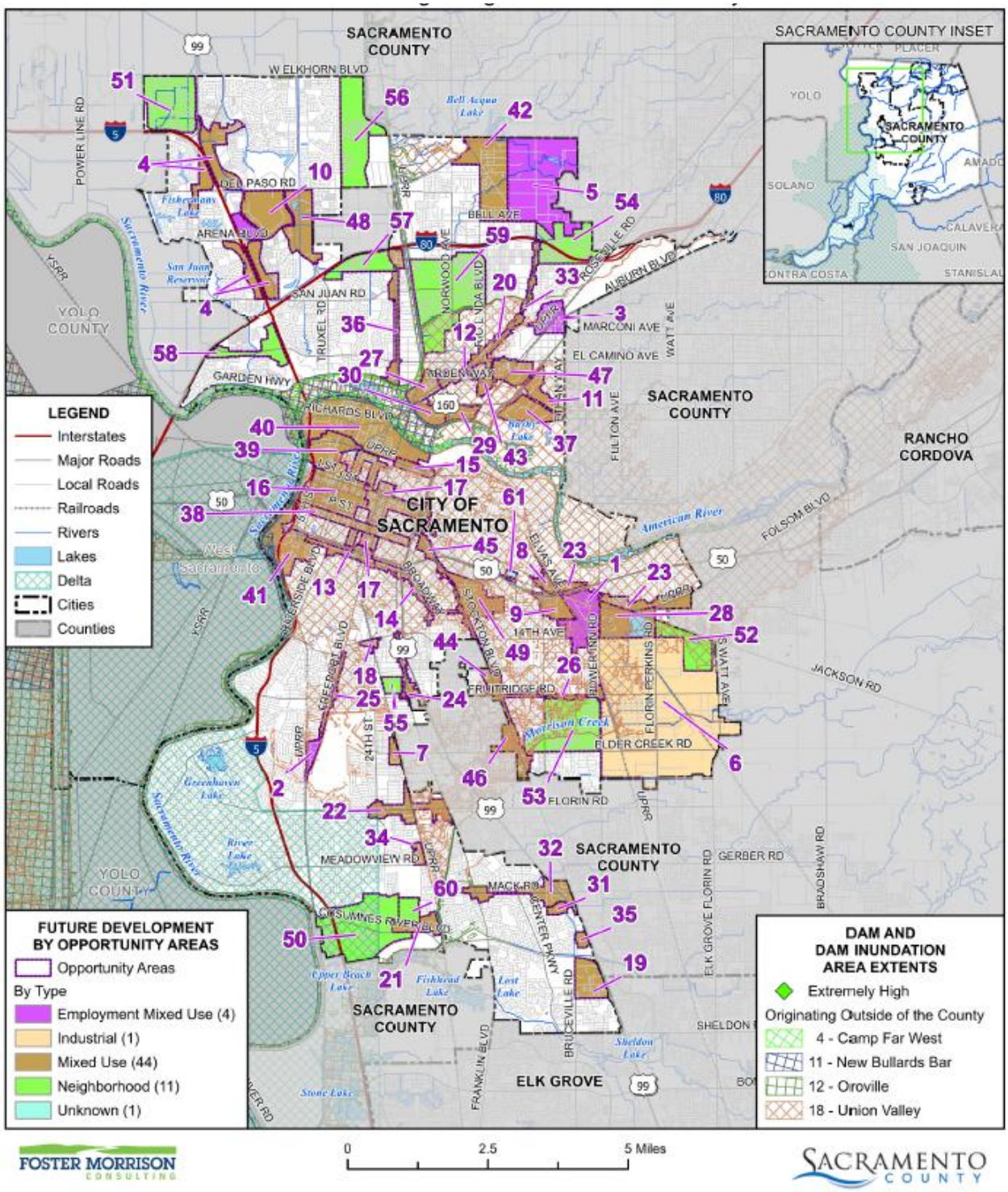
Future development areas and their vulnerability to dam failure are discussed further in the below GIS analysis.

GIS Analysis

The City of Sacramento provided 61 future development areas which were used as the basis for the inventory of future development for the City. These were mapped in GIS. Both Extremely High and High Hazard dam inundation areas affect the City. Figure F-26 shows the locations of the future development areas overlayed on the Extremely High Hazard (outside the County) dam inundation areas. 4 dams (Camp Far West, Oroville, New Bullards Bar, and Union Park) intersects the future development areas. Future development affected by these dams is detailed in Table F-29. As shown, 2 future development areas fall in the Camp Far West inundation area, 5 fall in the New Bullards Bar inundation area, 9 fall in the Oroville inundation area, and 43 fall in the Union Valley inundation area.

Figure F-26 shows the locations of the future development areas overlayed on the High Hazard (inside the County) dam inundation areas. One dam (Nimbus) intersects the future development areas. Future development affected by this dam is detailed in Table F-31. As shown, 57 future development areas fall in the Nimbus inundation area.

Figure F-26 City of Sacramento – Future Development Areas in Extremely High Hazard (Outside the County) Dam Inundation Areas



Data Source: DWR DSOD dam inundations (updated 7/2025; data downloaded 10/2025), Sacramento County. Cal-Atlas; Map Date: 7/31/2026.

Table F-29 City of Sacramento – Future Development Areas by Development Type and Status in Extremely High Hazard Dam (Outside the County) Inundation Areas with Map ID, Parcels, and Acres

Dam Hazard Inundation Areas / Future Development Type /Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Camp Far West							
Mixed Use							
39	Railyards	2	0	2	20	0	20
40	Richards Boulevard	29	0	29	90	0	90
Mixed Use Total		**31**	**0**	**31**	**110**	**0**	**110**
Camp Far West Total		**31**	**0**	**31**	**110**	**0**	**110**
New Bullards Bar							
Mixed Use							
27	Globe LRT	6	2	4	15	6	9
29	Johnston East	1	0	1	1	0	1
39	Railyards	2	0	2	20	0	20
40	Richards Boulevard	40	3	37	170	28	143
41	Riverfront	16	0	16	95	0	95
Mixed Use Total		**65**	**5**	**60**	**302**	**34**	**268**
New Bullards Bar Total		**65**	**5**	**60**	**302**	**34**	**268**
Oroville							
Mixed Use							
21	Delta Shores Transit Center	1	0	1	3	0	3
27	Globe LRT	1	0	1	6	0	6
32	Mack	2	0	2	12	0	12
33	Marysville	2	0	2	16	0	16
39	Railyards	2	0	2	20	0	20
40	Richards Boulevard	34	0	34	107	0	107
41	Riverfront	17	0	17	94	0	94
Mixed Use Total		**59**	**0**	**59**	**258**	**0**	**258**
Neighborhood							
50	Delta Shores	2	0	2	7	0	7

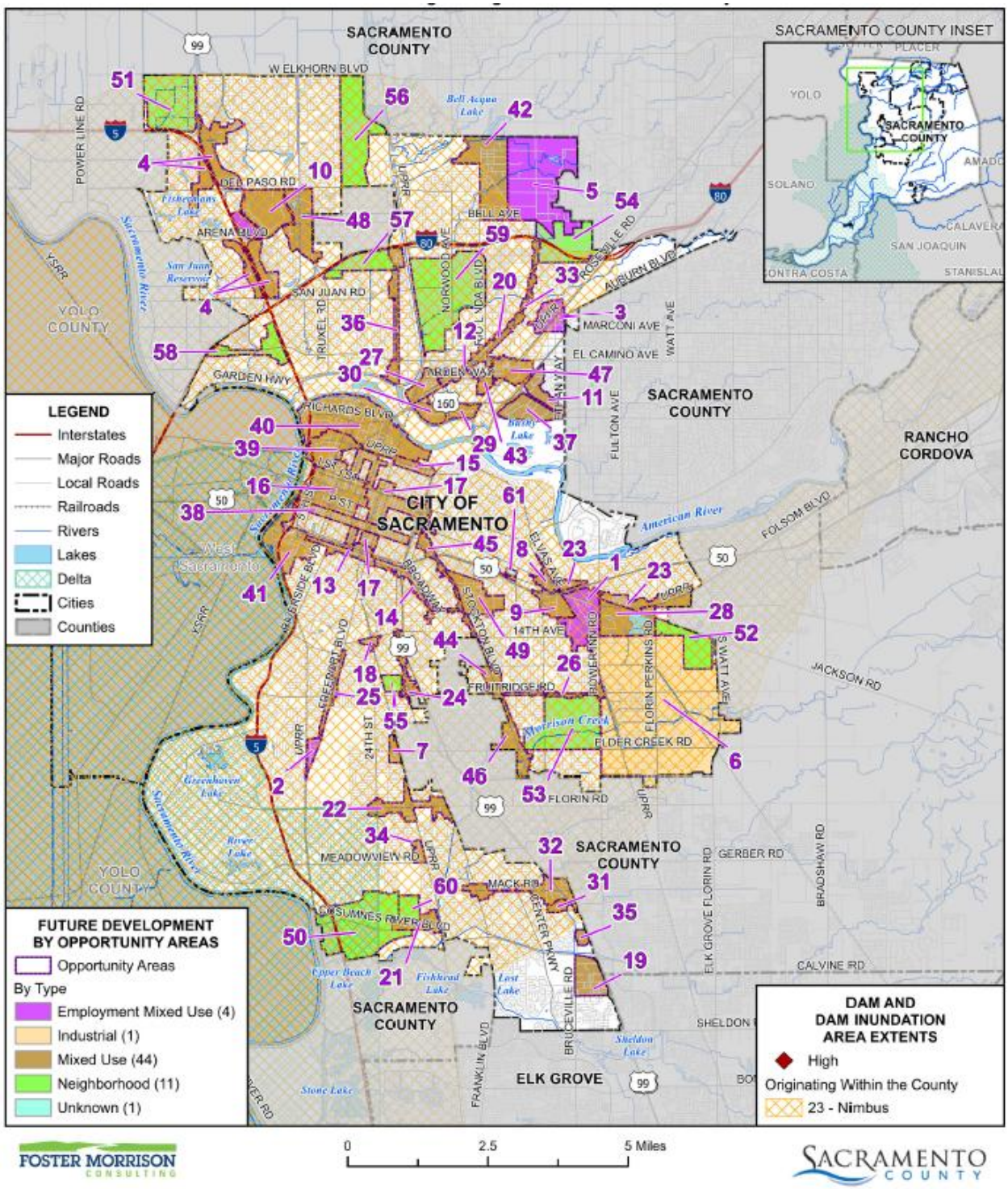
Dam Hazard Inundation Areas / Future Development Type /Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
59	Strawberry Manor	16	0	16	72	0	72
Neighborhood Total		**18**	**0**	**18**	**79**	**0**	**79**
Oroville Total		**77**	**0**	**77**	**336**	**0**	**336**
Union Valley							
Employment Mixed Use							
1	CSUS Village	212	125	87	321	222	100
2	Freeport South	7	3	4	14	4	10
3	Marconi	51	36	15	29	19	9
Employment Mixed Use Total		**270**	**164**	**106**	**364**	**245**	**119**
Industrial							
6	Power Inn/Army Depot	364	216	148	1,063	736	326
Industrial Total		**364**	**216**	**148**	**1,063**	**736**	**326**
Mixed Use							
8	65th North	74	49	25	61	39	22
9	65th South	107	86	21	110	73	38
11	Arden Fair	85	67	18	125	119	7
12	Arden/Del Paso	139	92	47	37	22	15
13	Broadway	288	243	45	78	63	15
14	Broadway East	454	356	98	85	59	26
15	C Street	57	34	23	63	7	56
16	CBD	1,000	623	377	312	113	199
17	Central City Corridors	1,882	1,610	272	298	240	58
18	City College	1	1	0	0	0	0
20	Del Paso	315	258	57	95	72	23
21	Delta Shores Transit Center	1	0	1	3	0	3
22	Florin	37	21	16	69	43	26
23	Folsom East	106	68	38	241	151	90

Dam Hazard Inundation Areas / Future Development Type /Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
24	Franklin	2	1	1	2	2	0
25	Freeport North	107	97	10	67	53	14
26	Fruitridge	142	125	17	44	35	9
27	Globe LRT	213	144	69	120	68	52
28	Granite Park	53	18	35	296	52	244
29	Johnston East	55	33	22	93	71	22
30	Johnston West	33	25	8	79	48	31
32	Mack	1	0	1	1	0	1
33	Marysville	6	4	2	17	1	16
37	Point West	61	57	4	184	182	2
38	R Street Central City Housing	606	464	142	119	88	31
39	Railyards	21	8	13	27	3	24
40	Richards Boulevard	49	2	47	219	22	197
41	Riverfront	650	505	145	305	59	246
42	Robla	8	0	8	41	0	41
43	Royal Oaks	78	50	28	53	28	24
44	Stockton	54	45	9	73	55	18
45	Stockton North	144	114	30	84	52	32
46	Stockton South	71	51	20	152	120	32
47	Swanston Station	80	32	48	61	39	23
49	UCD Med Center	173	99	74	230	32	198
Mixed Use Total		**7,153**	**5,382**	**1,771**	**3,846**	**2,010**	**1,836**
Neighborhood							
52	Jackson	22	7	15	558	239	319
53	Lemon Hill	892	803	89	292	229	63
59	Strawberry Manor	501	450	51	252	75	177
Neighborhood Total		**1,415**	**1,260**	**155**	**1,101**	**542**	**559**

Dam Hazard Inundation Areas / Future Development Type /Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Unknown							
61	SMUD	12	0	12	20	0	20
Unknown Total		**12**	**0**	**12**	**20**	**0**	**20**
Union Valley Total		**9,214**	**7,022**	**2,192**	**6,393**	**3,534**	**2,859**

Source: DSOD/NID, City of Sacramento

Figure F-27 City of Sacramento – Future Development Areas in High Hazard (Inside the County) Dam Inundation Areas



Data Source: DWR DSOD dam inventory (updated 7/2025; data downloaded 10/2025), CalOES CIP dam inundation data (3/2017). Sacramento County, Cal-Atlas; Map Date: 7/31/2026.

Table F-30 City of Sacramento – Future Development Areas by Development Type and Status in High Hazard Dam (Inside the County) Inundation Areas with Map ID, Parcels, and Acres

Dam Hazard Inundation Areas /Future Development Type /Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Nimbus Dam							
Employment Mixed Use							
1	CSUS Village	212	125	87	321	222	100
2	Freeport South	50	38	12	48	33	14
3	Marconi	256	175	81	128	62	66
4	North Natomas EC	3	2	1	76	68	8
5	Raley	88	77	11	70	52	18
Employment Mixed Use Total		**609**	**417**	**192**	**642**	**437**	**205**
Industrial							
6	Power Inn/Army Depot	1,077	738	339	2,747	2,041	706
Industrial Total		**1,077**	**738**	**339**	**2,747**	**2,041**	**706**
Mixed Use							
4	North Natomas EC	461	377	84	596	98	498
7	47th	69	51	18	48	30	18
8	65th North	74	49	25	61	39	22
9	65th South	107	86	21	110	73	38
10	Arco Arena	257	236	21	345	225	119
12	Arden/Del Paso	139	92	47	37	22	15
13	Broadway	310	263	47	80	65	15
14	Broadway East	467	365	102	86	60	26
15	C Street	132	87	45	91	15	77
16	CBD	1,218	755	463	397	146	251
17	Central City Corridors	2,206	1,876	330	349	281	68
18	City College	112	55	57	24	13	11
20	Del Paso	439	368	71	114	89	25
21	Delta Shores Transit Center	2	0	2	41	0	41
22	Florin	178	98	80	207	121	87

Dam Hazard Inundation Areas /Future Development Type /Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
23	Folsom East	106	68	38	241	151	90
24	Franklin	207	159	48	81	65	16
25	Freeport North	159	147	12	79	65	14
26	Fruitridge	173	151	22	54	44	10
27	Globe LRT	213	144	69	120	68	52
28	Granite Park	54	18	36	299	52	247
29	Johnston East	55	33	22	93	71	22
30	Johnston West	33	25	8	79	48	31
31	Kaiser Med Center	4	4	0	42	42	0
32	Mack	135	110	25	195	145	50
33	Marysville	210	122	88	69	33	36
34	Meadowview	93	81	12	39	7	32
36	Northgate	189	137	52	144	115	29
38	R Street Central City Housing	669	521	148	134	98	36
39	Railyards	96	30	66	124	16	109
40	Richards Boulevard	495	219	276	845	335	510
41	Riverfront	661	505	156	306	59	248
42	Robla	422	342	80	212	100	112
43	Royal Oaks	88	55	33	54	29	25
44	Stockton	72	58	14	88	68	20
45	Stockton North	234	181	53	102	67	35
46	Stockton South	102	67	35	181	137	44
47	Swanston Station	228	146	82	144	108	35
48	Truxel	325	267	58	316	196	120
49	UCD Med Center	275	127	148	239	36	203
Mixed Use Total		**11,469**	**8,475**	**2,994**	**6,868**	**3,430**	**3,438**
Neighborhood							
50	Delta Shores	926	203	723	780	113	667
51	Greenbriar	2,023	1,334	689	428	175	253
52	Jackson	25	9	16	573	241	332

Dam Hazard Inundation Areas /Future Development Type /Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
53	Lemon Hill	2,196	2,031	165	593	474	119
54	McClellan Heights/Parker Homes	530	493	37	116	97	19
55	North City Farms	121	98	23	55	46	9
56	Panhandle	465	3	462	597	135	461
57	Parkerbridge	555	524	31	251	66	185
58	Southwest Natomas	202	174	28	160	105	55
59	Strawberry Manor	2,878	2,508	370	885	501	383
60	102-Acre Site	1	0	1	102	0	102
Neighborhood Total		**9,922**	**7,377**	**2,545**	**4,539**	**1,954**	**2,585**
Unknown							
61	SMUD	12	0	12	20	0	20
Unknown Total		**12**	**0**	**12**	**20**	**0**	**20**
Nimbus Dam Total		**23,089**	**17,007**	**6,082**	**14,817**	**7,863**	**6,954**

Source: DSOD/NID, City of Sacramento

Drought & Water Shortage (w/Tree Mortality)

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

Hazard Profile

Drought and water shortage occur when a normal amount of precipitation is not available to satisfy an area's usual water-consuming activities; these are complex issues involving many factors. 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, with disparate impacts across sectors. 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.

The City's water supply is comprised of surface water from the Sacramento River and American River and groundwater from the North American and South American Subbasins. The primary water supply comes from the American River. However, the amount of water the City may divert from each source varies based upon several factors, including hydrologic conditions and environmental requirements.

The City's water supplies are adequate to meet projected retail demand increases and existing wholesale demand contracts during normal and dry conditions. Projections show, with existing wholesale contracts, supply expansion would not be needed until 2046, with a total peak capacity requirement of only 14 mgd additional supply by 2050. If additional likely wholesale commitments are considered, additional supply capacity would be needed by 2030, with a total additional requirement of 72 mgd by 2050.

Tree Mortality and Drought

One of the specific impacts of drought in the City of Sacramento 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 uprooting and toppling during extreme storm events (with high winds and saturation of soils), in addition 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 City. 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 City that provides relief during extreme heat days. In addition to an increase in wildfire fuels, hazardous trees can fall onto structures causing damage and result in a reduction on the tree canopy within the City that provides relief during extreme heat days.

Location and Extent

Drought and water shortage are regional phenomenon. The whole of the City 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 City of Sacramento, 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 City 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 the dominant 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.

Past Occurrences

Disaster Declaration History

There have been 3 state and 1 federal disaster declarations for Sacramento County. This can be seen in Table F-31. 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 City to some degree.

Table F-31 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 City.

City of Sacramento Events

Based on historical information, the occurrence of drought in California, including the City of Sacramento, 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 City and Sacramento County Planning Area. The City Planning Team noted that the City has experienced multiple, consecutive years of drought. No events since 2021 causing damages in the City could be recalled.

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 City 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 2024 City of Sacramento Climate Action & Adaptation Plan noted that the combination of warmer temperatures, changing precipitation patterns, and decreased winter snowpack will likely cause longer and more intense droughts in California and the Sacramento region. Modeling of an extended late-Century drought scenario indicates that average annual precipitation between 2051 and 2070 could be as low as 78 percent of historical median annual precipitation averaged over the North Coast and Sierra California regions. While drought on this scale would have far reaching consequences, drought on a lesser scale can lead to reduced soil moisture, increased risk of wildfire, and reductions in streamflow. Drought conditions have profound impacts on water availability and increase demand for groundwater and compromise levee integrity. Other impacts of drought include dust storms, flash flooding, lower crop yields, and reduced water quality.

Vulnerability to Drought and Water Shortage

Based on historical information, the occurrence of drought and water shortage in California, including the City, 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 City of Sacramento to drought may vary and include reduction in water supply, turf losses, impacts to natural resources, and an increase in dry fuels and tree dieback.

The whole of the City 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 City's Assets at Risk to this hazard.

Local Concerns

The City 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.

The City is well-positioned to withstand the effects of a single dry year and a five-year drought at any period between 2025 and 2045. The City's drought risk was specifically assessed between 2021 and 2025, assuming that the next five years are dry years. In each case, water supplies comfortably exceed water demands. This remains true whether the drought occurs in 2021, 2045, or any year between.

Through active groundwater management plans and projects over the past decade, the City and its regional partners have helped stabilize groundwater supply to a sustainable level. There is no current concern about groundwater reliability. There is continuing work on conjunctive-use infrastructure projects to help replenish groundwater basins for water supply reliability and diversification and environmental benefits.

In the long-term, climatic and socioeconomic impacts are projected to greatly impact water supply (precipitation variance, snowmelt runoff shifting to earlier in the year, increased evaporation and evapotranspiration, fewer wet years); water demand (increase in water consumption for food production, population growth); and water quality (increased water temperatures, higher runoff flowrates increasing turbidity and pollutants). It is anticipated that groundwater supply will be more heavily utilized through conjunctive use during dry and extremely dry years.

The City did note that there has been an increase in the occurrence of harmful algal blooms (HABs) in the stormwater detention basins, channels such as Pocket Canal, and City Park ponds such as McKinley Park and others during drought periods. This is primarily due to low flows, stagnant water and increased temperatures, all conditions that are more common with increased average temperatures and decreased precipitation. HABs have the potential to produce algal toxins that pose a risk to drinking water, as well as people and pets recreating in the waterbodies. Once established, these blooms are difficult to treat, and require monitoring and public outreach to mitigate the risks they pose.

Drought and water shortages pose an acute risk to the city's tree canopy, particularly for young trees that are still in the establishment phase and for trees without a consistent source of water. During the State-declared drought in 2014-2015, mandated limitations to irrigation of lawns had an unintended consequence of exacerbating drought impacts by leading to widespread underwatering of many urban trees (either due to trees reliant on lawn-based irrigation and/or reductions in across-the-board landscaping irrigation even when tree-specific irrigation was still allowed). This period of underwatering and drought weakened many trees, which set up the City of Sacramento for a period of uniquely devastating storms in late 2022-early 2023 where multiple atmospheric river events caused an estimated over 1,500 trees in the city to uproot and topple in a three-week time span. This loss of tree canopy is a setback to the broader City goals to increase

urban tree canopy to mitigate extreme heat, provide stormwater management benefits, and improve local air quality. As a result of recent impacts of drought on trees, there is an increased emphasis on installing adequate water-efficient, deep-root irrigation as part of all City-led tree planting efforts in order to mitigate the risk of future tree loss during storm events.

Assets at Risk

Assets at risk from drought and water shortage include people and populations; structures; 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 City 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 City 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 City residents. Water shortages can have an effect on all of the population in the City, 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.

Structures

Structures have a limited vulnerability to drought and water shortage. It is the secondary hazard of drought (wildfire) which causes risks to structures. Drought can also stress trees, causing die off and vulnerability to future storm events. These trees may fall on structures adjacent to them.

Critical Facilities and Infrastructure

Most 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 and wastewater systems may be impacted during times of reduced water supply and need to employ contingencies to remain functional and fully operational. 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 critical facilities and infrastructure. Sufficient water supply for firefighting can also be an issue. Drought can also stress trees, causing die off and vulnerability to future storm events. These trees may fall on critical infrastructure adjacent to them and impact power lines and other utilities.

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 coastal marsh areas may occur. Severe drought conditions can contribute to an increase in erosion of soils and lead to poor soil and water quality. Further,

all of the trees in the City are at risk to drought impacts and a reduction in water supply. These trees provide a wealth of social and environmental benefits to City 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 forests and critical habitat areas, and reduce food and water available for wildlife and livestock, the latter detailed above as a specific concern to the City. 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 City.

Impacts from Drought and Water Shortage

The vulnerability of the City to drought is City-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 City.

Other qualitative impacts associated with drought in the City 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 City 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 City of Sacramento include the following:

- Climate change is likely to exacerbate future drought conditions and associated impacts and vulnerability of the City 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.

- Future population growth should be considered as having more or less people in a community affects the overall hazard vulnerability to the City. Water shortages in the future may be worsened by drought. The City is expected to see slow and steady growth, and any future population growth (like that shown in the 61 future development areas) in the City will add additional pressure to water companies during periods of drought and water shortage. The Department of Utilities will need to continue to plan for and add infrastructure capacity for population growth. As the population grows, the nature and makeup of populations will shift and change along with it. Vulnerable and underserved populations, such as those with low incomes and the unhoused that might not always have access to clean water, will need to be considered as future development continues, since they may experience a disproportionate impact from drought and water shortage. Potential population growth will be a challenge not only with regard to the City's water access for agricultural production, but state- and nation-wide with regard to food production. Should the City see a growth in population, it will increase the vulnerability and impacts to the Citty from this hazard.
- Land use planning should be proactive to address future hazard conditions. As the City continues to grow, more cropland may be taken out of production to provide housing to accommodate for population growth. As the areas adjacent to the City's agricultural lands are reduced, it seems likely that there would be less of a competing demand for water. However, more development will also require an increase in water supply and associated infrastructure. With the amount of growth planning in the City, changes in land use and development will likely increase the impacts and associated vulnerabilities of the City to this hazard, depending on where and how this future growth occurs Tree planting efforts should include the installation of adequate water-efficient irrigation to support healthy tree establishment and survival through drought events.

Future Development

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

Earthquake (w/Subhazards)

Likelihood of Future Occurrence–Occasional
Vulnerability–Medium

Hazard Profile

An earthquake is caused by a sudden slip on a fault. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up, and the rocks slip suddenly, releasing energy in waves that travel through the earth's crust and cause the shaking that is felt during an earthquake. Earthquakes cause ground shaking, possible liquefaction, landslide, settlement, and can cause fires that follow the earthquake. Earthquakes can cause structural damage, injury, and loss of life, as well as damage to infrastructure networks, such as water, wastewater, power, gas, communication, and transportation. Earthquakes may also cause collateral emergencies including dam and levee failures, seiches, hazmat incidents, fires, avalanches, and landslides. The degree of damage depends on many interrelated factors. Among these are: the magnitude, focal depth, distance from the causative fault, source mechanism, duration of shaking, high rock accelerations, type of

surface deposits or bedrock, degree of consolidation of surface deposits, presence of high groundwater, topography, and the design, type, and quality of building construction.

Liquefaction Potential

Liquefaction can be defined as the loss of soil strength or stiffness due to a buildup of pore-water pressure during a seismic event and is associated primarily with relatively loose, saturated fine- to medium-grained unconsolidated soils. Seismic ground shaking of relatively loose, granular soils that are saturated or submerged can cause the soils to liquefy and temporarily behave as a dense fluid. If this layer is at the surface, its effect is much like that of quicksand for any structure located on it. If the liquefied layer is in the subsurface, the material above it may slide laterally depending on the confinement of the unstable mass. Liquefaction is caused by a sudden temporary increase in pore-water pressure due to seismic densification or other displacement of submerged granular soils. Liquefiable soil conditions are not uncommon in alluvial deposits in moderate to large canyons and could also be present in other areas of alluvial soils where the groundwater level is shallow (i.e., 50 feet below the surface). Bedrock units, due to their dense nature, are unlikely to present a liquefaction hazard.

Location and Extent

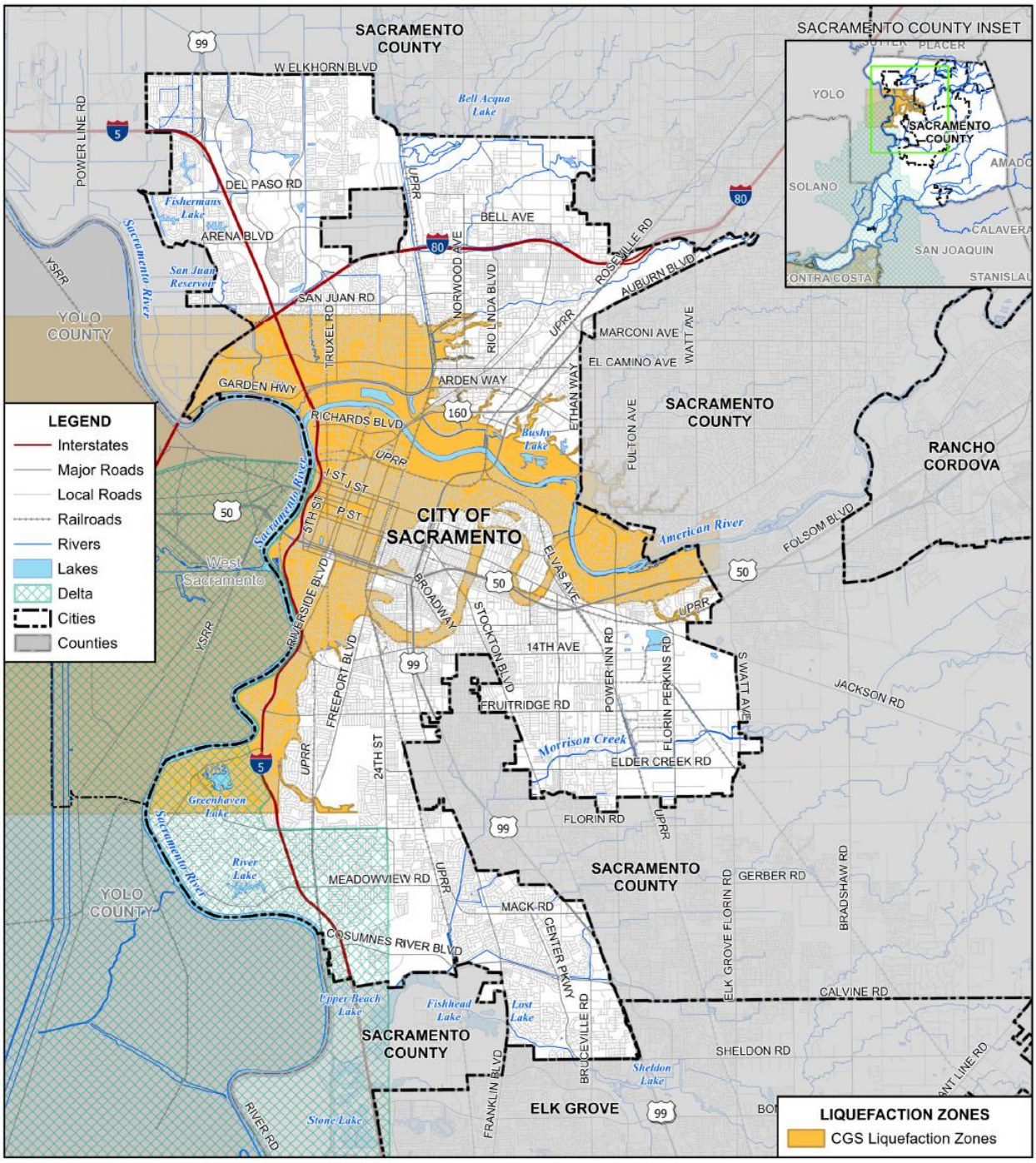
Since earthquakes are regional events, the whole of the City is at risk to earthquake. The City of Sacramento, Sacramento County, and surrounding areas have some level of risk from seismic and geologic hazards. Regional faults were shown in Section 4.3.10 of the Base Plan. Geological literature indicates that no major active faults transect the County; however, there are several subsurface, likely inactive, faults in the Delta, such as the Midland fault. A second, presumably inactive, fault is in the vicinity of Citrus Heights near Antelope Road. To the east, the Bear Mountain fault zone trends northwest-southeast through Sacramento and El Dorado Counties. As noted in the Base Plan, there have been historically active faults outside the County. These include: San Andreas, Vaca, Concord, Greenville, Hayward, Calaveras, Foothill Fault System, Las Positas, Midland, and West Napa. A significant seismic event on any of these major faults could cause damage in the City of Sacramento.

The amount of energy released during an earthquake is usually expressed as a magnitude and is measured directly from the earthquake as recorded on seismographs. An earthquake's magnitude is expressed in whole numbers and decimals (e.g., 6.8). Seismologists have developed several magnitude scales, as discussed in Section 4.3.10 of the Base Plan.

Another measure of earthquake severity is intensity. Intensity is an expression of the amount of shaking at any given location on the ground surface. Seismic shaking is typically the greatest cause of losses to structures during earthquakes. The City is located in an area where earthquakes of some magnitude occur, so both magnitude and intensity of earthquakes are expected to remain low to moderate. Seismic shaking maps for the area in Section 4.3.10 of the Base Plan show Sacramento County and the City fall within a low to moderate shake risk.

Shake risk in the City is complicated by soils that are at risk to earthquake induced liquefaction. Liquefaction zones cover a portion of the City, as shown on Figure F-28 and detailed in Table F-32.

Figure F-28 City of Sacramento – Liquefaction Zones



Data Source: CGS Liquefaction Zones 2015 (Sacramento West and East Quads updated 11/20/2025), Sacramento County, Cal-Atlas; Map Date: 3/17/2026.

Table F-32 City of Sacramento – Geographical Extents of Liquefaction Zones by Property Use

Liquefaction Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Inside Liquefaction Zone	12,419	24%	6,869	21%	5,551	28%

Source: CGS

Past Occurrences

Disaster Declaration History

There has been no state or federal disaster declarations in Sacramento County from earthquake (or liquefaction).

NCDC Events

The NCDC does not track earthquake (or liquefaction) events.

City of Sacramento Events

These sections first show historic hazard events occurring since the 2021 LHMPs and then those occurring prior to the 2021 LHMP.

Events since 2021 LHMP

The City noted one past occurrences of earthquakes that had some effect on the City:

- 2021 Truckee Earthquake (Magnitude 4.7) - West Tahoe Fault. Shaking could be felt within the City, though no damages were recorded. No liquefaction occurred in the City.

Events prior to 2021

Events prior to 2021 include the following.

- 2014 Napa Earthquake (Magnitude 6.0) - West Napa Fault
- 1989 Loma Prieta Earthquake (Magnitude 6.9) – San Andreas Fault
- 1906: San Francisco Earthquake (Magnitude 7.8) – San Andreas Fault
- 1892: Winters Earthquake (Magnitude 6.6) – Undetermined fault

No impacts to the City could be recalled from these events. None of these events had associated liquefaction in the City.

Climate Change and Earthquake

Climate change is unlikely to increase earthquake frequency or strength. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Vulnerability to Earthquake

The combination of plate tectonics and associated California coastal mountain range building geology generates earthquakes as a result of the periodic release of tectonic stresses Earthquake vulnerability is primarily based on population and the built environment. Urban areas in high seismic hazard zones are the most vulnerable, while more rural areas are less vulnerable. The primary impacts of concern are life safety and property damage. Although several active faults are near the Sacramento County Planning Area and the City, seismic hazard mapping indicates that the City has low to moderate seismic hazard potential. There is the potential for the City and Sacramento County Planning Area to be subject to some level of moderate seismic shaking during earthquake events occurring on these regional faults depending on the location and magnitude of the event. Some degree of structural damage due to stronger seismic shaking could be expected in the City.

The Uniform Building Code (UBC) identifies four seismic zones in the United States. The zones are numbered one through four, with Zone 4 representing the highest level of seismic hazard. The UBC establishes more stringent construction standards for areas within Zones 3 and 4. All of California lies within either Zone 3 or Zone 4. The City of Sacramento is located within Zone 3.

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

Local Concerns

The City 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.

The City does lie in the shake zone from active (though distant) faults. Analysis was performed in the Base Plan on damage from 4 faults: Calaveras, Concord, Hayward, and San Andreas. A small portion of the damages from the Hazus analysis would have likely come from the City.

It was noted that (from a police perspective), earthquakes present several operational concerns for the Sacramento Police Department. Structural collapses in older buildings or infrastructure may leave people trapped and require coordinated search and rescue efforts with fire and emergency partners. The Police Department also anticipate communication systems becoming overwhelmed, particularly with spikes in 911 calls for non-emergencies, which can delay responses to critical incidents.

Debris, damaged bridges, and blocked roadways increase the risk of traffic accidents and can slow the ability to reach affected areas quickly. Power outages and disrupted utilities may create additional risks for

vulnerable populations, including the elderly and unhoused, leading to increased requests for welfare checks.

Following a major event, the Police Department must also plan for false alarms from alert systems, public panic, and the potential for looting or civil unrest in heavily damaged areas. Maintaining visible patrols, preserving order, and coordinating with regional partners like Cal OES will be critical to stabilizing the community and supporting the broader disaster response.

Assets at Risk

Many assets in the City are at risk to ground shaking and other earthquake related impacts. Assets at risk from earthquake include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections. More information on the Hazus scenarios and how the City and County is affected is included in Section 4.3.10 of the Base Plan and in Appendix H.

People and Populations

All people and populations are at risk from earthquake events. Those at heightened risk include:

- The unsheltered
- Low income and other socially vulnerable populations
- Individuals dependent on medical equipment
- Individuals with impaired mobility

The greatest risk to people and populations from earthquake is death and injury. More information on people and populations at risk to earthquake shaking events can be seen in the Hazus scenarios developed for this LHMP.

City residents that live in the earthquake liquefaction zones are often the most vulnerable to earthquake liquefaction. Not only are the residents at risk, but their homes and contents are all at risk, compounding the impacts associated with significant hazard events. To further evaluate the impact to the City's residential population residing within these hazard areas, the CGS liquefaction zones were overlayed on the parcel layer and linked to the Assessor Data. Those residential parcels that fall in the liquefaction zones were counted and multiplied by the 2020 Census Bureau average household factors the City – 2.59. This is shown in Table F-33.

Table F-33 Sacramento County Planning Area – Improved Residential Parcels and Populations in CGS Liquefaction Zones by Jurisdiction

Jurisdiction	Improved Residential Parcels	Population
City of Sacramento	34,162	88,480

Source: CGS Liquefaction Zones 2015 (Sacramento East and West Quads updated 11/20/2025), 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size – City of Sacramento (2.59)

Structures

All structures in the City are vulnerable to earthquakes, depending on the severity, location of the event, age of structure relative to what building code the structure was designed for, and whether any seismic retrofits have been performed. The Hazus scenarios conducted for the entire Sacramento County Planning Area (including the City) show how structures may be affected.

Liquefaction can affect certain structures in the City. GIS was used to determine the possible impacts of liquefaction on parcels and structures within the Planning Area. Table F-34 shows parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), estimated content replacement values, and total values by property use for the City that fall in the CGS liquefaction zones.

Table F-34 City of Sacramento – Count and Value of Parcels and Structures in CGS Liquefaction Zones by Property Use

Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Agricultural	1	1	$1,817	$13,525	$13,525	$28,867
Care / Health	46	35	$26,211,271	$370,632,676	$370,632,676	$767,476,623
Church / Welfare	144	109	$51,798,002	$186,660,052	$186,660,052	$425,118,106
Industrial	387	317	$194,850,370	$427,779,937	$641,669,906	$1,264,300,213
Miscellaneous	937	4	$5,059,545	$108,457	$108,457	$5,276,459
Office	993	766	$859,836,151	$3,010,137,816	$3,010,137,816	$6,880,111,783
Public / Utilities	280	0	$84	$0	$0	$84
Recreational	82	42	$44,339,242	$376,970,781	$376,970,781	$798,280,804
Residential	34,746	34,162	$5,405,883,926	$14,246,734,416	$7,123,367,208	$26,775,985,550
Retail / Commercial	1,187	844	$629,521,446	$989,236,304	$989,236,304	$2,607,994,054
Unknown	40	3	$238,249	$312,876	$0	$551,125
Vacant	880	31	$307,078,168	$4,494,409	$0	$311,572,577
Sacramento Total	**39,723**	**36,314**	**$7,524,818,271**	**$19,613,081,249**	**$12,698,796,725**	**$39,836,696,245**

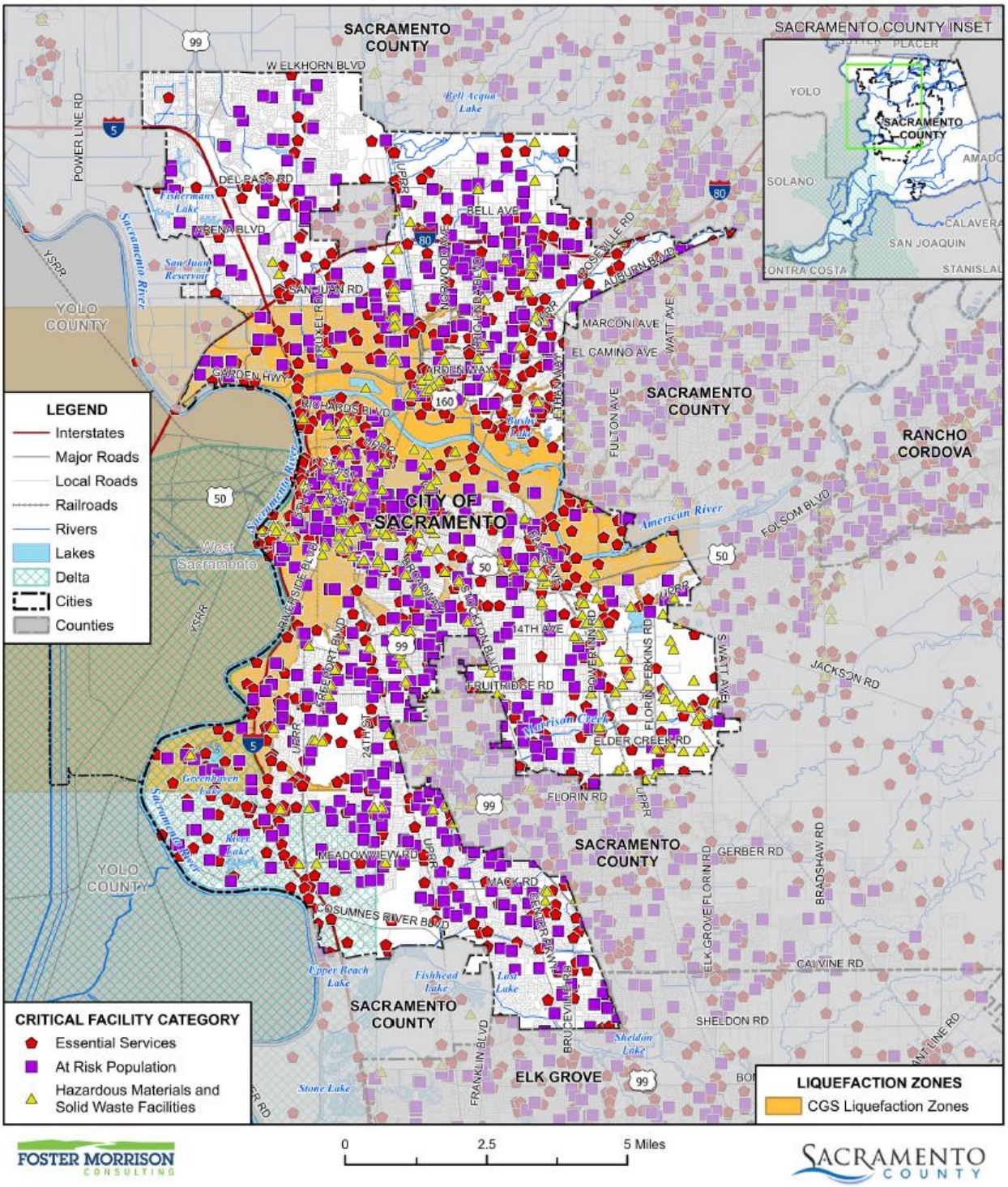
Source: CGS Liquefaction Zones 2015 (Sacramento West and East Quads updated 11/20/2025), 2025 Sacramento County Parcel/Assessor Data

Critical Facilities and Infrastructure

Earthquake and its related hazards present risks to the City. Earthquakes can damage critical facilities and infrastructure that provide vital services to the City. Damage to critical facilities from the Hazus earthquake scenarios for the Sacramento County Planning Area, including the City of Sacramento, are discussed in the Base Plan. Given the nature of earthquake events causing significant ground shaking among other issues, those critical facilities and infrastructure that include underground components such as water and wastewater facilities would be uniquely vulnerable to damaging earthquakes.

In addition to earthquake shaking and other hazards, liquefaction also presents a threat to critical facilities and infrastructure. The following analysis discusses critical facilities and infrastructure. A separate analysis was performed on the critical facility inventory in the City to determine critical facilities in liquefaction zones. Using GIS, the CGS liquefaction zones were overlayed on the critical facility GIS layer. Figure F-29 shows critical facilities as well as the liquefaction zones. Table F-35 details critical facilities by liquefaction zone by facility type and count for the City.

Figure F-29 City of Sacramento – Earthquake Liquefaction Zones



Data Source: CGS Liquefaction Zones 2015 (Sacramento West and East Quads updated 11/20/2025), Sacramento County, Cal-Atlas; Map Date: 4/17/2026.

Table F-35 City of Sacramento – Critical Facilities in Liquefaction Zones by Category and Type

Liquefaction Zone	Critical Facility Category / Type	Facility Count
Within a Liquefaction Zone	**Essential Services Facilities**	
	Bridge	11
	Emergency Evacuation Center	29
	EMS Stations	10
	FDIC Insured Banks	34
	Fire Station	9
	Floodgate	30
	Hospital or Urgent Care	2
	Law Enforcement	11
	Microwave Service Towers	263
	Port Facilities	4
	Power Plants	2
	Public Transit Stations	19
	Pump Station	77
	Sewage Treatment Plant	5
	State Government Buildings	26
	Water Well	34
	Essential Services Facilities Total	**566**
	At Risk Population Facilities	
	Colleges, Universities, and Professional Schools	3
	Community Center	1
	Day Care Center	39
	Major Sports Venues	2
	Mobile Home Parks	3
	Places of Worship	76
	School	62
	At Risk Population Facilities Total	**186**
	Hazardous Materials and Solid Waste Facilities	
	EPA ER FRP Facility	2
	EPA ER TRI Facility	10
	Leaky Underground Storage Tank	57
	Solid Waste Facility	10
	Tank Farm	4
	Hazardous Materials and Solid Waste Facilities Total	**83**

Liquefaction Zone	Critical Facility Category / Type	Facility Count
	Within a Liquefaction Zone Total	**835**
Sacramento Total		**835**

Source: CGS Liquefaction Zones 2015 (Sacramento East and West Quads updated 11/20/2025), Sacramento County GIS

Natural, Historic, and Cultural Resources

The 2023 State Hazard Mitigation Plan noted that environmental problems from earthquakes can be numerous. It is possible for earthquakes to reroute streams, which can change the water quality, possibly damaging habitat and feeding areas. Streams fed by groundwater and/or springs may dry up because of changes in underlying geology. Another threat to the environment from earthquakes is the potential release of hazardous materials into the natural environment causing contamination that can be difficult to contain. Historical and cultural resources are at risk, often due to their age and construction types. The Hazus scenarios in Section 4.3.10 of the Base Plan are relatively silent on the vulnerability to natural, historic, and cultural resources, but impacts to these resources could be long lasting.

Impacts from Earthquake

Earthquakes can strike without warning and cause dramatic changes to the landscape of an area that can have devastating impacts on the built environment. The greatest impact is to life safety of the City of Elk Grove residents and visitors. Other impacts to the City could include damages to infrastructure such as roads and bridges; damages and loss of services to utilities and critical infrastructure, including those related to gas, power, water, wastewater and communication systems; damages to structures and other development; and possible loss of life and injuries.

Earthquakes can also cause failure of dams, levees, and reservoirs. Facilities and lands adjacent to or downstream from dams, reservoirs, or behind levees might be subject to flooding, if the dams, reservoirs, or levees fail as a result of an earthquake. The City has locations with significant flood risk that include facilities downslope from levees and dams that could be affected by a significant earthquake event.

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 City may be affected in the future by climate change (which was discussed in the Likelihood of Future Occurrence 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 City of Sacramento include the following:

- Climate change is likely to have no effect on future earthquake conditions and associated impacts and vulnerability of the City. This was discussed in greater detail in the Climate Change and Earthquake section of the Hazard Profile above.
- The City is expected to see steady growth. There are 61 areas which the City expects to see experience development over the next 5 years. Any additional growth in the City would place additional populations at risk to earthquake. Additional population growth would likely bring continued diversity to the City. Vulnerable population groups could face disproportionate effects from an earthquake and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the location and severity of future earthquake events.
- Land use planning should be proactive to address future hazard conditions. There are 61 areas the City is planning to develop over the next five years. City building codes are in effect to reduce structure damage, including damage to critical facilities and infrastructure, and should be updated as necessary to continue to address future earthquake conditions. Depending on the location of new development and adherence to protective building codes, changes in land use and development may or may not increase the impacts and associated vulnerabilities of the City to this hazard.

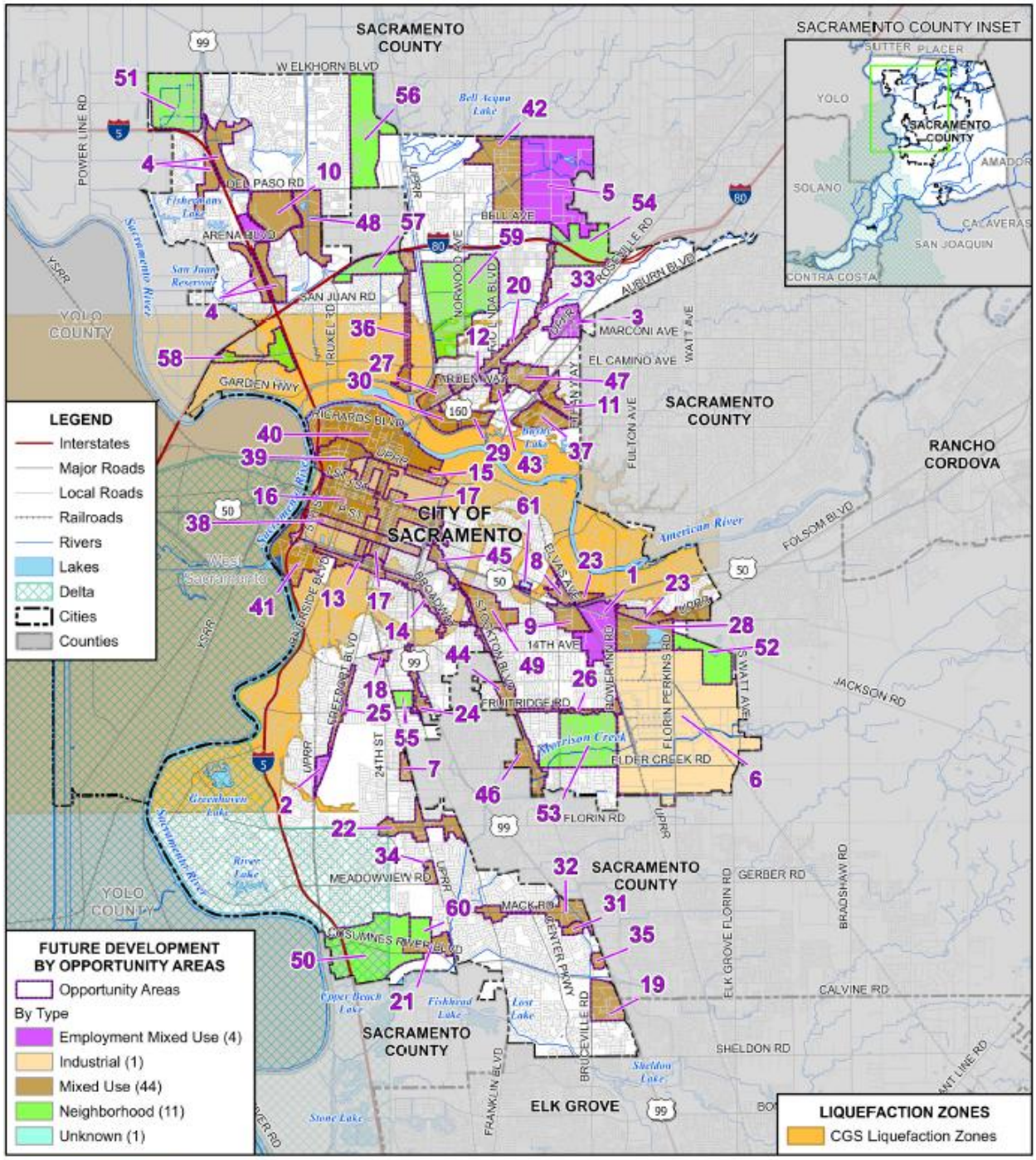
Future Development

Although new growth and development corridors would fall in areas affected by earthquake, given the low probability of major earthquake and the building codes in effect, development in areas prone to earthquakes will continue to occur. Seismic retrofits of the City's older, more vulnerable structures should be evaluated as part of future development in the City. The City enforces the state building code, which mandates construction techniques that minimize seismic hazards. Future development in the City is subject to these building codes and land use planning

GIS Analysis

The City of Sacramento provided 61 future development areas which were used as the basis for the inventory of future development for the City. These were mapped in GIS. Figure F-30 shows the locations of the future development areas overlayed on the CGS Liquefaction Zones. Future development affected in these zones is detailed in Table F-36. As shown, 26 future development areas fall in the liquefaction zones.

Figure F-30 City of Sacramento – Future Development Areas in Liquefaction Zones



Data Source: CGS Liquefaction Zones 2015 (Sacramento West and East Quads updated 11/20/2025), Sacramento County, Cal-Atlas; Map Date: 7/31/2026.

Table F-36 City of Sacramento – Future Development Areas in CGS Liquefaction Areas by Map ID, Parcels, and Acres

Liquefaction Zone / Future Development Type / Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Within a Liquefaction Zone							
Employment Mixed Use							
1	CSUS Village	3	2	1	9	9	0
2	Freeport South	2	0	2	3	0	3
Employment Mixed Use Total		**5**	**2**	**3**	**12**	**9**	**3**
Mixed Use							
8	65th North	6	4	2	11	1	10
11	Arden Fair	7	5	2	51	48	3
12	Arden/Del Paso	9	6	3	4	2	2
13	Broadway	226	189	37	61	47	14
14	Broadway East	137	99	38	24	15	10
15	C Street	132	87	45	91	15	77
16	CBD	1,218	755	463	397	146	251
17	Central City Corridors	1,881	1,593	288	276	222	54
23	Folsom East	43	28	15	115	84	32
27	Globe LRT	80	50	30	92	50	42
29	Johnston East	41	23	18	85	66	19
30	Johnston West	33	25	8	79	48	31
36	Northgate	145	105	40	71	57	14
37	Point West	18	18	0	86	86	0
38	R Street Central City Housing	433	306	127	88	61	27
39	Railyards	96	30	66	124	16	109
40	Richards Boulevard	495	219	276	845	335	510
41	Riverfront	661	505	156	306	59	248
43	Royal Oaks	12	5	7	22	10	12

Liquefaction Zone / Future Development Type / Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
45	Stockton North	9	6	3	4	3	1
49	UCD Med Center	1	0	1	62	0	62
Mixed Use Total		**5,683**	**4,058**	**1,625**	**2,895**	**1,368**	**1,527**
Neighborhood							
58	Southwest Natomas	202	174	28	160	105	55
59	Strawberry Manor	276	237	39	195	46	149
Neighborhood Total		**478**	**411**	**67**	**355**	**151**	**204**
Unknown							
61	SMUD	11	0	11	7	0	7
Unknown Total		**11**	**0**	**11**	**7**	**0**	**7**
Grand Total		**6,177**	**4,471**	**1,706**	**3,269**	**1,528**	**1,741**

Source: CGS, City of Sacramento

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

Likelihood of Future Occurrence–Occasional (1%)/Unlikely (0.5/0.2%)
Vulnerability–Extremely High

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 City and have caused damage in the past. Flooding can be a significant problem in the City. Historically, the City has been at risk to flooding primarily during the winter and spring months when river systems in the City swell with heavy rainfall and snowmelt runoff. The City 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 City of Sacramento. Occasionally, extended heavy rains result in floodwaters that exceed normal high-water boundaries and cause damage. Flooding has occurred within the 1%, 0.5%, and 0.2% annual chance floodplains and in other localized areas in the City.

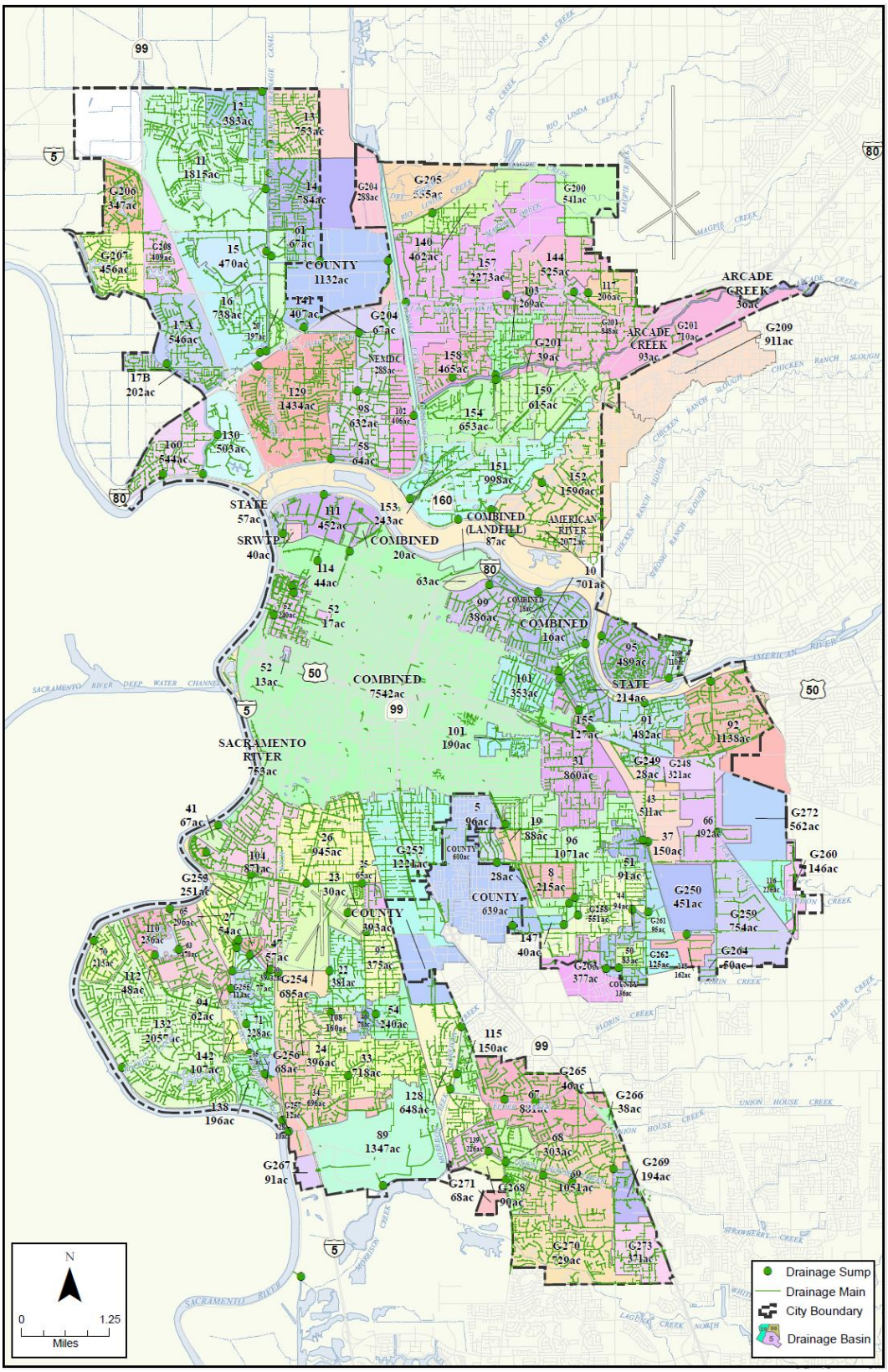
Location and Extent

The City of Sacramento is traversed by several stream systems and is at risk to both riverine flooding and localized stormwater flooding. As previously described in Section 4.2.14 of the main plan, the Sacramento County Planning Area and the City of Sacramento have been subject to previous occurrences of flooding.

In the City of Sacramento, much of the riverine flood damage occurs in the floodplains of the Sacramento River and the American River.

Six small tributaries of the Sacramento River pass through and provide drainage for the City of Sacramento. These tributaries are Dry Creek, Magpie Creek, and Arcade Creek in the northern portion of the City (north of the American River), and Morrison Creek, Elder Creek, Florin Creek, Unionhouse Creek, and Laguna Creek in the southern portion of the city (south of the American River). Waterways and drainages in the City are shown on Figure F-31.

Figure F-31 City of Sacramento Waterways and Drainage

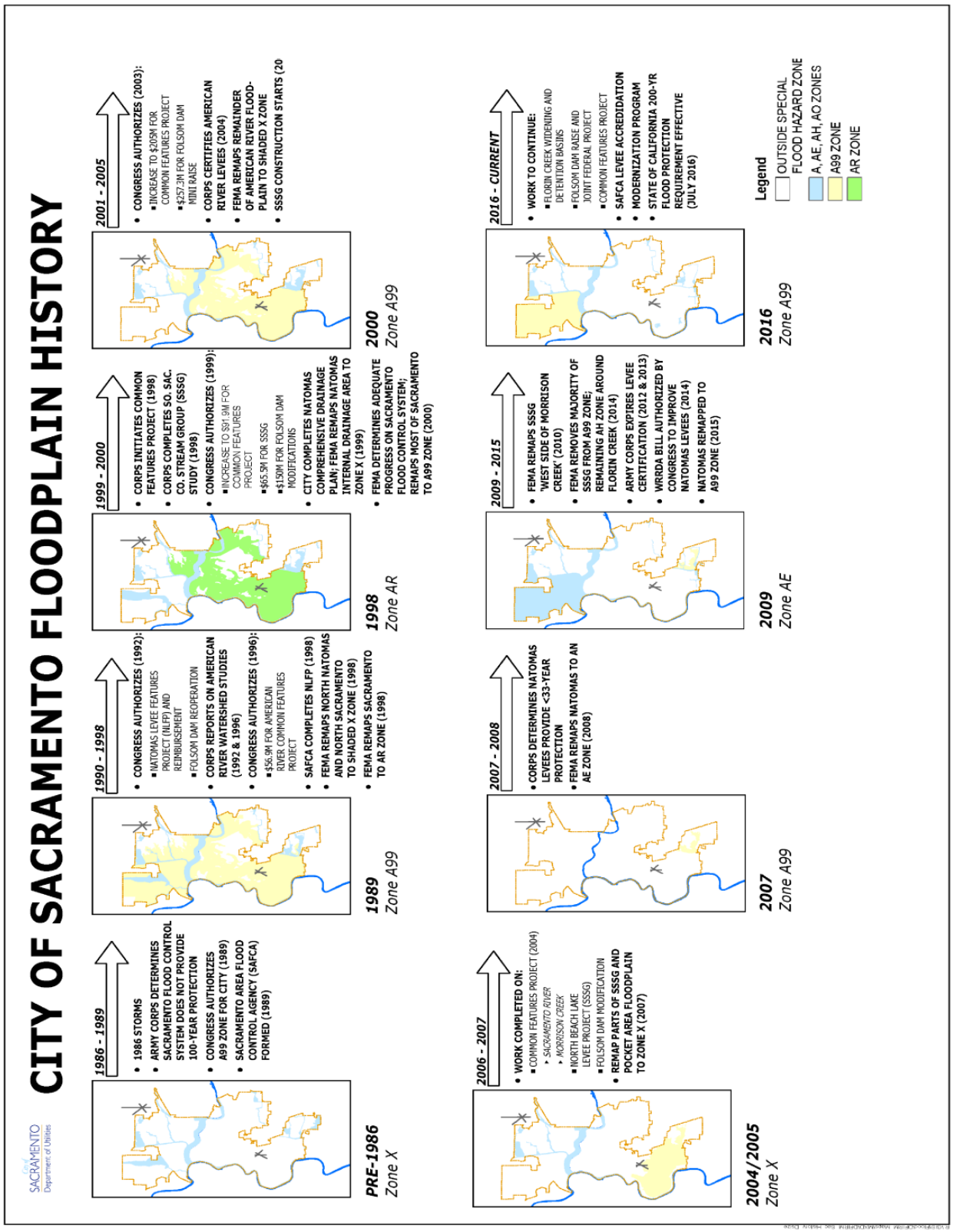


Source: City of Sacramento Department of Utilities

The City Planning Area contains many natural and man-made drainage features that ultimately drain into the Sacramento River. In addition to those listed above, local surface water drainages or creeks such as Chicken Ranch and Strong Ranch sloughs, Florin Creek, and Robla Creek are additional major natural drainages within the Policy Area. Man-made drainage canals, such as the Natomas East Main Drain Canal and the East, West, and Main Drainage Canals provide drainage for a large portion of the urbanized areas within the Policy Area that are not served by the City's combined sewer system or the City's storm drainage collection system.

The City Planning area has had many changes to the designated floodplain since the 1986 flooding base on Flood Insurance Rate Maps provided by FEMA. These changes are shown in Figure F-32.

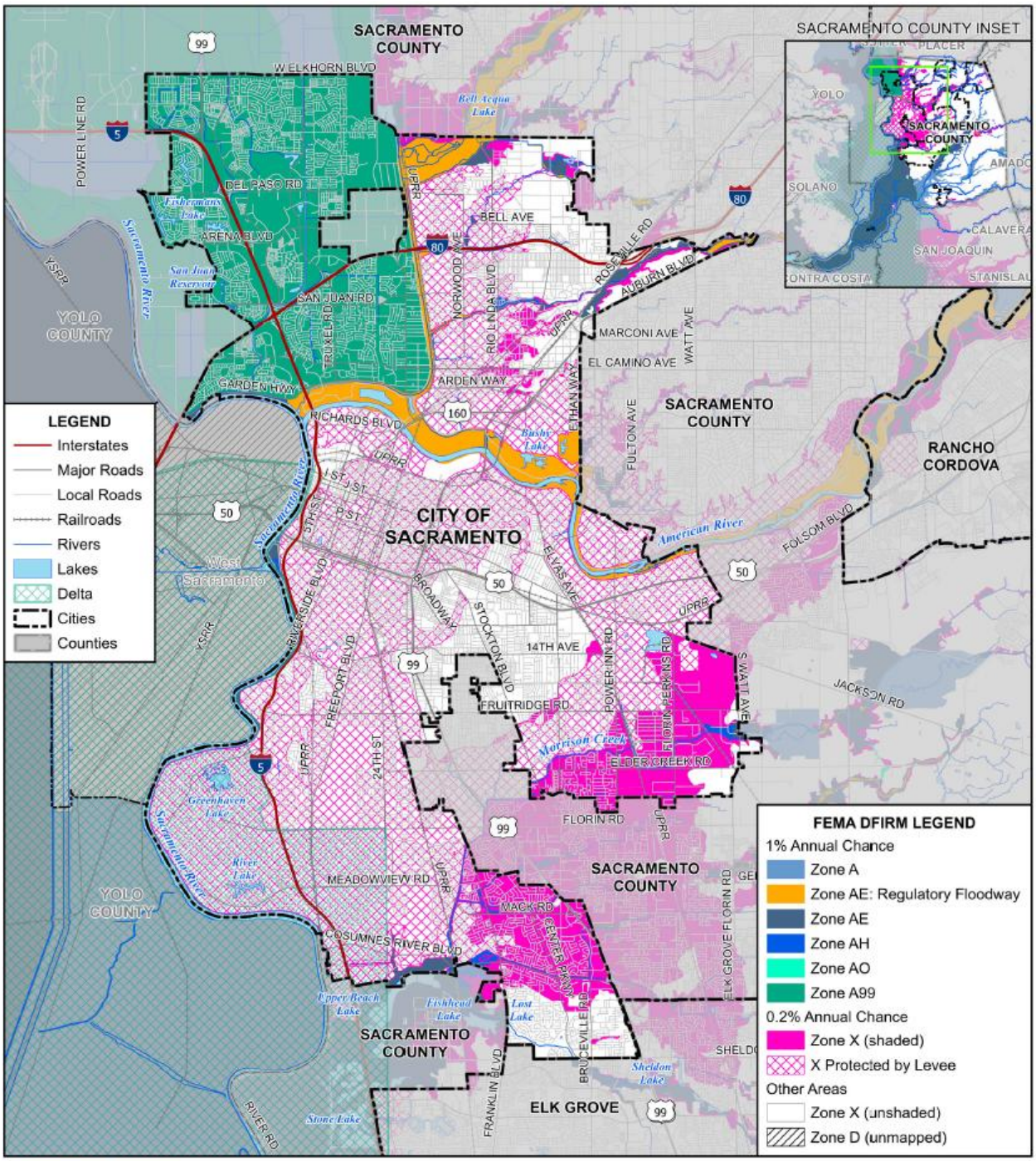
Figure F-32 City of Sacramento Floodplain History



Source: City of Sacramento Department of Utilities

The City of Sacramento has areas located in the DFIRM 1% and 0.2% annual chance flood zones. This is seen in Figure F-33.

Figure F-33 City of Sacramento – FEMA DFIRM Flood Zones



Data Source: FEMA Effective DFIRM 02/22/2024 (NFHL 10/13/2025 database), Sacramento County, Cal-Atlas; Map Date: 1/29/2026.

Table F-37 details the DFIRM mapped flood zones located within the City.

Table F-37 City of Sacramento– DFIRM Flood Hazard Zones

Flood Zone	Description	Present in City of Sacramento
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.	
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
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	

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 City vary, depending on the nature and extent of a flood event; specific depths are unknown. Flood durations in the City 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 City tends to have a shorter speed of onset, due to the amount of water that flows through the City. Geographical flood extents for the City from the FEMA DFIRMs are shown in Table F-38.

Table F-38 City of Sacramento – Geographical DFIRM Flood Zone Extents

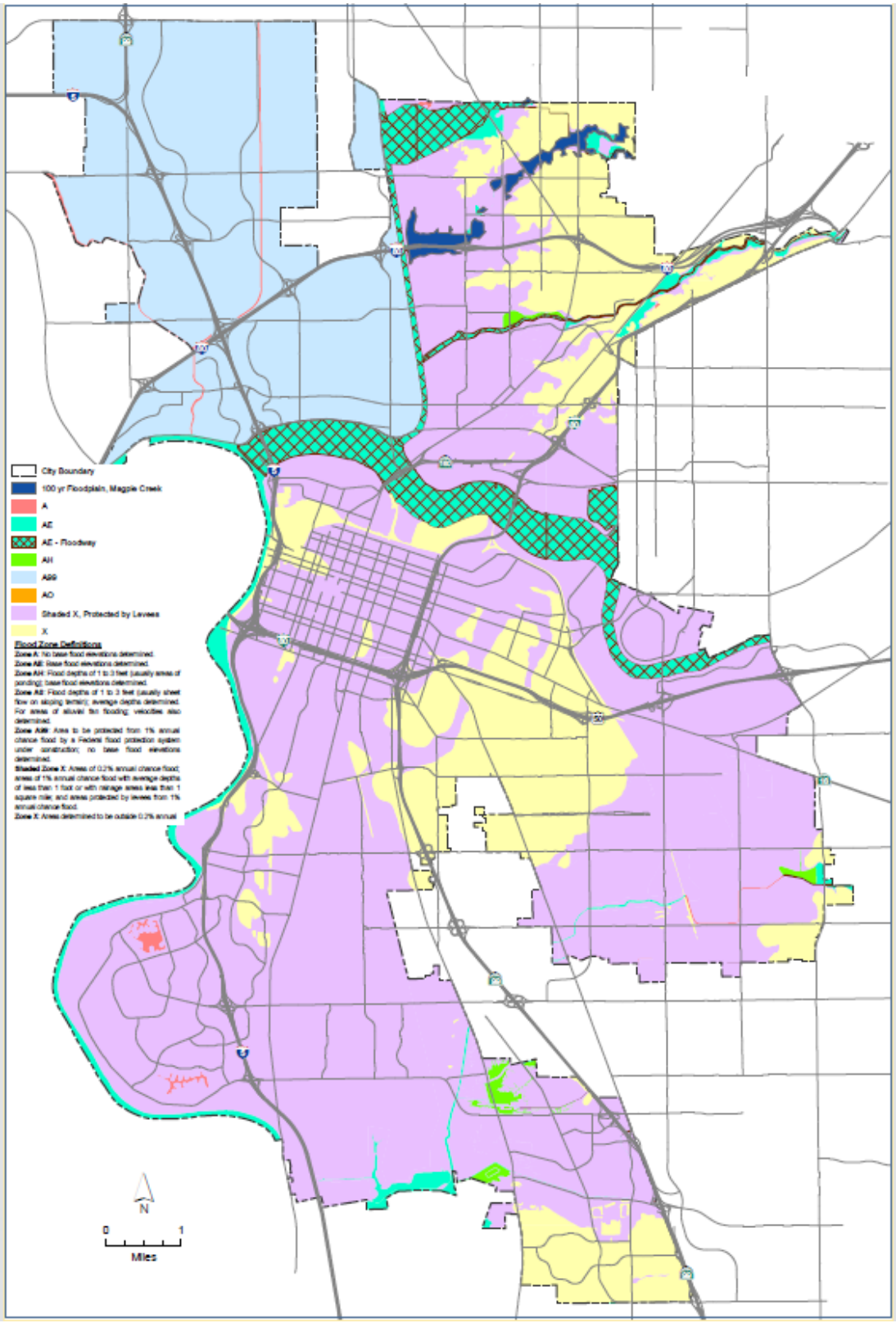
Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
1% Annual Chance Flood Hazard	14,190	27%	6,386	20%	7,803	39%
0.2% Annual Chance Flood Hazard	28,581	55%	19,622	61%	8,959	45%
Other Areas	9,241	18%	6,164	19%	3,077	16%

Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Total	**52,011**	**100%**	**32,172**	**100%**	**19,839**	**100%**

Source: FEMA DFIRM 02/22/2024

In addition to FEMA floodplains, the City also regulates a local floodplain. FEMA floodplains and local floodplains are shown on Figure F-34. For purposes on analysis in this plan, only FEMA floodplains are analyzed.

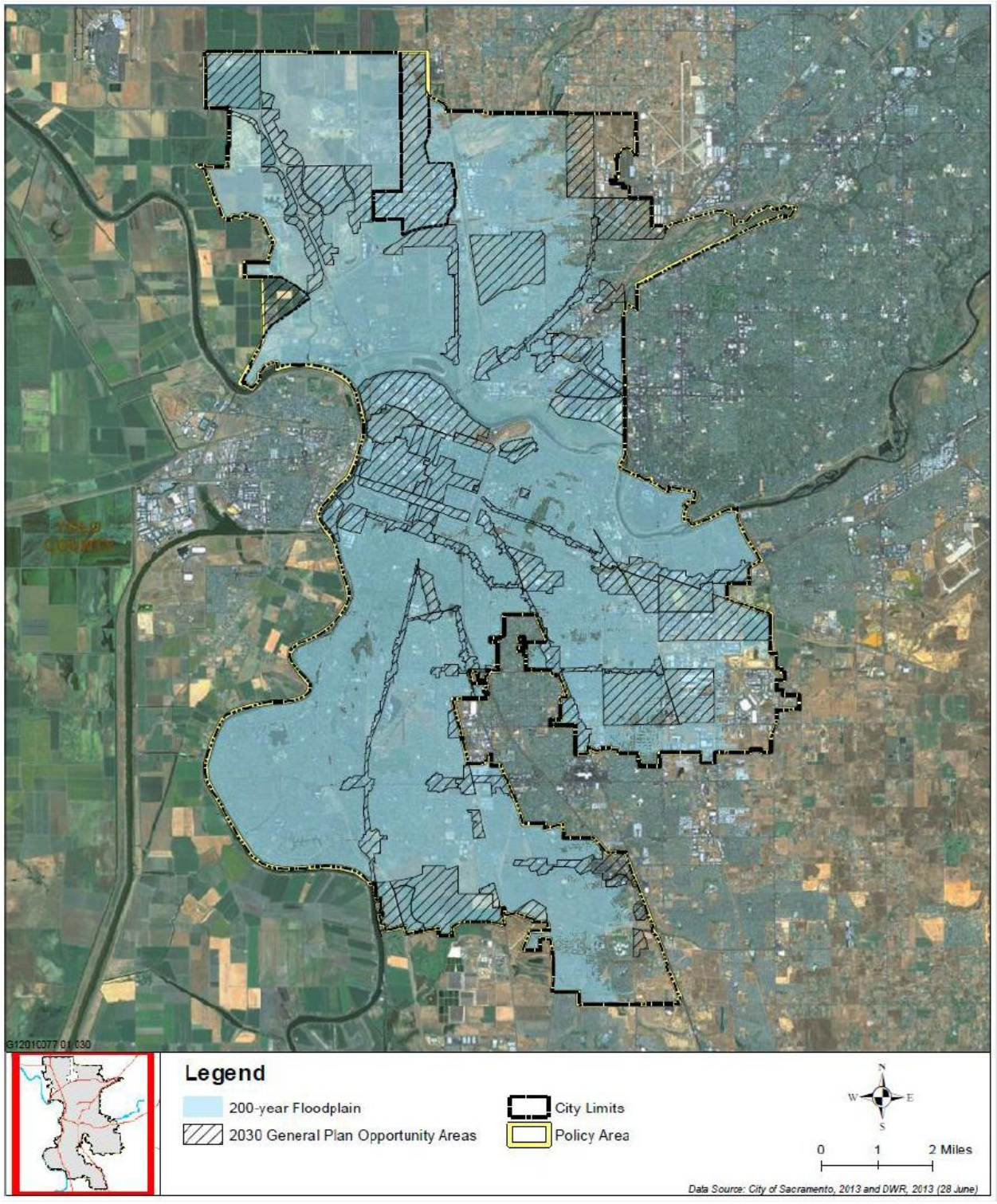
Figure F-34 City of Sacramento – FEMA and Local Floodplains



Source: City of Sacramento Department of Utilities GIS

An estimation of the City's 200-year floodplain can be seen in Figure F-35. While no analysis was performed using 200-year flood layer, it is presented here for informational purposes.

Figure F-35 City of Sacramento 200-year Floodplain



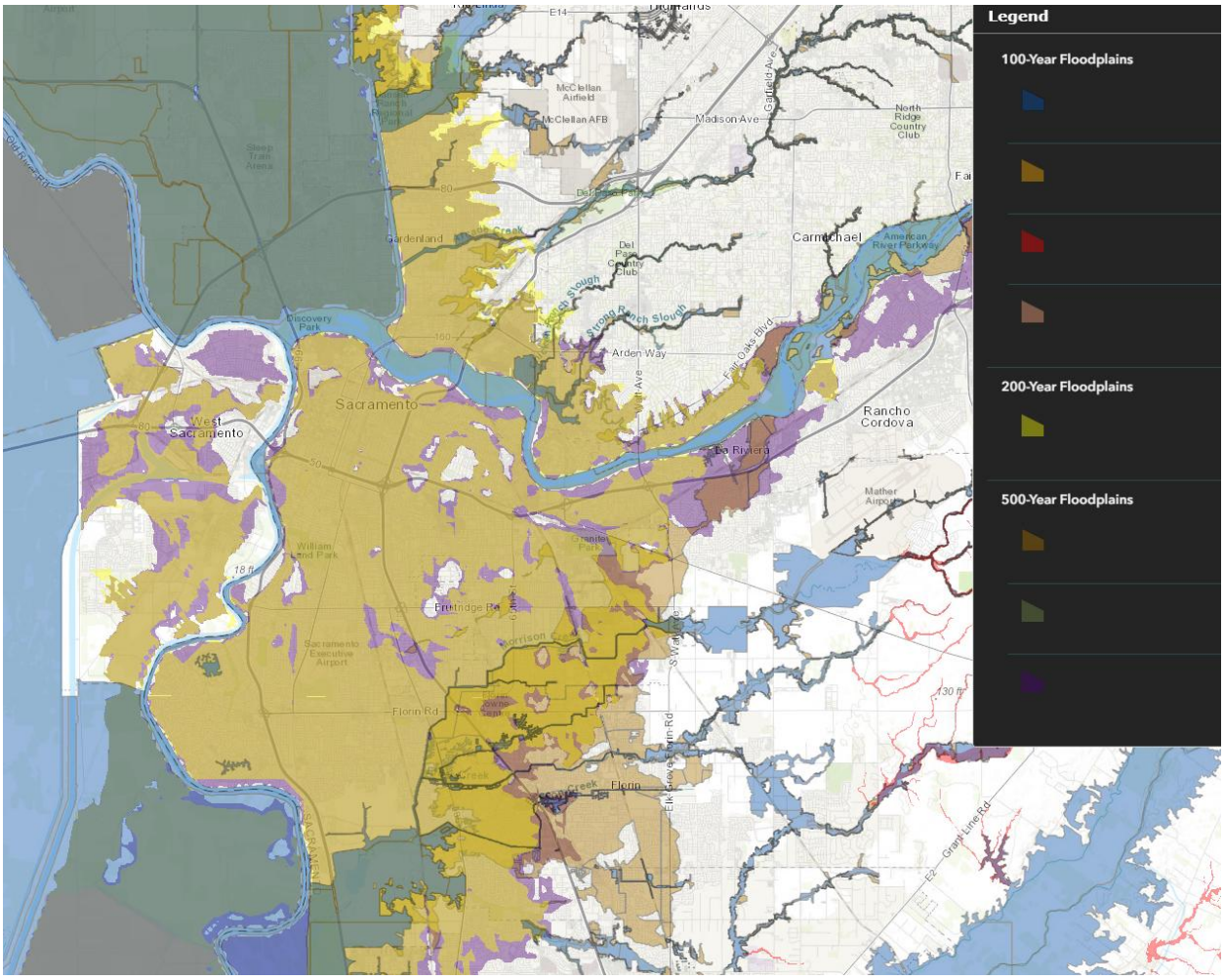
Source: City of Sacramento Department of Utilities

California Department of Water Resources Best Available Maps (BAM)

The FEMA regulatory maps provide just one perspective on flood risks in the City. Senate Bill 5 (SB 5), enacted in 2007, authorized the California DWR to develop the Best Available Maps (BAM) displaying 100- and 200-year floodplains for areas located within the Nevada-San Joaquin (SAC-SJ) Valley watershed. This effort was completed by DWR in 2008. DWR has expanded the BAM to cover all counties in the State and to include 500-year floodplains.

Different than the FEMA DFIRMs which have been prepared to support the NFIP and reflect only the 100-year event risk, the BAMs are provided for informational purposes and are intended to reflect current 100-, 200-(as applicable), and 500-year event risks using the best available data. The 100-year floodplain limits on the BAM are a composite of multiple 100-year floodplain mapping sources. It is intended to show all currently identified areas at risk for a 100-year flood event, including FEMA's 100-year floodplains. The BAM are comprised of different engineering studies performed by FEMA, Corps, and DWR for assessment of potential 100-, 200-, and 500-year floodplain areas. These studies are used for different planning and/or regulatory applications, and for each flood frequency may use varied analytical and quality control criteria depending on the study type requirements. The value in the BAMs is that they provide a bigger picture view of potential flood risk to the City than that provided in the FEMA DFIRMs. The BAM map for the City is shown in Figure F-36.

Figure F-36 City of Sacramento – Best Available Map



Source: California DWR. Retrieved 12/1/2025.

Legend explanation: **Blue** - FEMA 100-Year, **Orange** – Local 100-Year (developed from local agencies), **Red** – DWR 100-year (Awareness floodplains identify the 100-year flood hazard areas using approximate assessment procedures.), **Pink** – USACE 100-Year (2002 Sac and San Joaquin River Basins Comp Study), **Yellow** – USACE 200-Year (2002 Sac and San Joaquin River Basins Comp Study), **Tan** – FEMA 500-Year, Grey – Local 500-Year (developed from local agencies), **Purple** – USACE 500-Year (2002 Sac and San Joaquin River Basins Comp Study).

Past Occurrences

Disaster Declaration History

A list of state and federal disaster declarations for Sacramento County from flooding is shown on Table F-39. These events also likely affected the City to some degree.

Table F-39 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 flooding 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 City.

City of Sacramento Events

The City noted other past occurrences of flooding. Due to its length, this section is split into events occurring since the 2021 LHMP, and those that occurred prior to 2021.

Events since 2021 LHMP

December 31st, 2022 and January 8th 2023 – the City experienced two large storms with heavy rainfall and strong winds. The winds brought down many tree branches which caused power outages, leading to many of our drainage pump stations losing power, which triggered multiple areas of localized street flooding.

Figure F-37 December 2022/January 2023 Flood Examples



Events prior to 2021

Sacramento experienced great floods in 1850, 1852, 1862, 1911, 1913, 1951, 1956, 1963, 1964, 1986, 1995, 1997, 2005, and 2016. Record breaking flood events are detailed further below:

1850 Flood - During the night of January 7, 1850, a great storm swept in from the west. Almost overnight the water posed a grave threat to life and property. Within two days of the storms beginnings, downpours that reached an inch an hour, had transformed the rivers into raging torrents. There was no levee protecting the new City which started right at the river banks. Within hours, the entire community, for a mile back from the river, was deep under rushing waters. Houses were toppled; businessmen watched as thousands of dollars in inventory was washed out their doors; and a small steamboat navigated the town's streets to deliver goods. Very few homes escaped having water on the first floors. Many were swept from their underpinnings.

Figure F-38 Sketch of the City of Sacramento during the Flood of 1850



Source: California State Library

1852-53 Flood – In December of 1852, the Sacramento Valley was again inundated, even more deeply than they had in the high water of 1850. On March 29, 1853, the Sacramento River rose twelve feet within twenty-four hours. When the water finally broke through the levees, it was at a point south of the city, toward Sutterville. The out rush of waters on the flatlands were sweeping and violent. By April 2, 1853, the water had backed up into the city. Again the City was under water. Sacramento was a city submerged. The City was a lake, boats were in the streets and the water didn't drain away for two months. The City had levees along both the Sacramento and American Rivers. Although levees served to prevent the rivers from invading the growing city, they also served to trap storm and refuse water that would otherwise drain directly into those rivers.

1861-1862 Flood – Sacramento had enjoyed eight winters of the rivers staying in-bank. The City had prospered and became the State capital. On December 9, 1861, at 8:00 A.M., the American River suddenly went over the levee at Smith's Gardens, about 31st & B Streets, in the northeastern part of the City. The water took its old channel, rushed through the slough west of the Fort and over its banks in less than 30 minutes, the low lots between 0 & R Streets were overflowed two to three feet deep. The R Street levee stopped its flow, causing it to back up into the City. By 9 A.M., the entire City, south of J Street, was inundated. By 11:30 A.M., only J, K and the levee streets (1, R, and Front) were above water. Within an hour and a half, J and K Streets were under water.

1951 Record Flood – Just after ground is broken on Folsom Dam, the American River watershed experiences the first of five record storms.

1956 Record Flood – Though engineers had been predicting it would take a year to fill the nearly completed upstream Folsom Dam, the second record storm filled the dam in a week and Sacramento is saved from flooding.

1964 Record Flood – the 3rd record flood in less than 15 years. Engineers concluded that Folsom Dam was only designed to handle a 120-year storm, not a 500-year storm.

1986 Record Flood: In February 1986, major storms in northern California caused record flood flows in the American River basin. Overflows from Folsom Reservoir, together with high flows in the Sacramento River, caused water levels to rise above the safety margin on levees protecting the Sacramento area. A

series of tropical storms roared through the State that month. Ten inches of rain fell in 11 days. The levee overtopped in a low spot of Strawberry Manor, flooding approximately 500 homes. Outflows from Folsom Reservoir, together with high flows in the Sacramento River, caused water levels to rise above the safety margin on levees protecting the Sacramento area. The storm brought large flood flows into Folsom Reservoir with a maximum six-day record inflow of 1.14 million acre-feet, exceeding the six-day design inflow of 987,000 acre- feet. To relieve the pressure on the dam, 115,000 cubic feet per second (cfs), the design capacity of the levees downstream, was released from the reservoir for two days. As the rain continued, officials boosted those releases to 130,000 cfs for 24 hours. Officials considered increasing releases to 150,000 cfs, but the rain let up, and disaster was averted. At that point, it was estimated by flood officials that three more hours of rainfall would have overwhelmed the system, flooding thousands of homes. Runoff in the American River quickly filled the temporary diversion dam built at the Auburn Dam site, approximately ten years earlier, causing it to burst, and sending 100,000 acre feet of water rushing into Folsom Reservoir. Folsom Dam was downgraded to about a 60-year storm. The USACE determined that a majority of the City did not have 100-year level of flood protection.

Figure F-39 Aerial View of 1986 Flood



Source: SAFCA

1997 Record Flood: The fifth record flood in 46 years occurs over the New Year's holiday. Unprecedented flows from rain and melted snow surge into the Feather and the San Joaquin. Sacramento is spared when the fury of the storm hits 40 miles north in the Feather River. Levee failures flood Olivehurst, Adboga, Wilton, Manteca, and Modesto. By the end of January 1997, 48 counties were declared disaster areas and 290 square miles of property, valued at about $2 billion, including homes, farmlands, bridges, roads and flood management infrastructures were damaged. Nine people were killed and 120,000 people were evacuated from their homes.

Other large flood events will certainly occur in the future, leaving the City vulnerable to additional, potentially catastrophic flooding. Further localized flooding problems both in and outside of the natural floodplains are likely to continue as drainage channels are altered and confined with new development.

December 2012: McKinley Park Flooding - Several houses were flooded during a rain storm due to a failed programmable logic controller. DOC activation due to weather forecast.

Figure F-40 January 2003 Tower Bridge



Source: The Sacramento Area Flood Control Agency

Figure F-41 December 30, 2005 Pomegranate Avenue along Florin Creek in South Sacramento



Source: The Sacramento Area Flood Control Agency

December 15, 2016 – The Natomas Four Season development was hit by flooding (see Figure F-42). Drainage backed up in the area due to raised floodgates. The City of Sacramento Department of Utilities had lowered floodgates in the area, but a private operator raised them later, causing flooding. Street flooding was reported, but no damages were suffered.

Figure F-42 City of Sacramento – December 2016 Flooding in Natomas Four Season Development



Source: City of Sacramento

January 6 to 12, 2017 – Heavy rains caused flooding throughout the City. In response, the EOC was activated. In anticipation of flooding, the Del Paso floodgates were raised. Floodgates were also raised at the Union Pacific Railway. Flooding occurred in the Garcia Bend Park. Sloughing occurred on the Executive Airport Canal. Floodwater temporarily threatened the I Street bridge. Flooding occurred an NEMDC and on Magpie Creek. Nimbus Dam was not in danger, but high flows were discharged down the spillway and into downstream rivers. High water was seen at the Sacramento weir.

Figure F-43 Del Paso Floodgate Closure



Source: City of Sacramento

Figure F-44 High Water at Sacramento Weir



Source: City of Sacramento

Figure F-45 Nimbus Dam in January 2017



Source: City of Sacramento

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 City 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 City of Sacramento. 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 the City. 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.

The 2024 City of Sacramento Climate Action & Adaptation Plan noted that historically, flooding has been the most frequent natural hazard in the Sacramento region. The extensive network of levees, dams, and weirs built for flood protection face a monumental task, which only looms larger as infrastructure ages and climate change induces larger storms and promotes sea level rise. Historic floods have damaged bridges and levees and resulted in significant numbers of people injured, killed, or forced to evacuate. Between 1996 and 2015, the National Climatic Data Center (NCDC) reported 32 flood events within Sacramento County, amounting to a total of $13,326,000 in lost property damages. Large floods can result in damage to electric and transportation infrastructure, destruction of homes and businesses, increased rates of flood-borne disease, and loss of life. Flooding effects will be felt most strongly in low-lying areas, areas dependent on levee protection, and areas with inadequate stormwater infrastructure.

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

Floods have been a part of the City'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. Predominantly, the effects of 1%, 0.5%, and 0.2% annual chance flooding are generally confined to areas near the waterways of the City. As waterways grow in size from local drainages, so grows the threat of flood and dimensions of the threat.

The whole of the City 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 City's Assets at Risk to this hazard.

Local Concerns

The City 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.

The City of Sacramento is susceptible to various types of flood events: riverine, flash, and localized stormwater flooding; and levee and dam failure flooding. Regardless of the type of flood, the cause is most often the result of severe weather patterns and excessive rainfall, either in the flood area or upstream reach. Flooding is the most significant natural hazard that the City faces.

The City is divided into approximately 120 drainage basins. Drainage from most of these basins flows to local rivers or creeks or drainage channels through pumping. The City owns and operates 105 storm drainage pumping stations throughout the City. The drainage canals and local creeks eventually pump into the Sacramento and American Rivers.

The City of Sacramento (City) owns and operates a combined sewer system (CSS) that conveys residential and commercial wastewater and storm water runoff from approximately 11.7 square miles in downtown Sacramento, East Sacramento, Oak Park, and the Land Park area. There are 5.8 square miles of separated

sewer areas of the City north, east, and south of the CSS that contribute sanitary flows to the CSS. The City also includes approximately 76 square miles of separated areas that are not served by the CSS. The CSS serves approximately 101,700 people.

In addition to the risk of flooding from levee failure, a considerable flood risk exists due to aging internal drainage infrastructure. Although levee failure may result in much more catastrophic damage than flooding from internal drainage, most of the City's flood damage since 1955 has resulted from drainage deficiencies. In 1995, for instance, approximately 100 homes in four south area drainage basins incurred flood damage due to internal drainage system failure during a particularly intense storm.

The City of Sacramento works alongside the Sacramento Area Flood Control Agency, US Army Corps of Engineers, Central Valley Flood Protection Board, Reclamation District No. 1000, Maintaining Agency 9, American River Flood Control District, and others to implement and maintain flood control projects that protect the City.

All City drainage master plans recommend retrofit of City pumping plants with discharge measuring/monitoring devices. The average test capacity of pumps is approximately 75 percent of Rated Capacity.

Assets at Risk

Assets at risk from flood include people and populations; structures; 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% and 0.2% annual chance floodplains 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.

City residents that live in the 1% and 0.2% annual chance floodplains are often 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. To further evaluate the impact to the City of Sacramento's residential population residing within these hazard areas, the DFIRM flood zones were overlayed on the parcel layer. Those residential parcels that intersect the flood zones were counted and multiplied by the 2023 Census Bureau average household factors for the City of Sacramento – 2.59. According to this analysis, there is a total population of 93,792 and 207,734 residents of the City at risk to flooding in the 1% and 0.2% annual chance floodplains, respectively. This is shown in Table F-40.

Table F-40 City of Sacramento – Improved Residential Parcels and Population by Summary FEMA DFIRM Flood Zone

Jurisdiction	1% Annual Chance		0.2% Annual Chance*	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Sacramento	36,213	93,792	80,206	207,734

Source: FEMA DFIRM 02/2024, 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size – City of Sacramento (2.59)

*This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

The City noted that the Critical Facilities and Infrastructure section below includes the facilities used by At-Risk populations that are threatened by this hazard. While this is not specific to what special populations reside in the City, it does speak to facilities that area used to serve (portions) of this population.

Structures

Large flood events can affect the built environment of the City. Certain structures in the City are at risk of DFIRM flooding and primarily include those structures located within the 1% and 0.2% annual chance floodplains. The vulnerability of structures depends on flood depths and can range from slight damage to totally inundated in extreme events. GIS was used to determine the possible impacts of flooding on parcels and structures within the City of Sacramento. The methodology described in Section 4.3.11 of the Base Plan was followed in determining structures and values at risk to the 1% and 0.2% annual chance flood event. Table F-41 is a summary table for the City of Sacramento. Parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), estimated content replacement values, and total values in the City are shown for the 1% and 0.2% annual chance flood zones, as well as for those properties that fall within other areas of the FEMA DFIRM flood zones. Table F-42 breaks down Table F-41 and shows the same analysis further broken out by detailed FEMA flood zone and property use.

Table F-41 City of Sacramento – Count and Value of Parcels and Structures in Summary DFIRM Flood Zones

Jurisdiction / Flood Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
1% Annual Chance Flood Hazard*	38,717	34,623	$5,176,427,185	$15,545,859,199	$9,295,974,412	$30,018,260,796
0.2% Annual Chance Flood Hazard**	91,546	84,744	$13,310,617,630	$34,366,334,351	$23,288,097,052	$70,965,049,033
Other Areas	28,726	26,595	$3,507,207,964	$9,383,185,712	$6,013,406,194	$18,903,799,870
Sacramento Total	**158,989**	**145,962**	**$21,994,252,779**	**$59,295,379,262**	**$38,597,477,657**	**$119,887,109,698**

Source: FEMA DFIRM 02/2024, 2025 Sacramento County Parcel/Assessor Data

*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Table F-42 City of Sacramento – Count and Values of Parcels and Structures by Detailed DFIRM Flood Zone and Property Use

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
1% Annual Chance Flood Hazard						
Zone A						
Agricultural	1	1	$375,481	$500,643	$500,643	$1,376,767
Care / Health	0	0	$0	$0	$0	$0
Church / Welfare	0	0	$0	$0	$0	$0
Industrial	6	4	$35,428,782	$160,394,835	$240,592,253	$436,415,870
Miscellaneous	15	0	$601	$0	$0	$601
Office	1	1	$281,997	$1,938,693	$1,938,693	$4,159,383
Public / Utilities	1	0	$0	$0	$0	$0
Recreational	0	0	$0	$0	$0	$0
Residential	252	240	$67,039,270	$219,777,532	$109,888,766	$396,705,568
Retail / Commercial	1	1	$509,796	$676,260	$676,260	$1,862,316
Unknown	1	0	$0	$0	$0	$0
Vacant	7	0	$2,034,613	$0	$0	$2,034,613
Zone A Total	**285**	**247**	**$105,670,540**	**$383,287,963**	**$353,596,615**	**$842,555,118**
Zone AE						
Agricultural	1	0	$216,401	$0	$0	$216,401
Care / Health	0	0	$0	$0	$0	$0
Church / Welfare	5	5	$3,143,925	$8,409,892	$8,409,892	$19,963,709
Industrial	12	10	$7,539,388	$45,542,110	$68,313,165	$121,394,663
Miscellaneous	231	0	$185,295	$0	$0	$185,295
Office	12	10	$18,048,446	$82,068,743	$82,068,743	$182,185,932
Public / Utilities	24	0	$29	$0	$0	$29
Recreational	15	2	$1,275,248	$5,298,040	$5,298,040	$11,871,328
Residential	247	234	$50,743,598	$142,854,873	$71,427,437	$265,025,908
Retail / Commercial	13	12	$22,265,801	$37,345,860	$37,345,860	$96,957,521
Unknown	3	0	$0	$0	$0	$0
Vacant	90	2	$45,046,886	$2,648,529	$0	$47,695,415

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Zone AE Total	**653**	**275**	**$148,465,017**	**$324,168,047**	**$272,863,137**	**$745,496,201**
Zone AE: Regulatory Floodway						
Agricultural	0	0	$0	$0	$0	$0
Care / Health	2	2	$5,428,699	$453,022,181	$453,022,181	$911,473,061
Church / Welfare	7	3	$412,688	$4,397,638	$4,397,638	$9,207,964
Industrial	23	20	$12,755,306	$54,995,268	$82,492,902	$150,243,476
Miscellaneous	240	0	$2,954	$0	$0	$2,954
Office	0	0	$0	$0	$0	$0
Public / Utilities	48	0	$0	$0	$0	$0
Recreational	5	2	$169,452	$1,517,229	$1,517,229	$3,203,910
Residential	133	130	$15,616,178	$52,816,174	$26,408,087	$94,840,439
Retail / Commercial	10	9	$7,976,950	$13,091,414	$13,091,414	$34,159,778
Unknown	0	0	$0	$0	$0	$0
Vacant	71	1	$10,742,075	$241,416	$0	$10,983,491
Zone AE: Regulatory Floodway Total	**539**	**167**	**$53,104,302**	**$580,081,320**	**$580,929,451**	**$1,214,115,073**
Zone AH						
Agricultural	0	0	$0	$0	$0	$0
Care / Health	0	0	$0	$0	$0	$0
Church / Welfare	2	2	$54,318	$768,687	$768,687	$1,591,692
Industrial	21	20	$19,674,862	$64,977,513	$97,466,270	$182,118,645
Miscellaneous	29	0	$8,544	$0	$0	$8,544
Office	0	0	$0	$0	$0	$0
Public / Utilities	1	0	$0	$0	$0	$0
Recreational	0	0	$0	$0	$0	$0
Residential	282	281	$23,948,342	$55,527,727	$27,763,864	$107,239,933
Retail / Commercial	7	6	$7,259,276	$7,801,316	$7,801,316	$22,861,908
Unknown	0	0	$0	$0	$0	$0
Vacant	18	0	$1,579,996	$0	$0	$1,579,996
Zone AH Total	**360**	**309**	**$52,525,338**	**$129,075,243**	**$133,800,136**	**$315,400,717**

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Zone A99						
Agricultural	10	1	$3,550,335	$362,026	$362,026	$4,274,387
Care / Health	14	13	$18,693,804	$88,070,188	$88,070,188	$194,834,180
Church / Welfare	17	16	$16,987,260	$55,136,237	$55,136,237	$127,259,734
Industrial	51	48	$39,778,494	$183,326,400	$274,989,600	$498,094,494
Miscellaneous	1,119	2	$699,926	$3,849,485	$3,849,485	$8,398,896
Office	194	173	$201,491,744	$680,640,295	$680,640,295	$1,562,772,334
Public / Utilities	26	0	$73	$0	$0	$73
Recreational	6	3	$7,779,485	$29,136,229	$29,136,229	$66,051,943
Residential	33,914	33,123	$3,890,421,151	$12,447,245,033	$6,223,622,517	$22,561,288,701
Retail / Commercial	232	223	$267,557,925	$598,978,497	$598,978,497	$1,465,514,919
Unknown	21	0	$0	$0	$0	$0
Vacant	1,276	23	$369,701,791	$42,502,236	$0	$412,204,027
Zone A99 Total	**36,880**	**33,625**	**$4,816,661,988**	**$14,129,246,626**	**$7,954,785,074**	**$26,900,693,688**
1% Annual Chance Flood Hazard Total	**38,717**	**34,623**	**$5,176,427,185**	**$15,545,859,199**	**$9,295,974,412**	**$30,018,260,796**
0.2% Annual Chance Flood Hazard**						
X (shaded)						
Agricultural	0	0	$0	$0	$0	$0
Care / Health	12	10	$9,050,414	$124,600,592	$124,600,592	$258,251,598
Church / Welfare	43	32	$11,515,206	$47,001,174	$47,001,174	$105,517,554
Industrial	474	445	$254,175,650	$966,575,239	$1,449,862,859	$2,670,613,748
Miscellaneous	141	0	$184,104	$0	$0	$184,104
Office	53	45	$26,167,755	$107,001,519	$107,001,519	$240,170,793
Public / Utilities	45	0	$27	$0	$0	$27
Recreational	1	1	$899,682	$1,941,424	$1,941,424	$4,782,530
Residential	9,843	9,670	$630,498,932	$1,922,940,432	$961,470,216	$3,514,909,580
Retail / Commercial	156	139	$93,114,118	$202,182,809	$202,182,809	$497,479,736
Unknown	25	0	$0	$0	$0	$0
Vacant	293	13	$81,599,165	$5,739,732	$0	$87,338,897
Shaded X Total	**11,086**	**10,355**	**$1,107,205,053**	**$3,377,982,921**	**$2,894,060,593**	**$7,379,248,567**

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
X Protected by Levee**						
Agricultural	1	1	$1,817	$13,525	$13,525	$28,867
Care / Health	101	85	$74,574,782	$1,161,702,484	$1,161,702,484	$2,397,979,750
Church / Welfare	301	247	$94,434,218	$334,957,958	$334,957,958	$764,350,134
Industrial	1,123	971	$498,962,468	$1,394,194,194	$2,091,291,291	$3,984,447,953
Miscellaneous	1,235	4	$5,281,155	$108,457	$108,457	$5,498,069
Office	1,311	1,017	$968,406,245	$3,495,922,824	$3,495,922,824	$7,960,251,893
Public / Utilities	402	0	$20,018	$0	$0	$20,018
Recreational	80	44	$48,665,087	$392,854,798	$392,854,798	$834,374,683
Residential	71,334	70,536	$8,944,067,550	$22,567,327,248	$11,283,663,624	$42,795,058,422
Retail / Commercial	1,864	1,398	$988,966,606	$1,633,521,498	$1,633,521,498	$4,256,009,602
Unknown	93	3	$238,249	$312,876	$0	$551,125
Vacant	2,615	83	$579,794,382	$7,435,568	$0	$587,229,950
X Protected by Levee Total	**80,460**	**74,389**	**$12,203,412,577**	**$30,988,351,430**	**$20,394,036,459**	**$63,585,800,466**
0.2% Annual Chance Flood Hazard Total**	**91,546**	**84,744**	**$13,310,617,630**	**$34,366,334,351**	**$23,288,097,052**	**$70,965,049,033**
Other Areas						
Zone X (unshaded)						
Agricultural	1	0	$5,454	$0	$0	$5,454
Care / Health	28	21	$19,212,132	$189,189,446	$189,189,446	$397,591,024
Church / Welfare	176	140	$49,430,648	$610,875,452	$610,875,452	$1,271,181,552
Industrial	390	350	$128,194,813	$441,025,008	$661,537,512	$1,230,757,333
Miscellaneous	374	3	$294,187	$202,246	$202,246	$698,679
Office	206	151	$127,350,644	$432,331,520	$432,331,520	$992,013,684
Public / Utilities	149	0	$582,109	$0	$0	$582,109
Recreational	16	15	$4,609,451	$6,052,127	$6,052,127	$16,713,705
Residential	25,527	25,313	$2,715,842,254	$7,170,945,705	$3,585,472,853	$13,472,260,812
Retail / Commercial	632	542	$274,752,612	$527,745,038	$527,745,038	$1,330,242,688
Unknown	13	0	$0	$0	$0	$0
Vacant	1,214	60	$186,933,660	$4,819,170	$0	$191,752,830

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Zone X (unshaded) Total	**28,726**	**26,595**	**$3,507,207,964**	**$9,383,185,712**	**$6,013,406,194**	**$18,903,799,870**
Other Areas Total	**28,726**	**26,595**	**$3,507,207,964**	**$9,383,185,712**	**$6,013,406,194**	**$18,903,799,870**
Grand Total	**158,989**	**145,962**	**$21,994,252,779**	**$59,295,379,262**	**$38,597,477,657**	**$119,887,109,698**

Source: FEMA DFIRM 02/2024, 2025 Sacramento County Parcel/Assessor Data

*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Table F-43 summarizes Table F-42 and shows City of Sacramento loss estimates and improved values at risk by FEMA 1% and 0.2% annual chance flood zones. According to Table F-42 and Table F-43, the City of Sacramento has 34,623 parcels and $24.8 billion of structure and contents values or values in the 1% annual chance flood zone, and 84,744 improved parcels and $57.7 billion of structure and contents values in the 0.2% annual chance flood zone. These values can be refined a step further. Applying the 20 percent damage factor as previously described in Section 4.3.11 of the Base Plan, there is a 1% chance in any given year of a flood event causing $4.97 billion in damage and a 0.2% chance in any given year of a flood event causing $11.5 billion in damage in the City of Sacramento. The loss ratio of 5.1% indicates that flood losses for 1% annual chance flooding would be significant but and the City would be able recover. The loss ratio of 11.8% indicates that flood losses for 0.2% annual chance flooding would be relatively severe and the City would have some difficulty in recovering.

Table F-43 City of Sacramento – Flood Loss Estimates

Flood Zone	Total Parcel Count	Imp. Parcel Count	Improved Structure Value	Estimated Contents Value	Total Value	Loss Estimate	Loss Ratio
1% Annual Chance Flood Hazard	38,717	34,623	$15,545,859,199	$9,295,974,412	$24,841,833,611	$4,968,366,722	5.1%
0.2% Annual Chance Flood Hazard**	91,546	84,744	$34,366,334,351	$23,288,097,052	$57,654,431,403	$11,530,886,281	11.8%
Total	**130,263**	**119,367**	**$49,912,193,550**	**$32,584,071,464**	**$82,496,265,014**	**$16,499,253,003**	**16.9%**

Source: FEMA DFIRM 02/2024, 2025 Sacramento County Parcel/Assessor Data

*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Insurance Coverage, Claims Paid, and Repetitive Losses

Standard property insurance does not include flood coverage because of the relatively high risk. The National Flood Insurance Program (NFIP) provides flood insurance to residents in those communities that participate in the NFIP. Federal financial assistance requires the purchase of flood insurance for structures

located within a 100-year floodplain – a requirement that affects nearly all mortgages financed through commercial lending institutions. Flood insurance is also recommended for all structures protected by levees, even if not mapped within a floodplain.

The City of Sacramento joined the National Flood Insurance Program (NFIP) on September 15, 1978. The City participates in CRS program and is currently a CRS Class 3. Class 3 ratings provide a discount of 35% to those policies in the Special Flood Hazard Area. NFIP data (provided by FEMA CIS) indicates that as of February 2, 2026, there were 26,113 flood insurance policies in force in the City with $9,097,506,000 of coverage. There have been 1,938 historical claims for flood losses totaling $10,413,039.97. Of these, 1,717 were in an A zones and 321 were in B, C, or X zones. 1,347 of the claims were for pre-FIRM structures, while 571 were for post-FIRM. There have been 43 substantial damage claims since 1978. NFIP data further indicates that there are 64 repetitive loss buildings. There are 6 severe repetitive loss buildings in the City. This information (provided by FEMA's PIVOT database) can be seen in Table F-44.

Table F-44 City of Sacramento – Repetitive Loss Structures

County	Community	Residential Type	Insured	Mitigated	FMA Repetitive Loss	FMA Severe Repetitive Loss	NFIP Repetitive Loss	NFIP Severe Repetitive Loss	# of Losses
Sacramento County (06067)	Sacramento, City Of (060266)	Other Residential	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Other Residential	NO	YES	NO	NO	NO	NO	4
Sacramento County (06067)	Sacramento, City Of (060266)	Non-Residential Commercial (Non-Small Business)	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	YES	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	YES	YES	YES	5
Sacramento County (06067)	Sacramento, City Of (060266)	Non-Residential Commercial (Non-Small Business)	NO	YES	NO	NO	NO	NO	3
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	YES	NO	NO	5
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	3

County	Community	Residential Type	Insured	Mitigated	FMA Repetitive Loss	FMA Severe Repetitive Loss	NFIP Repetitive Loss	NFIP Severe Repetitive Loss	# of Losses
Sacramento County (06067)	Sacramento, City Of (060266)	Non-Residential Commercial (Non-Small Business)	NO	YES	NO	NO	NO	NO	3
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	YES	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	YES	YES	YES	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	YES	NO	NO	4
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	3
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	4
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	YES	YES	NO	NO	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	3
Sacramento County (06067)	Sacramento, City Of (060266)	2-4 Family	NO	NO	NO	YES	YES	YES	3
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	2-4 Family	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	3
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	2

County	Community	Residential Type	Insured	Mitigated	FMA Repetitive Loss	FMA Severe Repetitive Loss	NFIP Repetitive Loss	NFIP Severe Repetitive Loss	# of Losses
Sacramento County (06067)	Sacramento, City Of (060266)	2-4 Family	NO	NO	NO	YES	YES	YES	4
Sacramento County (06067)	Sacramento, City Of (060266)	2-4 Family	NO	NO	NO	YES	YES	YES	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Non-Residential Commercial (Non-Small Business)	NO	NO	NO	NO	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	YES	NO	NO	NO	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	3
Sacramento County (06067)	Sacramento, City Of (060266)	2-4 Family	NO	YES	NO	NO	NO	NO	3
Sacramento County (06067)	Sacramento, City Of (060266)	Non-Business Non Residential	YES	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Non-Business Non Residential	YES	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	YES	YES	YES	3
Sacramento County (06067)	Sacramento, City Of (060266)	Non-Residential Commercial (Non-Small Business)	NO	NO	NO	NO	YES	NO	2

County	Community	Residential Type	Insured	Mitigated	FMA Repetitive Loss	FMA Severe Repetitive Loss	NFIP Repetitive Loss	NFIP Severe Repetitive Loss	# of Losses
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	YES	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	YES	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	YES	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	YES	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Non-Residential Commercial (Non-Small Business)	NO	YES	NO	NO	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	YES	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	3
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	2

County	Community	Residential Type	Insured	Mitigated	FMA Repetitive Loss	FMA Severe Repetitive Loss	NFIP Repetitive Loss	NFIP Severe Repetitive Loss	# of Losses
Sacramento County (06067)	Sacramento, City Of (060266)	Non-Residential Commercial (Non-Small Business)	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	3
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	3
Sacramento County (06067)	Sacramento, City Of (060266)	Non-Residential Commercial (Non-Small Business)	NO	NO	NO	NO	YES	NO	3
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	YES	NO	NO	NO	NO	NO	1
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	YES	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	NO	NO	NO	YES	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	2-4 Family	NO	YES	NO	NO	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	2
Sacramento County (06067)	Sacramento, City Of (060266)	Single Family	NO	YES	NO	NO	NO	NO	2

County	Community	Residential Type	Insured	Mitigated	FMA Repetitive Loss	FMA Severe Repetitive Loss	NFIP Repetitive Loss	NFIP Severe Repetitive Loss	# of Losses
Sacramento County (06067)	Sacramento, City Of (060266)	Non-Residential Commercial (Non-Small Business)	NO	NO	NO	NO	NO	NO	1
Total									**154**

Source: FEMA Region IX, FEMA PIVOT Database

Based on this analysis of insurance coverage, the City has values at risk to the 1% annual chance and greater floods. Of the 34,623 improved parcels within the 1% annual chance flood zone, 17,889 of those parcels maintain flood insurance. This can be seen on Table F-45.

Table F-45 City of Sacramento – Percentage of Policy Holders to Improved Parcels in the 1% Annual Chance Floodplain

Jurisdiction	Improved Parcels in SFHA (1% Annual Chance) Floodplain*	Insurance Policies in the SFHA (1% Annual Chance) Floodplain	Percentage of 1% Annual Chance Floodplain Parcels Currently Insured
Sacramento	34,623	17,889	51.7%

Source: FEMA DFIRM 02/2024, FEMA CIS, 2025 Sacramento County Parcel/Assessor's Data

2024 City of Sacramento Flood Insurance Analysis

Most primary buildings or substantial improvement within the City of Sacramento's SFHA must have a flood insurance policy if there is a federally backed mortgage. The majority of mortgage loans are backed by the federal government through either Fannie Mae or Freddie Mac. Since flood insurance rates are driven by distance to the flooding source, ground elevation, first-floor height, and foundation type, structures in the SFHA usually pay higher rates than do those buildings located outside the designated higher risk areas.

While flood insurance cannot prevent actual flood damage or loss of life, it can help to mitigate the economic risk associated with flooding to the insured. Flood insurance is a property owner's first line of defense against flood damage. A property that is damaged or destroyed can be replaced more quickly, without using financial resources devoted to other expenses such as the mortgage, utilities or maintenance. Additionally, compensation for flood losses (through flood insurance payments) can help families to recover from a flood event with minimal financial hardship. Similarly, this can also aid businesses in reopening to avoid potential financial ruin.

Table F-46 shows the number of flood insurance policies in the A, AE, AH and AO Zones and the number of Standard X Zone policies in AR and A99-Zones. The table also shows the average number of flood insurance policies by flood zone from 2021 to 2023.

As of April 2022, Preferred Risk Policies (PRPs) are no longer available for property owners in B, C, and X Zones. A PRP was a voluntary lower-cost Standard Flood Insurance Policy that offered fixed combinations

of building/contents coverage limits or contents-only coverage, available only within the B, C and X Zones. PRPs were phased out in April 2022, under the Risk Rating 2.0, as FEMA can differentiate flood risk outside of high-risk flood zones.

Flood insurance policies across each Zone remained relatively stable between 2017 – 2021. Between 2021 – 2022, a significant decrease in PRP participation occurred and as mentioned previously, PRPs were phased out in 2022 resulting in zero participation for 2023. The notable decrease between 2021 – 2022 may also be related to high levels of unemployment and inflation associated with the COVID-19 pandemic. Data shows similar decreases in voluntary flood insurance programs during the Great Recession as well.

While the PRP program was eliminated, residents and property owners within Zone X can now purchase a standard insurance policy that accounts for decreased flood risk. This accounts for the increase in X-STD policies between 2022 and 2023. Overall, there was a 7.5 percent decrease in flood insurance policy holders between 2022 and 2023, likely attributed both to the elimination of PRP and continued challenging economic factors influencing the purchasing habits of consumers.

Table F-46 Flood Insurance Policies in Sacramento by Zone and Year

Year	SFHA*	X-STD, AR, A99**	PRP	Total
2017	352	25,522	16,349	42,223
2018	285	27,762	15,353	43,400
2019	N/A	N/A	N/A	N/A
2020	202	28,738	14,363	43,303
2021	183	29,059	13,037	42,279
2022	157	27,583	7,592	35,332
2023	144	32,557	0	32,701

Source: FEMA's Community Information System
*SHFA (Zones A, AE, A1-A30, V, V1-V30, AO and AH)
**SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO)
***Preferred Risk Policies, phased out in April 2022

Table F-47 indicates that as of October 2, 2023, the City of Sacramento had 32,701 active flood insurance policies in force with total premiums of more than $17 million. These active policies represent more than $11 billion of insurance coverage in place covering both structure and contents. Historically, the City has had 1,927 claims paid against the NFIP totaling $10.3 million in paid losses.

Table F-47 Flood Insurance Policies by Occupancy Type (Data as of 10/02/2023)

Property Type	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	$ of Closed Paid Losses	Adjustment Expense
Single Family	28,929	$15,134,778	$9,881,435,000	1,654	$7,611,743.57	$566,830.30
2-4 Family	823	$386,306	$255,952,000	120	$520,101.50	$35,230.00
All Other Residential	2,204	$781,175	$797,955,000	49	$381,645.68	$19,080.26

Property Type	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	$ of Closed Paid Losses	Adjustment Expense
Non Residential	745	$739,637	$392,244,000	104	$1,848,270.24	$84,141.88
Total	**32,701**	**$17,041,896**	**$11,327,586,000**	**1,927**	**$10,361,760.99**	**$705,282.44**

Table F-48 presents the number of insurance policies in force, as of October 2, 2023, by occupancy type in relation to condominiums.

Table F-48 Flood Insurance Policies by Condominiums compared to Non-Condominiums (Data as of 10/02/2023)

	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	$ of Closed Paid Losses	Adjustment Expense
Condo	1,739	$320,973	$406,603,000	35	$206,425.28	$15,233.89
Non Condo	30,962	$16,720,923	$10,920,983,000	1,892	$10,155,335.71	$690,048.55
Total	**32,701**	**$17,041,896**	**$11,327,586,000**	**1,927**	**$10,361,760.99**	**$705,282.44**

Source: FEMA's Community Information System

Table F-49 indicates the number of flood insurance policies by flood zone as of October 2, 2023. Since the previous iteration of the 2016 CFMP, participation in flood insurance programs has declined by approximately 25 percent. In January 2016, the City had 43,937 flood insurance policies in force and by October 2023 the total policies in force dropped to 32,669.

The total number of flood insurance policies in the A, AE, AH and AO Zones decreased by nearly 70 percent from 360 in January of 2016 to 112 in October 2023. The number of flood insurance policies in the A99, AR, and STD-X Zones increased by over 10,000 from 22,170 in January of 2016 to 32,557 in October 2023. This increase can be attributed by PRP policies phased out in 2022, as participants now purchase standard policies.

Table F-49 Flood Insurance Policies by Flood Zone (Data as of 10/02/2023)

Flood Zone	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	$ of Closed Paid Losses	Adjustment Expense
A01-30 & AE Zones	35	$14,600	$12,410,000	51	$503,592.03	$20,294.98
A Zones	0	$0	$0	32	$239,984.28	$11,212.87
AO Zones	0	$0	$0	16	$75,317.77	$4,075.87
AH Zones	77	$52,613	$18,821,000	31	$183,102.47	$13,840.00
AR Zones	1	$1,144	$300,000	33	$380,263.95	$17,667.02
A99 Zones	21,252	$11,018,666	$7,416,040,000	1,429	$6.401.705.71	$461,703.30
B, C & X Zones	11,304	$5,945,263	$3,872,155,000	315	$2,320,780.89	$168,789.27

Flood Zone	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	$ of Closed Paid Losses	Adjustment Expense
Standard	11,304	$5,945,263	$3,872,155,000	200	$1,780,845.18	$101,754.27
Preferred	0	$0	$0	115	$539,935.71	$67,035.00
Total	**32,669**	**$17,032,286**	**$11,319,726,000**	**1,907**	**$10,104,747.10**	**$697,582.44**

Source: FEMA's Community Information System

As of October 2, 2023, the City of Sacramento had 8,240 pre-FIRM flood insurance policies in force as shown in Table F-50. These pre-FIRM policies in the AE, A, and AH zones were most affected by rate increases through the Biggert-Waters Flood Insurance Reform Act of 2012 and the Homeowner's Flood Insurance Affordability Act of 2014, as certain subsidies were phased out.

Table F-50 Pre-FIRM Flood Insurance Policies by Zone (Data as of 10/02/2023)

Flood Zone	Policies in Force	Premium	Insurance in Force	# of Closed Paid Losses	$ of Closed Paid Losses	Adjustment Expense
A01-30 & AE Zones	10	$6,364	$2,672,000	43	$452,410.24	$17,419.98
A Zones	0	$0	$0	31	$235,697.81	$10,862.87
AO Zones	0	$0	$0	7	$22,042.13	$1,950.00
AH Zones	64	$45,972	$15,386,000	11	$15,559.40	$7,015.00
AR Zones	0	$0	$0	24	$373,440.03	$15,417.02
A99 Zones	1,335	$599,591	$444,788,000	988	$3,240,465.36	$269,744.06
B, C & X Zones	6,831	$3,660,476	$2,372,023,000	238	$1,894,989.65	$135,319.27
Standard	6,831	$3,660,476	$2,372,023,000	152	$1,503,505.54	$79,454.27
Preferred	0	$0	$0	86	$391,484.11	$55,865.00
Total	**8,240**	**$4,312,403**	**2,834,869,000**	**1,342**	**$6,234,604.61**	**$457,728.20**

Source: FEMA's Community Information System

Table F-51 shows there were 24,429 post-FIRM flood insurance policies as of October 2, 2023; 4,473 were Standard Flood Insurance Policies.

Table F-51 Post-FIRM Flood Insurance Policies by Zone (Data as of 10/02/2023)

Flood Zone	Policies in Force	Premium	Insurance in Force	# of Closed Paid Losses	$ of Closed Paid Losses	Adjustment Expense
A01-30 & AE Zones	25	$8.236	$9,738,000	8	$51,181.79	$2,875.00
A Zones	0	$0	$0	1	$4,286.47	$350.00
AO Zones	0	$0	$0	9	$53,275.64	$2,125.00
AH Zones	13	$6,641	$3,435,000	20	$167,543.07	$6,825.00
AR Zones	1	$1,144	$300,000	9	$6,823.92	$2,250.00
A99 Zones	19,917	$10,419,075	$6,971,252,000	441	$3,161,240.35	$191,959.24

Flood Zone	Policies in Force	Premium	Insurance in Force	# of Closed Paid Losses	$ of Closed Paid Losses	Adjustment Expense
B, C & X Zones	4,473	$2,284,787	$1,500,132.000	77	$425,791.24	$33,470.00
Standard	4,473	$2,284,787	$1,500,132.000	48	$277.339.64	$22,300.00
Preferred	0	$0	$0	29	$148,451.60	$11,170.00
Total	**24,429**	**$12,719,883**	**$8,484,857,000**	**565**	**$3,870,142.48**	**$239,854.24**

Source: FEMA's Community Information System

Many factors can affect the number of flood insurance policies held by residents or property owners in the City. For example, in 2015, the City saw a drop in the number of A99 policies in Pre-FIRM and Post-FIRM policies due to over 3,000 residents being removed from the A99 Zone on May 12, 2014 in South Sacramento. Similarly, the Natomas area was remapped from AE to A99 in June 2015, resulting in an increase in A99 policies for 2016. Data was also affected because many Natomas residents participated in historical subsidized programs since 2008, such as the Preferred Risk Policy Eligibility and Properties Newly Mapped.

As of April 2022, the most substantial change affecting the number of flood insurance participation was the phasing out of PRPs for property owners in B, C and X Zones. Residents and property owners within these zones can now purchase a standard insurance policy that accounts for decreased flood risk. While there was an increase in X-STD policies between 2022 and 2023, there was an observed decrease in flood insurance purchasing within the City during 2023. As previously mentioned, this is likely attributed both to the elimination of PRP and continued challenging economic factors influencing the purchasing habits of consumers.

Repetitive Loss Analysis

The RL properties are located throughout the City. Repetitive flooding is generally a result of a combination of poor drainage and homes below the street elevation. Drainage improvements in the area have alleviated some of the flooding issues to these RL structures over the years. Citizens are required to have flood insurance in an A zone if they have a federally backed mortgage. An analysis of repetitive loss was completed to examine the number of insured repetitive loss properties against FEMA flood zones. According to 2022 NFIP records, there are currently 23 unmitigated repetitive loss properties evaluated in this analysis with total payments of roughly $691,637. This can be seen on Table F-52.

Table F-52 Repetitive Loss Summary (Unmitigated Properties)

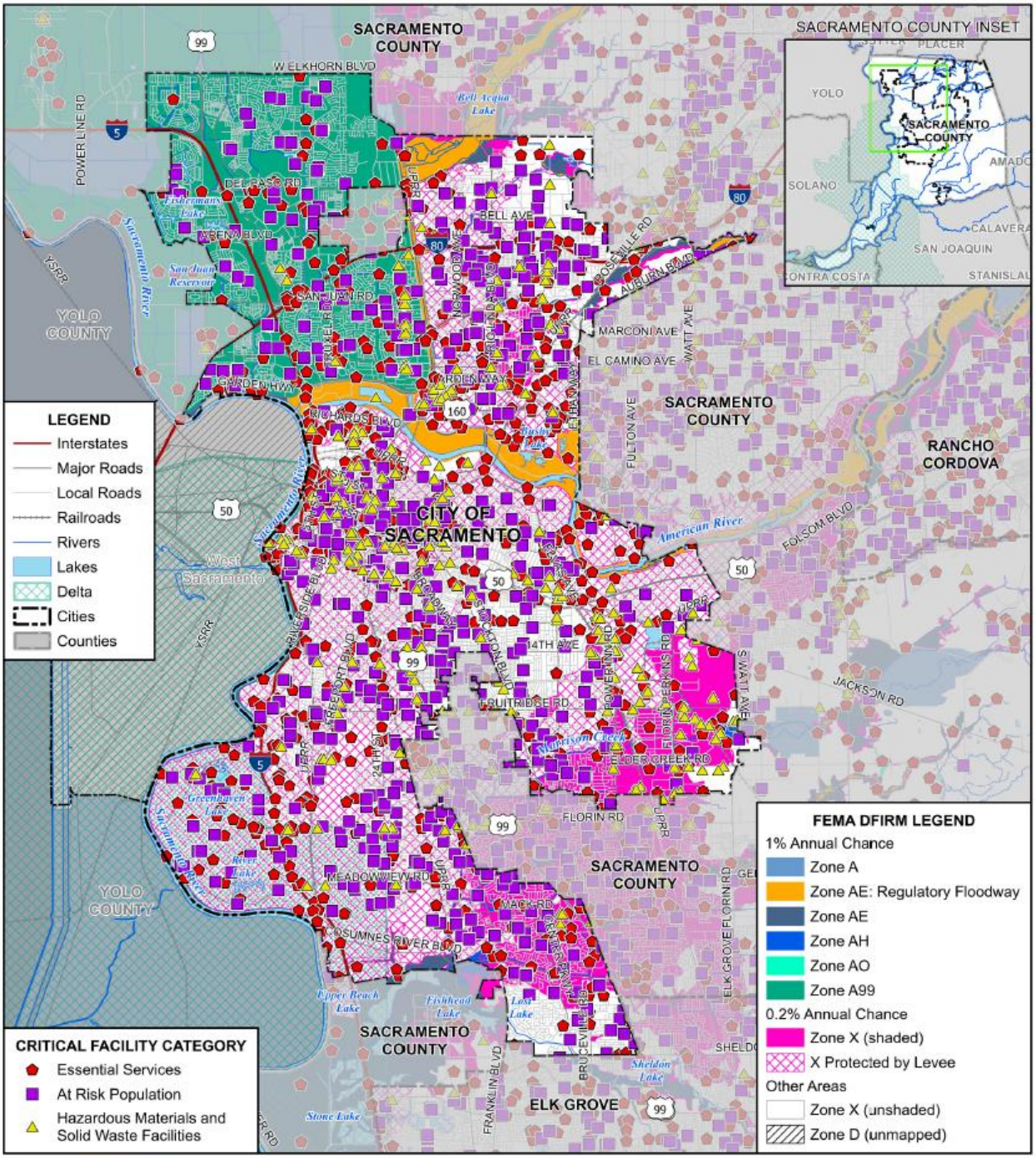
Flood Zone	Building Count		Total Number of Losses	Total Building Payment	Total Content Payment	Total Paid
	Insured	Uninsured				
X	1	17	41	$453,235	$85,499	**$538,734**
AE & A99	3	2	10	$150,873	$2,030	**$152,903**
Total	**4**	**19**	**51**	**$604,108**	**$87,529**	**$691,637**

Source: FEMA RL List 2021/2022

Critical Facilities and Infrastructure

1% and 0.2% annual chance flooding presents a threat to critical facilities and infrastructure. Damage to any one of these systems can threaten public safety, wreak havoc on daily life, impact properties far from flood zones, and result in economic impacts to the City The following analysis was performed on the critical facility inventory in the City to determine which critical facilities fall into each FEMA DFIRM flood zone. Using GIS, the FEMA DFIRM flood zones were overlayed on the critical facility GIS layer. This is shown on Figure F-46 for the FEMA DFIRM flood zones. Table F-53 details which critical facilities fall in which FEMA DFIRM flood zones.

Figure F-46 City of Sacramento – Critical Facilities in FEMA DFIRM Flood Zones



Data Source: FEMA Effective DFIRM 02/22/2024 (NFHL 10/13/2025 database), Sacramento County, Cal-Atlas; Map Date: 4/17/2026.

Table F-53 City of Sacramento – Critical Facilities in FEMA DFIRM Flood Zones by Category and Type

Flood Zone	Critical Facility Category /Critical Facility Type	Facility Count
1% Annual Chance Flood Hazard		
Zone A	***Essential Services Facilities***	
	Pump Station	1
	Essential Services Facilities Total	***1***
	Total	**1**
Zone AE: Regulatory Floodway	***Essential Services Facilities***	
	Bridge	3
	Floodgate	10
	Hospital or Urgent Care	1
	Microwave Service Towers	1
	Pump Station	1
	Water Well	9
	Essential Services Facilities Total	***25***
	At Risk Population Facilities	
	Mobile Home Parks	1
	At Risk Population Facilities Total	***1***
	Hazardous Materials and Solid Waste Facilities	
	Solid Waste Facility	1
	Hazardous Materials and Solid Waste Facilities Total	***1***
	Total	**27**
Zone AE	***Essential Services Facilities***	
	Bridge	3
	Floodgate	5
	Microwave Service Towers	3
	Port Facilities	5
	Pump Station	6
	Sewage Treatment Plant	1
	Water Well	2
	Essential Services Facilities Total	***25***
	At Risk Population Facilities	
	Places of Worship	1
	At Risk Population Facilities Total	***1***
	Hazardous Materials and Solid Waste Facilities	
	EPA ER TRI Facility	1
	Tank Farm	1

Flood Zone	Critical Facility Category /Critical Facility Type	Facility Count
	Hazardous Materials and Solid Waste Facilities Total	***2***
	Total	**28**
Zone AH	***Essential Services Facilities***	
	Public Transit Stations	1
	Pump Station	2
	Essential Services Facilities Total	***3***
	Hazardous Materials and Solid Waste Facilities	
	EPA ER TRI Facility	1
	Leaky Underground Storage Tank	1
	Hazardous Materials and Solid Waste Facilities Total	***2***
	Total	**5**
Zone A99	***Essential Services Facilities***	
	Cellular Tower	1
	Emergency Evacuation Center	11
	EMS Stations	2
	FDIC Insured Banks	14
	Fire Station	2
	Floodgate	1
	Microwave Service Towers	31
	Power Plants	2
	Pump Station	25
	State Government Buildings	1
	Water Well	24
	Essential Services Facilities Total	***114***
	At Risk Population Facilities	
	Colleges, Universities, and Professional Schools	3
	Day Care Center	20
	Major Sports Venues	1
	Mobile Home Parks	3
	Places of Worship	47
	School	26
	At Risk Population Facilities Total	***100***
	Hazardous Materials and Solid Waste Facilities	
	Leaky Underground Storage Tank	12
	Waste Transfer Station	1
	Hazardous Materials and Solid Waste Facilities Total	***13***
	Total	**227**

Flood Zone	Critical Facility Category /Critical Facility Type	Facility Count
1% Annual Chance Flood Hazard Total		**288**
0.2% Annual Chance Flood Hazard		
Zone X (shaded)	***Essential Services Facilities***	
	Emergency Evacuation Center	8
	EMS Stations	1
	FDIC Insured Banks	1
	Fire Station	1
	Hospital or Urgent Care	3
	Law Enforcement	3
	Microwave Service Towers	37
	Public Transit Stations	3
	Pump Station	15
	Water Well	14
	Essential Services Facilities Total	***86***
	At Risk Population Facilities	
	Colleges, Universities, and Professional Schools	2
	Day Care Center	14
	Mobile Home Parks	1
	Places of Worship	35
	School	18
	At Risk Population Facilities Total	***70***
	Hazardous Materials and Solid Waste Facilities	
	EPA ER TRI Facility	11
	EPA ER TSCA Facility	1
	Leaky Underground Storage Tank	9
	Solid Waste Facility	4
	Waste Transfer Station	2
	Hazardous Materials and Solid Waste Facilities Total	***27***
	Total	**183**
X Protected by Levee	***Essential Services Facilities***	
	Airport	1
	Bridge	17
	Cellular Tower	1
	Emergency Evacuation Center	58
	EMS Stations	22
	FDIC Insured Banks	54
	Fire Station	18

Flood Zone	Critical Facility Category /Critical Facility Type	Facility Count
	Floodgate	9
	Hospital or Urgent Care	5
	Law Enforcement	18
	Microwave Service Towers	277
	Power Plants	4
	Public Transit Stations	25
	Pump Station	121
	Sewage Treatment Plant	6
	State Government Buildings	29
	Water Well	65
	Essential Services Facilities Total	***730***
	At Risk Population Facilities	
	Colleges, Universities, and Professional Schools	4
	Community Center	2
	Day Care Center	72
	Major Sports Venues	2
	Mobile Home Parks	9
	Places of Worship	257
	School	136
	At Risk Population Facilities Total	***482***
	Hazardous Materials and Solid Waste Facilities	
	EPA ER FRP Facility	1
	EPA ER TRI Facility	20
	EPA ER TSCA Facility	2
	Leaky Underground Storage Tank	114
	Solid Waste Facility	10
	Tank Farm	3
	Waste Transfer Station	1
	Hazardous Materials and Solid Waste Facilities Total	***151***
	Total	**1,363**
0.2% Annual Chance Flood Hazard Total		**1,546**
Other Areas		
Zone X (unshaded)	***Essential Services Facilities***	
	Bridge	3
	Emergency Evacuation Center	14
	EMS Stations	1
	FDIC Insured Banks	13

Flood Zone	Critical Facility Category /Critical Facility Type	Facility Count
	Fire Station	1
	Floodgate	18
	Hospital or Urgent Care	7
	Law Enforcement	6
	Microwave Service Towers	152
	Port Facilities	1
	Power Plants	1
	Public Transit Stations	12
	Pump Station	29
	Sewage Treatment Plant	2
	State Government Buildings	3
	Water Well	37
	Essential Services Facilities Total	***300***
	At Risk Population Facilities	
	Colleges, Universities, and Professional Schools	2
	Day Care Center	34
	Mobile Home Parks	8
	Places of Worship	87
	School	58
	At Risk Population Facilities Total	***189***
	Hazardous Materials and Solid Waste Facilities	
	EPA ER FRP Facility	1
	EPA ER TRI Facility	6
	Leaky Underground Storage Tank	37
	Solid Waste Facility	8
	Waste Transfer Station	1
	Hazardous Materials and Solid Waste Facilities Total	***53***
	Total	**542**
Other Areas Total		**542**
Grand Total		**2,376**

Source: FEMA DFIRM 02/2024, City of Sacramento

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 flood zones shown on Figure F-33 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%, 0.5% 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 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

Health Hazards from Flooding

Certain health hazards are also common to flood events. While such problems are often not reported, three general types of health hazards accompany floods. The first comes from the water itself. Floodwaters carry anything that was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where cattle and hogs are kept or their wastes are stored can contribute polluted waters to the receiving streams.

Floodwaters also saturate the ground, which leads to infiltration into sanitary sewer lines. When wastewater treatment plants are flooded, there is nowhere for the sewage to flow. Infiltration and lack of treatment can lead to overloaded sewer lines that can back up into low-lying areas and homes. Even when it is diluted by flood waters, raw sewage can be a breeding ground for bacteria such as e. coli and other disease-causing agents.

The second type of health problems arise after most of the water has gone. Stagnant pools can become breeding grounds for mosquitoes, and wet areas of a building that have not been properly cleaned breed mold and mildew. A building that is not thoroughly cleaned becomes a health hazard, especially for small children and the elderly.

Another health hazard occurs when heating ducts in a forced air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and breathed in by the occupants. If a city or county water system loses pressure, a boil order may be issued to protect people and animals from contaminated water.

The third problem is the long-term psychological impact of having been through a flood and seeing one's home damaged and irreplaceable keepsakes destroyed. The cost and labor needed to repair a flood-damaged home puts a severe strain on people, especially the unprepared and uninsured. There is also a long-term problem for those who know that their homes can be flooded again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City 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 further below.

Warning and Evacuation Procedures

The City of Sacramento in conjunction with Sacramento County and other incorporated communities have a variety of systems and procedures established to protect its residents and visitors to plan for, avoid, and respond to a hazard event including those associated with floods and wildfires. This includes Pre-Disaster Public Awareness and Education information which is major component in successfully reducing loss of life and property in a community when faced with a potentially catastrophic incident. Much of this information is not specific to a given hazard event and is always accessible to the public on local City and County websites. Specific warning and evacuation systems and procedures include information relative to: Flood Forecasting (e.g., California Data Exchange Center), ALERT System, Warning Systems, dam protocols, evacuation procedures, and sheltering in place. Additional information on these warning and evacuation procedures as well as post-disaster mitigation policies and procedures can be found within the Capability Section of this Annex and in Section 4.4 of the Base plan and in the Emergency Management discussions in Appendix C.

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 City of Sacramento include the following:

- Climate change is likely to exacerbate future flood conditions and associated impacts and vulnerability of the City to 1% and 0.2% annual chance flooding. This was discussed in greater detail in the Climate Change and Flood section of the Hazard Profile above.
- Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the City. The City has 61 areas where growth is expected over the next five years. These active developments, would place additional population in the flood zones. Additional population growth would likely bring continued diversity to the County. Vulnerable population groups could face disproportionate effects from flooding and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the location of future flood events.
- Land use planning should be proactive to address future hazard conditions. The City has 61 areas where growth is expected over the next five years. However, City building codes and the City's floodplain ordinance are in effect to reduce this risk and should be updated as necessary to continue to address future flood conditions. As such, changes in land use and future development may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the location of future flood events.

Future Development

This section provides an analysis of the flood hazard and proposed future development within the City based on FEMA floodplains and also discusses considerations in evaluating future flooding conditions.

Future Development: General Considerations

Communities that participate in the NFIP adopt regulations and codes that govern development in special flood hazard areas (SFHAs) and enforce those requirements through their local floodplain management ordinances through the issuance of permits. The City's floodplain management ordinance provides standards for development, subdivision of land, construction of buildings, and improvements and repairs to buildings that meet or exceed the minimum requirements of the NFIP.

The International Residential Code (IRC) and International Building Code (IBC), by reference to ASCE 24, include requirements that govern the design and construction of buildings and structures in flood hazard areas. FEMA has determined that the flood provisions of the I-Codes are consistent with the requirements of the NFIP (the I-Code requirements either meet or exceed NFIP requirements). ASCE 7 and ASCE 24, design standards developed by the American Society of Civil Engineers, expands on the minimum NFIP requirements with more specificity, additional requirements, and some limitations. Adoption of latest edition of the California Building Standards Code (CBSC), the 2025 triennial edition is based on the 2024 IBC and 2024 IRC, with and effective dated of January 1, 2026. The previous edition was the 2022 triennial edition, based on the 2021 IBC and 2021 IRC and was effective from 1/1/2023 until 12/31/2025. CA DWR

has also developed a California State Model Flood Damage Prevention Ordinance to work with the flood provisions of the CBSC (CCR Title 24) for buildings and structures in special flood hazard areas. CA DWR has also prepared sample language to modify local floodplain management regulations.

With the adoption of the CBSC and the International Codes, communities are moving towards a more stringent approach to regulatory floodplain management, beyond the minimum requirements of the NFIP. The adoption and enforcement of disaster-resistant building codes is a core community action to promote effective mitigation. When communities ensure that new buildings and infrastructure are designed and constructed in accordance with national building codes and construction standards, they significantly increase local resilience now and in the future. With continued advancements in building codes, local ordinances should be reviewed and updated to meet and exceed standards as practicable to protect new development from future flood events and to further promote disaster resiliency.

One of the most effective ways to reduce vulnerability to potential flood damage is through careful land use planning that fully considers applicable flood management information and practices. Master planning will also be necessary to assure that open channel flood flow conveyances serving the smaller internal streams and drainage areas are adequately prepared to accommodate the flows. Preservation and maintenance of natural and riparian areas should also be an ongoing priority to realize the flood control benefits of the natural and beneficial functions of these areas.

The potential for flooding may increase as floodwaters are channeled due to land development. Such changes can exacerbate flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. Floodplain modeling and master planning should be based on built out property use to ensure that all new development remains safe from future flooding. While local floodplain management, stormwater management, and water quality regulations and policies address these changes on a site-by-site basis, their cumulative effects can have a negative impact on the overall floodplain.

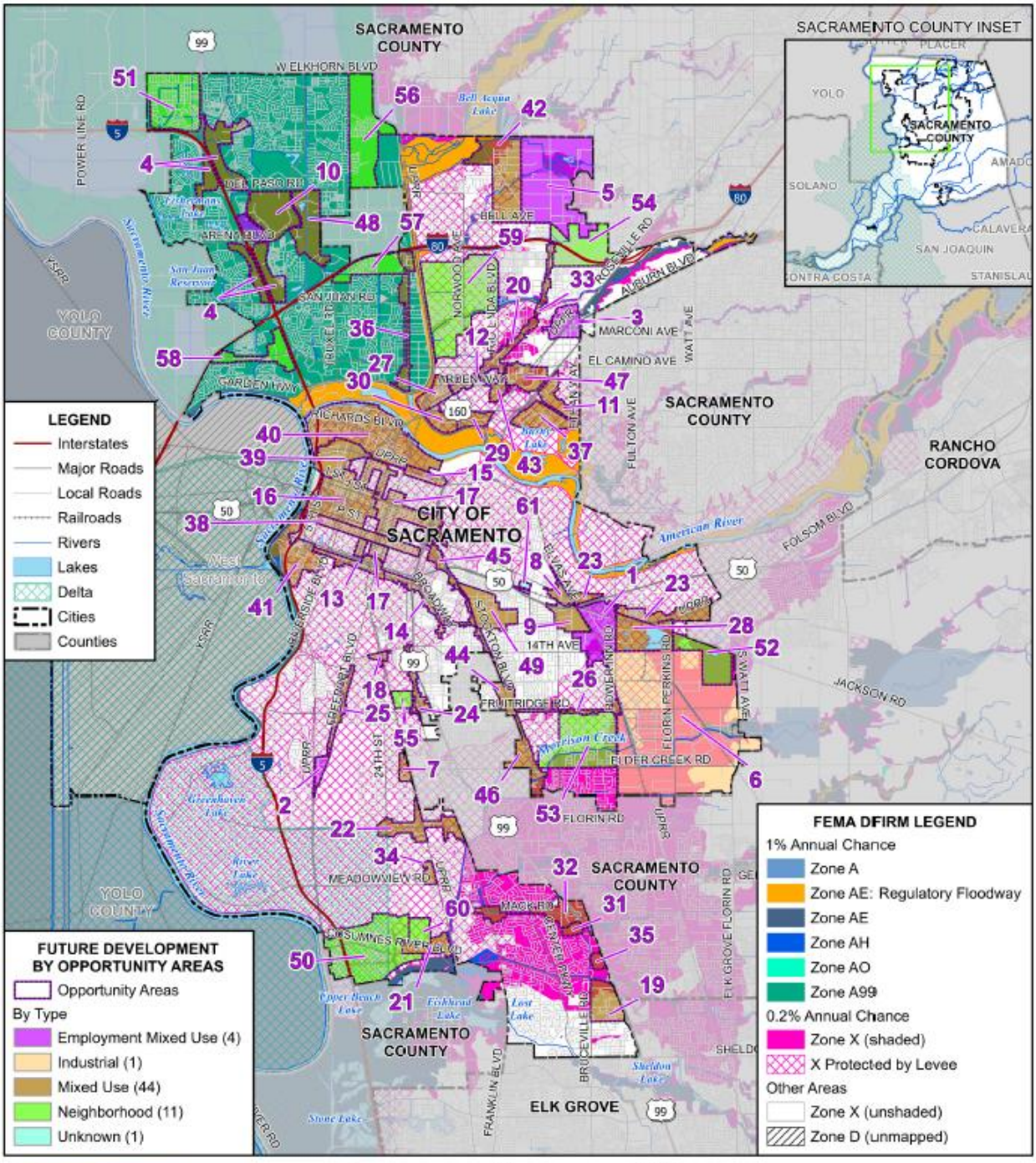
The City enforces its floodplain management ordinance. If any development is to occur in the floodplain, it would have to conform to the elevation and other standards of the floodplain ordinance. More detail on the specifics of the floodplain ordinance can be found in the Capability section below.

Future development areas and their vulnerability to 1% and 0.2% annual chance flood are discussed further in the below GIS analysis.

GIS Analysis

The City provided 61 future development areas which were used as the basis for the inventory of future development for the City. These areas were mapped in GIS. Utilizing the future development area spatial layer, the parcel polygon data was intersected to determine the future development areas within each DFIRM flood zone. Figure F-47 shows the locations of the future development area overlayed on the DFIRM flood zones. Some of these future development areas fall within the mapped flood areas as shown on Table F-54. As shown in the map and table, 25 of these future development areas sit in the 1% annual chance flood zone, while 47 sit in the 0.2% annual chance flood zone.

Figure F-47 City of Sacramento – Future Development Areas in FEMA DFIRM Flood Zones



Data Source: FEMA Effective DFIRM 02/22/2024 (NFHL 10/13/2025 database), Sacramento County. Cal-Atlas: Map Date: 7/31/2026.

Table F-54 City of Sacramento – Future Development Area by Development and Type in FEMA DFIRM Flood Zones with Map ID, Parcels, and Acres

Flood Zones /Future Development Type/Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
1% Annual Chance Flood Hazard							
Employment Mixed Use							
4	North Natomas EC	3	2	1	76	68	8
3	Marconi	2	0	2	1	0	1
5	Raley	43	12	31	373	71	302
Employment Mixed Use Total		**48**	**14**	**34**	**450**	**139**	**311**
Industrial							
6	Power Inn/Army Depot	71	48	23	656	460	196
Industrial Total		**71**	**48**	**23**	**656**	**460**	**196**
Mixed Use							
4	North Natomas EC	461	377	84	596	98	498
10	Arco Arena	257	236	21	345	225	119
21	Delta Shores Transit Center	2	0	2	41	0	41
27	Globe LRT	4	1	3	11	4	8
31	Kaiser Med Center	1	1	0	29	29	0
32	Mack	18	9	9	53	26	27
33	Marysville	8	6	2	20	5	16
36	Northgate	189	137	52	144	115	29
39	Railyards	2	0	2	20	0	20
40	Richards Boulevard	37	1	36	146	4	142
41	Riverfront	29	0	29	101	0	101
42	Robla	57	9	48	110	4	106
46	Stockton South	9	4	5	35	23	13
48	Truxel	325	267	58	316	196	120
Mixed Use Total		**1,399**	**1,048**	**351**	**1,968**	**728**	**1,239**
Neighborhood							
50	Delta Shores	45	8	37	230	19	211

Flood Zones /Future Development Type/Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
51	Greenbriar	2,047	1,356	691	432	178	254
53	Lemon Hill	33	9	24	41	6	35
56	Panhandle	465	3	462	597	135	461
57	Parkerbridge	555	524	31	251	66	185
58	Southwest Natomas	202	174	28	160	105	55
59	Strawberry Manor	58	32	26	108	5	103
Neighborhood Total		**3,405**	**2,106**	**1,299**	**1,819**	**516**	**1,303**
1% Annual Chance Flood Hazard Total		**4,923**	**3,216**	**1,707**	**4,892**	**1,843**	**3,049**
0.2% Annual Chance Flood Hazard							
Employment Mixed Use							
1	CSUS Village	172	91	81	283	192	91
2	Freeport South	50	38	12	48	33	14
3	Marconi	102	73	29	59	30	30
5	Raley	31	17	14	103	78	25
Employment Mixed Use Total		**355**	**219**	**136**	**494**	**333**	**161**
Industrial							
6	Power Inn/Army Depot	918	622	296	1,939	1,492	447
Industrial Total		**918**	**622**	**296**	**1,939**	**1,492**	**447**
Mixed Use							
7	47th	69	51	18	48	30	18
9	65th South	1	0	1	2	0	2
11	Arden Fair	85	67	18	125	119	7
12	Arden/Del Paso	139	92	47	37	22	15
13	Broadway	298	251	47	79	64	15
14	Broadway East	248	198	50	54	35	19
15	C Street	123	87	36	76	15	61
16	CBD	980	607	373	304	106	198
17	Central City Corridors	2,145	1,822	323	339	272	67

Flood Zones /Future Development Type/Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
18	City College	98	55	43	23	13	10
19	Cosumnes River	34	17	17	75	30	45
20	Del Paso	420	357	63	111	87	24
22	Florin	178	98	80	207	121	87
23	Folsom East	106	68	38	241	151	90
24	Franklin	54	38	16	37	26	10
25	Freeport North	159	147	12	79	65	14
26	Fruitridge	117	95	22	46	36	10
27	Globe LRT	209	143	66	109	65	44
28	Granite Park	54	18	36	299	52	247
29	Johnston East	55	33	22	93	71	22
30	Johnston West	33	25	8	79	48	31
31	Kaiser Med Center	3	3	0	13	13	0
32	Mack	116	100	16	141	118	23
33	Marysville	37	17	20	8	4	4
34	Meadowview	93	81	12	39	7	32
35	Methodist Med Center	15	7	8	37	23	13
37	Point West	61	57	4	184	182	2
38	R Street Central City Housing	636	490	146	129	94	35
39	Railyards	50	23	27	15	6	9
40	Richards Boulevard	444	217	227	677	314	363
41	Riverfront	627	505	122	204	59	146
42	Robla	289	246	43	185	102	83
43	Royal Oaks	88	55	33	54	29	25
45	Stockton North	49	37	12	46	28	18
46	Stockton South	93	63	30	146	115	31
47	Swanston Station	155	83	72	115	82	32

Flood Zones /Future Development Type/Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Mixed Use Total		**8,361**	**6,253**	**2,108**	**4,456**	**2,602**	**1,854**
Neighborhood							
50	Delta Shores	881	195	686	550	94	456
52	Jackson	25	9	16	573	241	332
53	Lemon Hill	2,163	2,022	141	551	468	84
55	North City Farms	121	98	23	55	46	9
59	Strawberry Manor	2,639	2,320	319	743	468	275
60	102-Acre Site	1	0	1	102	0	102
Neighborhood Total		**5,830**	**4,644**	**1,186**	**2,574**	**1,316**	**1,257**
0.2% Annual Chance Flood Hazard Total		**15,464**	**11,738**	**3,726**	**9,463**	**5,744**	**3,719**

Source: FEMA DFIRM 02/2024, City of Sacramento

Flood: Localized Stormwater Flooding

Likelihood of Future Occurrence–Highly Likely
Vulnerability–Medium

Hazard Profile

Flooding occurs in areas other than the FEMA mapped 1%, 0.5%, and 0.2% annual chance floodplains. Flooding may be from drainages not studied by FEMA, lack of or inadequate drainage infrastructure, or inadequate maintenance. Localized, stormwater flooding occurs throughout the City, during the rainy season from November through April. Prolonged heavy rainfall (including that from atmospheric river events) contributes to a large volume of runoff resulting in high peak flows of moderate duration. Rain on snow events occurring in the upper elevations can also be significant and contribute to greater downstream runoff and flooding during large storm events.

The 2024 CFMP for the City noted that in Sacramento, as in most areas, runoff from rainwater enters storm drain inlets (DIs), which lead to an extensive underground storm drainpipe system. Because of the flat nature of the terrain in Sacramento, runoff is pumped through levees to a creek or river. If this system fails to operate properly (e.g., DIs are clogged, or pump stations are down), there is considerable risk of property damage from flooding during intense storms

Location and Extent

The City of Sacramento is subject to localized flooding throughout the City. Areas prone to localized flooding are included in Table F-55 below. Flood extents are usually measured in areas affected, velocity of flooding, and depths of flooding. Expected flood depths in the City vary by location. Flood durations

in the City tend to be short to medium term, or until either the storm drainage system can catch up or flood waters move downstream. Localized flooding in the City tends to have a shorter speed of onset, especially when antecedent rainfall has soaked the ground and reduced its capacity to absorb additional moisture.

Past Occurrences

Disaster Declaration History

There have been no state or federal disaster declarations from localized floods. There would most likely have been localized flood events during the disaster declarations from flood as shown in the previous 1%/0.5%/0.2% annual chance flood section.

NCDC Events

The NCDC occurrences of localized flooding are included in the 1%, 0.5%, and 0.2% annual chance flood hazard profile above where past flood events were noted. Some of these events may have affected the City

City of Sacramento Events

These sections first show historic hazard events occurring since the 2021 LHMPs and then those occurring prior to the 2021 LHMP.

The City noted that the times of flooding and localized flooding have coincided. These were discussed in the Past Occurrences Section of the Flood:1%, 0.5%, and 0.2% Annual Chance section above.

Events since 2021 LHMP

December 31st, 2022 and January 8th, 2023 – the City experienced two large storms with heavy rainfall and strong winds. The winds brought down many tree branches which caused power outages, leading to many of our drainage pump stations losing power, which triggered a lot of localized street flooding.

Events prior to 2021

The situation brought about by extremely heavy local rain storms could conceivably result in badly flooded streets and flooding of homes in some areas. It is probable that such situations would be brought about by a slow-moving high-intensity rainstorm over several hours reaching a peak intensity of ½" per hour later in the storm event. Any higher intensity storm event will cause localized flooding problems. An example is shown in Figure F-48.

Figure F-48 City of Sacramento – Localized Flooding at Anita Avenue and 23rd Street



Source: City of Sacramento Department of Utilities

The City noted the following past occurrences of localized flooding:

- **December 6 - 8, 2019**: Steady rain slowly creeping into Sacramento Monday and continuing through Thursday with only one dry day. Another system began with breezy conditions and heavier rains Friday and peaking on Sunday during the California International Marathon (CIM).
- **February 26, 2019**: The National Weather Service is predicting an wet atmospheric river starting in the evening along with gusty winds. Rain totals for the Sacramento area is predicted of up to 6" by the end of the fourth day. In addition, Folsom is releasing water which will created high levels in the creeks and rivers.
- **January 16, 2019**: National Weather predicting a series of storms for three days straight with as much as ¼ of an inch to fall for one hour. Concerns over winds and high river levels.
- **April 5 – 12, 2018**: Heavy rains predicted for a four day stretch and light rains continuing into the following week
- **October 10 – 20, 2017**: Purple colored water detected in one neighborhood in North Sacramento. Activation was for one day on the 20th.
- **March 2016** – DOC was on alert due to heavy rain projections. DOC activation was ultimately not required.
- **March 3- 10, 2016**: Projected winter storm affecting the Sacramento Valley – Almost activated, but storm fizzled out at the end

- **December 2014** – Media and reports claimed severe rain predicted for multiple days. DOC activated for several days.
- **2013**: Sewer system overflow incident. DOC activation was not required.
- **December 2012**: Severe rain for several days. The Department Operation Center (DOC) was activated for approximately a week due extreme weather forecasts.
- The 2024 CFMP noted that in **1995**, for instance, approximately 100 homes in four south area drainage basins incurred flood damage due to internal drainage system failure during a particularly intense storm.

Climate Change and Localized Flood

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

Even if average annual rainfall may decrease slightly, the intensity of individual rainfall events is likely to increase during the 21st century, increasing the likelihood of overwhelming stormwater systems built to historical rainfall averages. This makes localized flooding more likely.

The 2024 City of Sacramento Climate Action & Adaptation Plan noted that annual precipitation is expected to increase in the Sacramento region to between 20.3 and 25.7 inches per year; however, this increase will not occur at a uniform rate throughout the year. Rainfall will become more concentrated in the winter months and fall in fewer, higher-intensity events. These high intensity storms may produce higher volumes of runoff, contribute to increased flood risk, damage transportation infrastructure such as roads and bridges, and contribute to levee failure. Meanwhile, the spring and summer months are expected to see the largest reductions in rainfall compared to historical patterns. These changes could lead to drought, groundwater depletion, increased wildfire risk, changes in streamflow, decreased drinking water supply and availability, and strain to health, energy, and infrastructure systems.

Vulnerability to Localized Flood

Flood vulnerability and their impacts vary by location and severity of any given flood event and will likely only affect certain areas of the City during specific times. Based on the risk assessment, it is evident that floods will continue to have potentially significant impacts to certain areas of the City. However, while flooding can cause significant impacts, depending on the duration and volume of precipitation and the drainage in any given area, many of the floods in the City are minor, localized flood events that are more of a nuisance than a disaster.

Many areas of the City are at some measure of vulnerability to localized flooding. An assessment of a community's vulnerability to localized flooding begins with an understanding of local exposure to localized flooding. This is included in the Local Concerns section below followed by a discussion of the City's Assets at Risk to this hazard.

Local Concerns

The City 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.

Historically, the City has been affected by flooding of streams and creeks occurring during heavy rain and storm (including atmospheric river) events. Additional development in the City and in the watersheds of these streams affects both the frequency and duration of damaging floods through an increase in stormwater runoff and contributes to localized flooding occurring in areas throughout the City. The lack of or inadequate drainage infrastructure in the City contributes to localized flooding issues

The City local drainage system services approximately 100 square miles and is handled by a combination of gravity and lift stations which a total of approximately some 140 storm drainage basins. Since the City is typically lower than the elevated rivers by as much as 5-25 feet, the majority of the local drainage must be pumped into the rivers. The City operates 94 sumps and pumps to keep the drainage pumped down. A major power outage within any of these basins can cause significant local flooding.

The City tracks localized flooding areas. The list below and Table F-55 identify known and past occurrences of such areas and the associated problems encountered. This list is an initial inventory of key problem areas and is not intended to be a complete inventory of all problems and locations associated with severe weather events and localized flooding in the City of Sacramento.

1. Sump (pump station) 157 screen. During rain events the north channel which empties into sump 157 conveys debris onto the screen which can reduce the pumping capacity of the station. The screen is monitored during rain events and cleaned as necessary.
2. Riza ditch near Stockton Boulevard and Riza Avenue. During rain events the screen on the culvert on the east side of Stockton Boulevard can become clogged with debris. The screen is monitored during rain events and cleaned as necessary.
3. Culvert at John Stiles ditch at Interstate 5 upstream of Sump 134. This culvert tends to clog during rain events. The culvert is monitored and cleaned as necessary.
4. Bypass pipe between Sumps 37 and 43 under Power Inn Road. Pipe tends to clog. Maintenance crews keep the pipe free and clear prior to rain events.
5. Inverted siphon under Fruitridge Road – Proctor and Gamble Ditch. Headwalls have been installed upstream and downstream of the inverted siphon, which allows crews to better service the siphon. During rain events the siphon is monitored and cleaned as necessary.
6. Sears ditch near Arden Way onramp to Business 80 freeway. This ditch terminates at a box culvert. The box culvert has a screen at the entrance to the culvert which tends to clog during first flush rain events. The screen is monitored and cleaned as necessary.
7. San Juan Road bridge. Screen on the south side of the bridge tends to clog during rain events. The screen is monitored during rain events and cleaned as necessary.
8. Sump 95 and 98. If these stations lose electrical power during rain events, the watershed tends to flood rapidly. Power to these stations is monitored during rain events and trailer mounted generators are available to provide backup power to these pump stations.

9. Sutterville Road at 24th Street. An 8-inch pipe in this area routinely plugs. Field crews check this pipe during storm events and provide the necessary maintenance to keep the pipe cleared.
10. Hagginwood ditch downstream of Arcade Boulevard near Acacia Avenue. This ditch has an ongoing trash problem and is difficult to clean. This ditch is monitored during rain events and cleaned as necessary.
11. Low lying area of the Valley Hi neighborhood
12. River Park neighborhood
13. Downtown Area – during rain events, the combined storm/sewer system can't handle all of the water causing a lot of street flooding
14. Florin Road and Meadowview Intersection
15. Sump 96 at Beach Lake Stables
16. Magpie Creek at Raley Blvd. A low lying area of Raley Blvd always fills up with water during rain events making it almost impossible to drive through.
17. Elvas Avenue & 65th Street near walking path to Sacramento State University
18. Sump 99 at McKinley Park in East Sacramento

Table F-55 City of Sacramento's Road List of Localized Flooding Problem Areas

Road Name	Flooding	Pavement Deterioration	Washout	High Water	Landslide/ Mudslide	Debris	Downed Trees
Stockton Boulevard at Riza Avenue	X						
Interstate 5 upstream of Sump 134	X						
Arden Way onramp to Business 80 freeway	X						
Sutterville Road at 24th Street	X						
Arcade Boulevard near Acacia Avenue	X						
Florin Road at Meadowview Blvd.	X						
Raley Blvd	X						
Power Inn Road at Fruitridge Blvd.	X						
Mack Road at Franklin Blvd.	X						

Source: City of Sacramento

Assets at Risk

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

People and Populations

People and populations (including vulnerable populations) are traditionally not highly vulnerable to localized flooding, but their structures and contents can be at risk. Localized flooding may also cause transportation issues as roads and lanes are impacted or closed and affect the ability for people to travel throughout the City.

Structures

Structures in areas with localized flooding can be affected if floodwaters intrude into the structure. Structures in low lying areas, or those with basements can be at greater risk. Buildings with older foundations that are prone to water intrusion are also at greater risk. Once water finds its way into a structure, it tends to continue to do so until the path that brings water into a structure is mitigated. Structures can also be damaged by trees that have become uprooted and fall during rain and storm events. Large trees falling onto structures can cause significant damage.

Critical Facilities and Infrastructure

Localized flooding, while often more of a nuisance, can cause damage to critical facilities and infrastructure during a heavy rain and storm event. Any facility that experiences localized flooding can be impacted. Utilities and other critical infrastructure can all be affected, causing interruptions in service until repairs can be made. For example, water and wastewater systems can be vulnerable to heavy rains and flood events. Rainfall creates a high water table, surging streams and creeks, and saturates soil. Infiltration of stormwater into water and wastewater systems may occur and presents a threat to public health and safety, when the infrastructure is no longer able to meet operational needs and local demands. Other critical facilities such as roads, bridges and other transportation facilities can also experience localized flooding causing road closures and other impacts until storm waters recede. This can result in extended road closures requiring alternate routes.

Natural, Historic, and Cultural Resources

Natural resource assets may have some vulnerabilities to localized flood during major storm events, but can benefit from floodwaters, often by design. Many parks and green spaces are designed to take overflow water and release it into the underlying soils and natural areas. Wetland areas in the City actually help reduce the risk of flooding, as they can absorb excess rainfall that would have to be drained away from impervious surfaces. Flooding can provide many benefits to the natural environment, including recharging wetlands and groundwater, increasing fish production, creating wildlife habitat, and rejuvenating soil fertility. These smaller localized flooding events often provide more benefits to the environment in comparison to negative impacts associated with large flood events. Historic and cultural resources may be at some measure of vulnerability if they are located in areas subject to repeated localized flooding.

Impacts from Localized Flood

Primary concerns associated with stormwater flooding include impacts to infrastructure that provide a means of ingress and egress throughout the community. Ground saturation can result in instability, collapse, or other damage to trees, structures, roadways and other critical infrastructure. Objects can also

be buried or destroyed through sediment deposition. Floodwaters can break utility lines and interrupt services. Standing water can cause damage to crops, roads, and foundations. Other problems connected with flooding and stormwater runoff include erosion, sedimentation, degradation of water quality, losses of environmental resources, and certain health hazards.

Life safety issues from localized flooding would be more limited. The amount and type of damage or flooding that occurs varies from year to year and from storm to storm, depending on the quantity of precipitation and runoff.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City may be affected in the future by climate change (which was discussed in the Likelihood of Future Occurrence 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 City of Sacramento include the following:

- Climate change is likely to exacerbate future heavy rain conditions and associated impacts and vulnerability of the City to localized flood. This was discussed in greater detail in the Climate Change and Localized Flood section of the Hazard Profile above.
- The City is expected to see slow and steady growth. The City has 61 areas planned for development in the next five years. Additional population growth would likely bring continued diversity to the City. This can also impact the vulnerable populations, like low-income individuals and households living in areas that are typically more hazardous. Vulnerable population groups such as low-income individuals and households living in flood prone areas could face disproportionate effects from localized flood and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the location of future flood events.
- Land use planning should be proactive to address future hazard conditions. The City has 61 areas planned for development in the next five years. Development in more urban areas causes an increase in peak flow and stormwater runoff. Such growth will consume previously undeveloped acres, and the impacts may overwhelm existing drainage and flood control facilities. Locating new development, structures and critical facilities and infrastructure within or near areas of localized flooding risk may put additional development at risk. However, City building codes are in effect to reduce this risk and should be updated as necessary to continue to address future localized flood conditions. Depending on the location of new development and adherence to protective building codes, changes in land use and development may or may not increase the impacts and associated vulnerabilities of the City to this hazard.

Future Development

The City will need to be proactive to ensure that increased development has proper siting and drainage for stormwaters. The risk of localized flooding to future development can also be minimized by accurate recordkeeping of repetitive localized storm activity. Mitigating the root causes of the localized stormwater flooding will reduce future risks of losses.

Levee Failure

Likelihood of Future Occurrence–Unlikely
Vulnerability–Extremely High

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 steam 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 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.

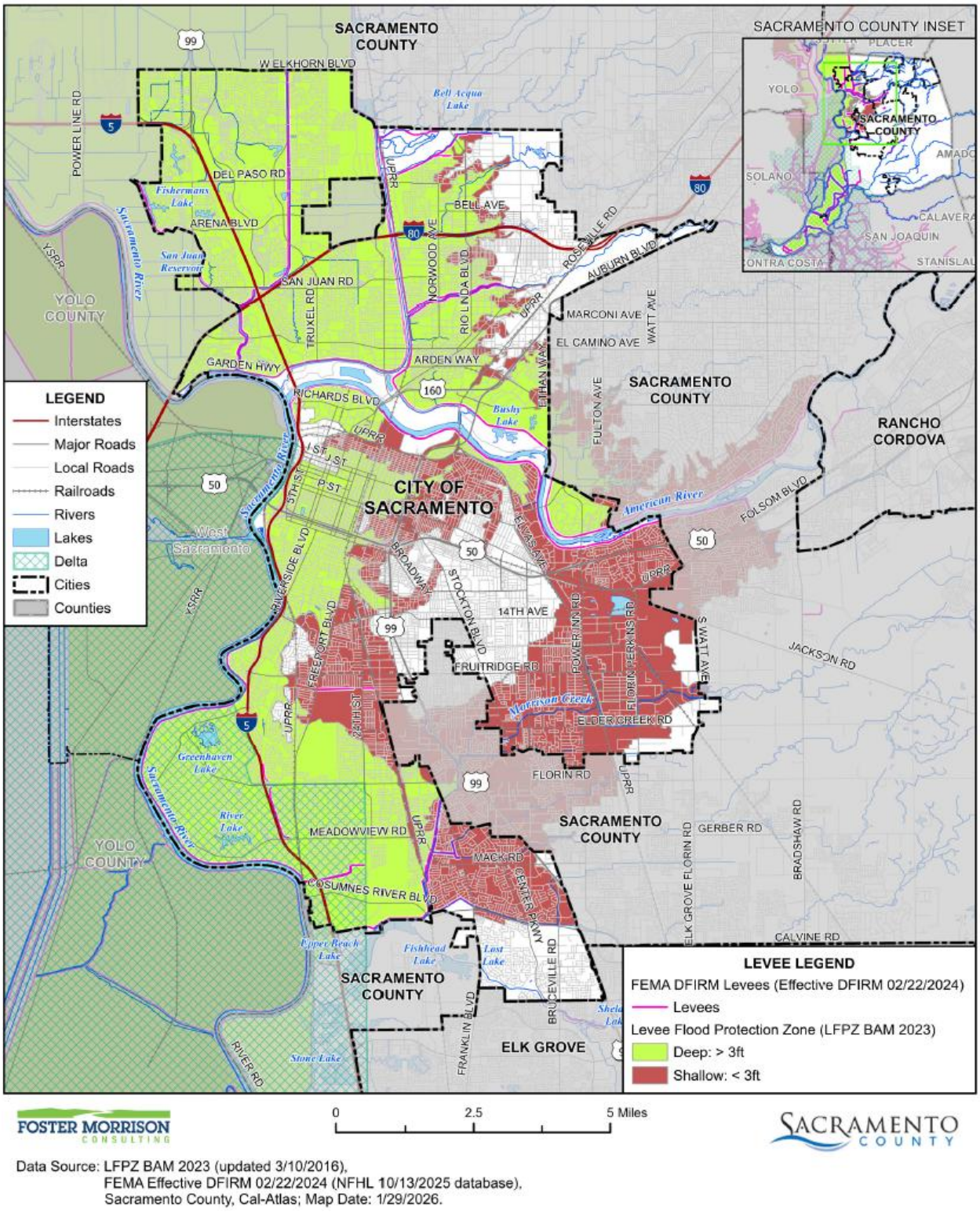
Over 518 miles of levees are located throughout the Sacramento County Planning Area. These include both accredited and unaccredited levees, as discussed in Section 4.3.14 of the Base Plan, all which pose a risk to adjacent communities should a levee fail or overtop. While the levee analysis included 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 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 City 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 the 518 miles of levees located in the Sacramento County Planning Area is shown in Section 4.3.14 of the Base Plan. This Maps showing estimated inundation depths due to a levee failure in the County are shown on Figure F-49. 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 F-50 and included in Table F-56.

Figure F-49 Sacramento County Planning Area – Levee Flood Protection Zones

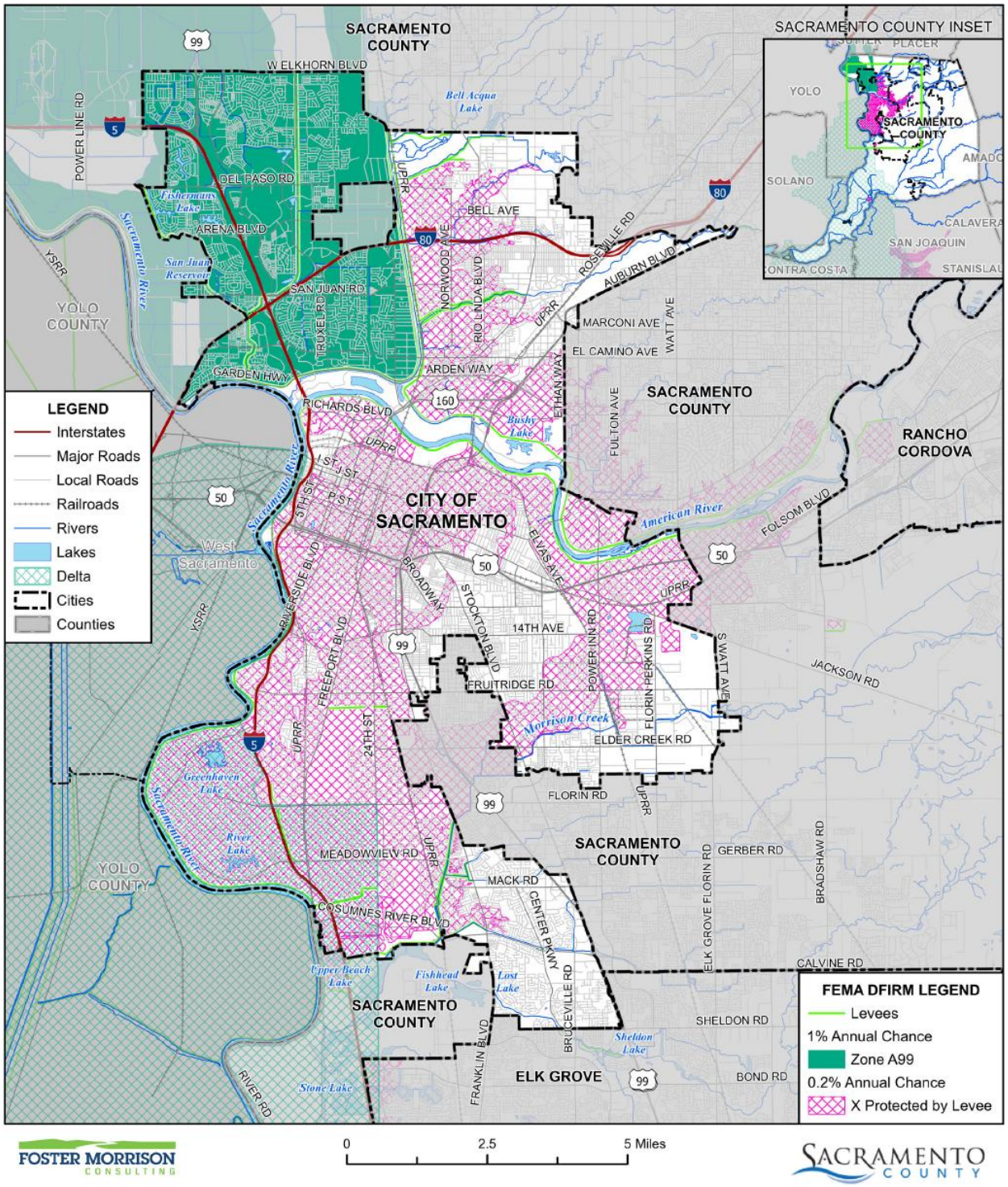


FOSTER MORRISON CONSULTING

SACRAMENTO COUNTY

Data Source: LFPZ BAM 2023 (updated 3/10/2016),
FEMA Effective DFIRM 02/22/2024 (NFHL 10/13/2025 database),
Sacramento County, Cal-Atlas; Map Date: 1/29/2026.

Figure F-50 Sacramento County Planning Area – FEMA DFIRM A99 and X Protected by Levee Flood Zones



Data Source: FEMA Effective DFIRM 02/22/2024 (NFHL 10/13/2025 database), Sacramento County, Cal-Atlas; Map Date: 3/27/2026.

Table F-56 City of Sacramento – Geographical Flood Hazard Extents in FEMA A99 and X Protected by Levee DFIRM Flood Zones

DFIRM Flood Zone/ Jurisdiction	Total Acres	% of Total Acres*	Improved Acres	% of Total Improved Acres*	Unimproved Acres	% of Total Unimproved Acres*
A99						
City of Sacramento	10,178	1.720%	6,183	1.98%	3,994	1.427%
X Protected by Levee						
City of Sacramento	23,163	3.914%	15,771	5.06%	7,392	2.641%

Source: 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 F-57. Also, it is important to note that many of the flood disaster declarations included in Section 4.3.11 of the Base Plan also may include flooding associated with levee breach or failure events.

Table F-57 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.

City of Sacramento Events

These sections first show historic hazard events occurring since the 2021 LHMPs and then those occurring prior to the 2021 LHMP.

Events since 2021 LHMP

The City Planning Team noted no events since 2021, but did note the following past occurrence of levee failures.

Events prior to 2021

December 9, 1861 - American River Levee failed east of 30th street, flooding what is now known as River Park. The water then overran the City's levee built to protect it. To relieve the building water levels, the levee at R & 5th Streets was cut to drain the "lake" but houses were swept away in the current in the cut in the levee.

Figure F-51 January 1862 K Street Flooding



Source: Drainage and Flood Control, 152 Year.

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.

The 2024 City of Sacramento Climate Action & Adaptation Plan noted that annual precipitation is expected to increase in the Sacramento region to between 20.3 and 25.7 inches per year; however, this increase will not occur at a uniform rate throughout the year. Rainfall will become more concentrated in the winter months and fall in fewer, higher-intensity events. These high intensity storms may produce higher volumes of runoff, contribute to increased flood risk, damage transportation infrastructure such as roads and bridges, and contribute to levee failure.

Vulnerability to Levee Failure

According to historical hazard data and levee mapping, levee failures can occur in or near the City. Portions of the City are at some measure of vulnerability to levee failure floods, including failure 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 City's Assets at Risk to this hazard.

Local Concerns

The City 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

Due to its location, the City of Sacramento relies heavily on its levee system for flood control/ protection. The City of Sacramento area has numerous creeks/channels with a bank network that serves as barriers or water constraints.

The HMPC noted that when northern California reservoirs are nearing maximum capacity, they release water through the river systems, causing additional burdens on County levees. Bank erosion is a critical concern in Sacramento River because the eroding stream banks threaten levee integrity. Over 50% of the rivers 193 miles have been riprapped in the last 40 years according to the US Fish and Wildlife Service and over a hundred erosion sites have been identified along the river in recent years. It is critical to mitigate these sites to reduce their threats to the integrity of Sacramento's levee system.

DOU is coordinating with the U.S. Army Corps of Engineers (USACE) to repair a void that was identified in 2024 at the base of the floodwall near the bow of the Delta King. In order to gather additional information, DOU hired a consultant to conduct Ground Penetrating Radar (GPR) scanning in November 2025. DOU provided USACE and State Parks with the results of GPR scanning, which identified three potential voids along the boardwalk between J Street and K Street that are likely connected to the original void.

USACE provides assistance under the Federal PL 84-99 program to repair levee and flood protection structures damaged by high-water events. USACE originally planned that repair of the floodwall void near the bow of the Delta King would occur between 2027 and 2028. DOU requested that USACE accelerate the project schedule. USACE has agreed to fast-track the project and is now targeting construction to begin and be complete in October 2026.

The levees around the City are being improved with the only remaining sections in Natomas and south Sacramento at Beach Lake Levee. Once these improvements are finalized in the next couple years, the City will have 200-year flood protection provided by the levee system.

Levee Accreditation Concerns

The levees surrounding the City are not currently accredited. Around 2008 the City worked with Sutter County, Sacramento County, Sacramento Area Flood Control Agency ("SAFCA"), the California Department of Water Resources ("DWR"), the Central Valley Flood Protection Board, ("CVFPB") and the Corps to identify and implement a comprehensive flood control project to provide a minimum of 100-year flood protection and ultimately provide 200-year protection, known as the American River Common Features, Natomas Basin Project ("ARCF-NBP").

In 2012, in a letter to the City, the Corps announced they shall begin the process of transitioning former levee certification criteria to current rigorous standards, and that the Corps' former responsibilities for levee certification are to be obligated by local jurisdictions and agencies. As a result, SAFCA initiated the Levee Accreditation Program to evaluate and construct the necessary improvements along the levees outside of Natomas to ensure 65.10 and Corps criteria will be met. Since 2007, all levee improvement projects implemented by SAFCA and the Corps have been congressionally approved and appropriated under the ARCF-NBP, enacted in the Water Resources, Reform and Development Acts ("WRRDA") of 2014 and 2016, as explained in detail in SAFCA's "Urban Level of Flood Protection Annual Report", dated September 2025.

Compliance with Federal Flood-Protection Requirements – Natomas Basin. As required by FEMA under 44 C.F.R. § 65.14 (g), the City annually submits the certification that the Zone A99 restoration plan for Natomas will be completed within a specified time. This regulation also requires the City and the cost-sharing Federal agency to update the restoration plan and identify any permitting or construction problems that may delay the completion of levee improvement projects beyond the deadline set out in prior plans submitted to the Federal Insurance Administrator. FEMA Region IX, which includes California, makes an annual assessment and recommendation to the Federal Insurance Administrator of FEMA about the viability of the restoration plan and will conduct periodic on-site inspections of the flood-protection system under restoration.

The Central Valley Flood Protection Act of 2008 requires that urban and urbanizing communities within the Sacramento-San Joaquin Valley (such as the City of Sacramento) make certain findings with respect to flood protection before approving development agreements, tentative maps, discretionary permits, and ministerial permits for new residences. By December 31, 2025, these communities were required to make an Urban Level of Flood Protection ("ULOP") finding, defined as the level of flood protection needed to withstand a flood event that has a 0.5% chance of occurring in a year (i.e., a 200-year flood), unless extensions beyond 2025 have been approved by the State legislature and signed into law. To date, all levee systems within the City, except for the Natomas Basin and Beach Lake North Levee, are in compliance with ULOP and supported by Engineers Reports as substantial evidence. An extension was granted for the Natomas Basin and the Beach Lake North Levee systems to meet ULOP by December 31, 2030, during which time an adequate progress report to demonstrate the progress of construction to meet ULOP will continue to be prepared by SAFCA on an annual basis.

Per FEMA's guidelines, levee systems cannot be certified to meet 65.10 criteria until all construction projects are completed. To date, a Letter of Map Revision ("LOMR") application for the Dry Creek North Levee system has been submitted and FEMA approval is expected in 2026. The LOMR applications for the Robla-Arcade levee system and American River North levee system are scheduled for submittal in 2026. The submittal of the LOMR applications for the levee systems adjacent to the Sacramento River will largely be dependent on the completion of the construction of the Sacramento Weir widening project, at which time the FEMA effective 100-year base flood elevations for the Sacramento River will be updated. When the improvements to the levees and system-wide facilities are completed, the City expects that, under current FEMA criteria, the areas protected by the levees will be reclassified as "Zone X (shaded)", i.e., areas with reduced flood risk during a 1% annual chance of a flood event (100-year flood).

California Government Code Section 65007(a)(4) states that for local flood management agencies to demonstrate substantial completion of flood protection systems, they must show they have not been responsible for a significant delay in the system's completion, ensuring progress aligns with the plan, budget, and schedule required for ULOP. This code requires local agencies in the Sacramento-San Joaquin Valley to report to DWR and CVFPB on their progress, including budget spending and completion status, to meet ULOP standards for 200-year flood protection. In reference to the "Urban Level of Flood Protection Annual Report", prepared by SAFCA in September 2025, SAFCA reports that local agencies have abided by Section 65007(a)(4), have exceeded 100% of their planned expenditures for flood protection, and have remained consistent with State, and Federal appropriations with the ULOP plan. Nonetheless, the Corps' construction schedules and Federal funding appropriations over the course of the coming year will be critical for the Natomas Basin to attain ULOP by 2030. Similarly, the completion of levee improvements, pump station modifications, and floodwall enhancements along the Beach Lake North levee are also critical to attain ULOP. It remains uncertain on whether the improvements to the Magpie Creek Diversion Channel levee will be completed by 2030.

SAFCA's latest ULOP Annual Report, dated September 2025, and accepted by the Sacramento City Council is available on the City's website which can be accessed here: https://sacramento.granicus.com/MetaViewer.php?view_id=22&clip_id=6086&meta_id=800263

Security Concerns

The levee system protecting the City from local creeks and the Sacramento and American Rivers is well over 100 miles long. Several dozen pump stations are incorporated into the system, pumping local storm drainage into the adjacent river or creek. Although there is significant security at the pump stations and lesser security in other places along the levees, the system is largely open to the public. Due to this openness, the levees are vulnerable to activities such as planting explosive devices or illegal digging on a levee to weaken its structure. If a weakened levee were to fail during a significant storm event, the results could be catastrophic.

Assets at Risk

Assets at risk from levee failure include people and populations; structures; 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 leveed areas are at some risk to 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.

City residents that live in the A99 or X Protected by Levee flood zones, as well as in areas adjacent to and downstream of unaccredited levees, are 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. To further evaluate the impact to the City of Sacramento's residential population residing within these hazard areas, the DFIRM A99 or X Protected by Levee flood zones were overlayed on the parcel layer. Those residential parcels that intersect the flood zones were counted and multiplied by the 2023 Census Bureau average household factors for the City of Sacramento – 2.59. According to this analysis, there is a total population of 85,789 and 182,668 residents of the City at risk to levee failure flooding in the A99 and X Protected by Levee floodplains, respectively. In addition, residents in areas adjacent to and downstream of unaccredited levees would also be at risk, but due to data limitations, are not included in this analysis. This is shown in Table F-58.

Table F-58 City of Sacramento – Improved Residential Parcels and Populations in FEMA DFIRM A99 and X Protected by Levee Flood Zones

Jurisdiction	A99		X Protected by Levee	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Sacramento	33,123	85,789	70,536	182,688

Source: FEMA DFIRM 02/2024, 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size – City of Sacramento (2.59)

The City noted that the Critical Facilities and Infrastructure section below includes the facilities used by At-Risk populations that are threatened by this hazard. While this is not specific to what special populations reside in the City, it does speak to facilities that area used to serve (portions) of this population.

Structures

Levee failure events can affect the built environment of the City. Certain structures in the City are at risk of levee failure flooding and include those structures located within the A99 or X Protected by Levee floodplains as well as in areas adjacent to and downstream of unaccredited levees. The vulnerability of structures depends on flood depths and can range from slight damage to totally inundated in extreme events. GIS was used to determine the possible impacts of flooding on parcels and structures within the City of Sacramento. The methodology described in Section 4.3.11 of the Base Plan was followed in determining structures and values at risk to A99 or X Protected by Levee flood event. Table F-59 shows parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), estimated content replacement values, and total values in the City are shown for the 1% and 0.2% annual chance flood zones, as well as for those properties that fall outside of the mapped FEMA DFIRM flood zones. In addition,

structures in areas adjacent to and downstream of unaccredited levees would also be at risk, but due to data limitations, are not included in this analysis

Table F-59 City of Sacramento – Count and Value of Parcels and Structures in FEMA DFIRM A99 and X Protected by Levee Flood Zone by Property Use

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
1% Annual Chance Flood Hazard*						
Zone A99						
Agricultural	10	1	$3,550,335	$362,026	$362,026	$4,274,387
Care / Health	14	13	$18,693,804	$88,070,188	$88,070,188	$194,834,180
Church / Welfare	17	16	$16,987,260	$55,136,237	$55,136,237	$127,259,734
Industrial	51	48	$39,778,494	$183,326,400	$274,989,600	$498,094,494
Miscellaneous	1,119	2	$699,926	$3,849,485	$3,849,485	$8,398,896
Office	194	173	$201,491,744	$680,640,295	$680,640,295	$1,562,772,334
Public / Utilities	26	0	$73	$0	$0	$73
Recreational	6	3	$7,779,485	$29,136,229	$29,136,229	$66,051,943
Residential	33,914	33,123	$3,890,421,151	$12,447,245,033	$6,223,622,517	$22,561,288,701
Retail / Commercial	232	223	$267,557,925	$598,978,497	$598,978,497	$1,465,514,919
Unknown	21	0	$0	$0	$0	$0
Vacant	1,276	23	$369,701,791	$42,502,236	$0	$412,204,027
Zone A99 Total	**36,880**	**33,625**	**$4,816,661,988**	**$14,129,246,626**	**$7,954,785,074**	**$26,900,693,688**
0.2% Annual Chance Flood Hazard**						
X Protected by Levee**						
Agricultural	1	1	$1,817	$13,525	$13,525	$28,867
Care / Health	101	85	$74,574,782	$1,161,702,484	$1,161,702,484	$2,397,979,750
Church / Welfare	301	247	$94,434,218	$334,957,958	$334,957,958	$764,350,134
Industrial	1,123	971	$498,962,468	$1,394,194,194	$2,091,291,291	$3,984,447,953
Miscellaneous	1,235	4	$5,281,155	$108,457	$108,457	$5,498,069
Office	1,311	1,017	$968,406,245	$3,495,922,824	$3,495,922,824	$7,960,251,893
Public / Utilities	402	0	$20,018	$0	$0	$20,018
Recreational	80	44	$48,665,087	$392,854,798	$392,854,798	$834,374,683
Residential	71,334	70,536	$8,944,067,550	$22,567,327,248	$11,283,663,624	$42,795,058,422
Retail / Commercial	1,864	1,398	$988,966,606	$1,633,521,498	$1,633,521,498	$4,256,009,602

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Unknown	93	3	$238,249	$312,876	$0	$551,125
Vacant	2,615	83	$579,794,382	$7,435,568	$0	$587,229,950
X Protected by Levee Total	**80,460**	**74,389**	**$12,203,412,577**	**$30,988,351,430**	**$20,394,036,459**	**$63,585,800,466**

Source: FEMA DFIRM 02/2024, 2025 Sacramento County Parcel/Assessor Data

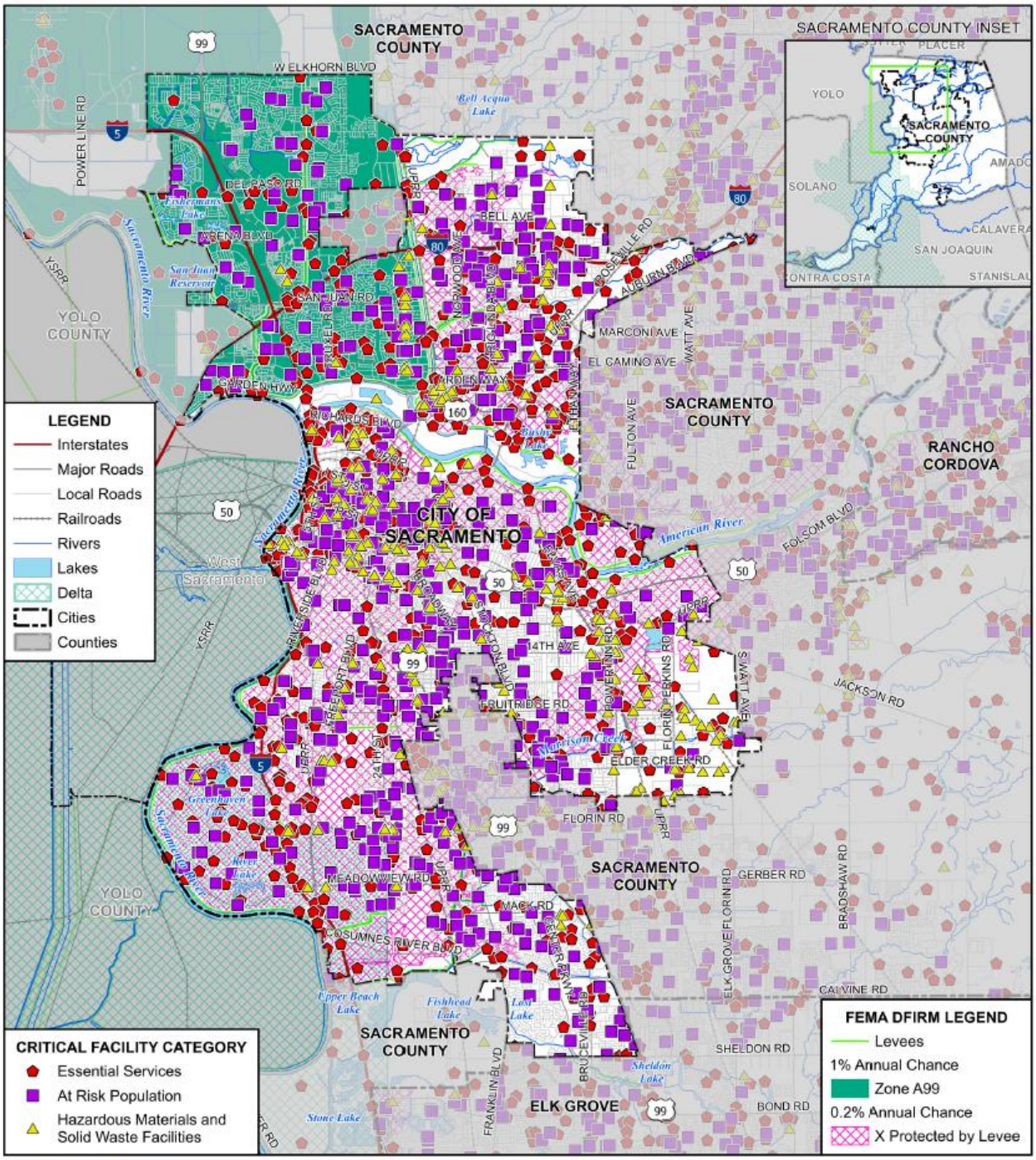
*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Critical Facilities and Infrastructure

Levee failure flooding present a threat to critical facilities and infrastructure. Critical facilities and infrastructure play an immensely important role in communities. Damage to any one of these systems can threaten public safety, wreak havoc on daily life, impact properties far from flood zones, and result in economic impacts to the City. A separate analysis was performed on the critical facility inventory in the City to determine which critical facilities fall into the FEMA DFIRM A99 or X Protected by Levee flood zone. Using GIS, the FEMA DFIRM flood zones were overlayed on the critical facility GIS layer. This is shown on Figure F-52 for the FEMA DFIRM flood zones. Table F-60 details which critical facilities fall in which FEMA DFIRM flood zones. In addition, critical facilities and infrastructure located in areas adjacent to and downstream of unaccredited levees would also be at risk, but due to data limitations, are not included in this analysis

Figure F-52 City of Sacramento – Critical Facilities in FEMA DFIRM A99 and X Protected by Levee Flood Zones



Data Source: FEMA Effective DFIRM 02/22/2024 (NFHL 10/13/2025 database), Sacramento County, Cal-Atlas; Map Date: 4/17/2026.

Table F-60 City of Sacramento – Critical Facilities in FEMA DFIRM A99 and X Protected by Levee Flood Zones by Category and Type

Flood Zone	Critical Facility Category /Critical Facility Type	Facility Count
1% Annual Chance Flood Hazard		
Zone A99	***Essential Services Facilities***	
	Cellular Tower	1
	Emergency Evacuation Center	11
	EMS Stations	2
	FDIC Insured Banks	14
	Fire Station	2
	Floodgate	1
	Microwave Service Towers	31
	Power Plants	2
	Pump Station	25
	State Government Buildings	1
	Water Well	24
	Essential Services Facilities Total	***114***
	At Risk Population Facilities	
	Colleges, Universities, and Professional Schools	3
	Day Care Center	20
	Major Sports Venues	1
	Mobile Home Parks	3
	Places of Worship	47
	School	26
	At Risk Population Facilities Total	***100***
	Hazardous Materials and Solid Waste Facilities	
	Leaky Underground Storage Tank	12
	Waste Transfer Station	1
	Hazardous Materials and Solid Waste Facilities Total	***13***
	Total	**227**
0.2% Annual Chance Flood Hazard		
X Protected by Levee	***Essential Services Facilities***	
	Airport	1
	Bridge	17
	Cellular Tower	1
	Emergency Evacuation Center	58
	EMS Stations	22
	FDIC Insured Banks	54

Flood Zone	Critical Facility Category /Critical Facility Type	Facility Count
	Fire Station	18
	Floodgate	9
	Hospital or Urgent Care	5
	Law Enforcement	18
	Microwave Service Towers	277
	Power Plants	4
	Public Transit Stations	25
	Pump Station	121
	Sewage Treatment Plant	6
	State Government Buildings	29
	Water Well	65
	Essential Services Facilities Total	***730***
	At Risk Population Facilities	
	Colleges, Universities, and Professional Schools	4
	Community Center	2
	Day Care Center	72
	Major Sports Venues	2
	Mobile Home Parks	9
	Places of Worship	257
	School	136
	At Risk Population Facilities Total	***482***
	Hazardous Materials and Solid Waste Facilities	
	EPA ER FRP Facility	1
	EPA ER TRI Facility	20
	EPA ER TSCA Facility	2
	Leaky Underground Storage Tank	114
	Solid Waste Facility	10
	Tank Farm	3
	Waste Transfer Station	1
	Hazardous Materials and Solid Waste Facilities Total	***151***
	Total	**1,363**
Grand Total		**1,590**

Source: FEMA DFIRM 02/2024, City of Sacramento

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 A99 or X Protected by Levee flood zones shown on Figure F-49 and Figure F-50 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 City that are in areas protected by both accredited and unaccredited levees. Based on the areas of the City surrounded by levees, it is evident that levee failure floods could potentially have significant impacts to the City, depending on the severity of the event. Impacts that are not quantified, but could be anticipated in large levee failure event, include:

- Injury and loss of life.
- Commercial and residential 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 City are 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, often occurring during an earthquake event.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City 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 City of Sacramento include the following:

- Climate change is likely to exacerbate future flood and levee failure conditions and associated impacts and vulnerability of the City to levee failure flooding. This was discussed in greater detail in the Climate Change and Levee Failure section of the Hazard Profile above.
- Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the City. The City is expected to see slow and steady growth; therefore, any additional growth within the levee protected areas of the City could place additional populations at risk to a levee failure flood. The City has 61 areas where growth is expected over the next five years. Additional population growth would likely bring continued diversity to the City. Vulnerable population groups could face disproportionate effects from flooding and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the location of future levee failure flood events.
- Land use planning should be proactive to address future hazard conditions. The City has 61 areas where growth is expected over the next five years. However, City building codes and the City's floodplain ordinance are in effect to reduce this risk and should be updated as necessary to continue to address future flood conditions. As such, changes in land use and future development may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the location of future levee failure flood events.

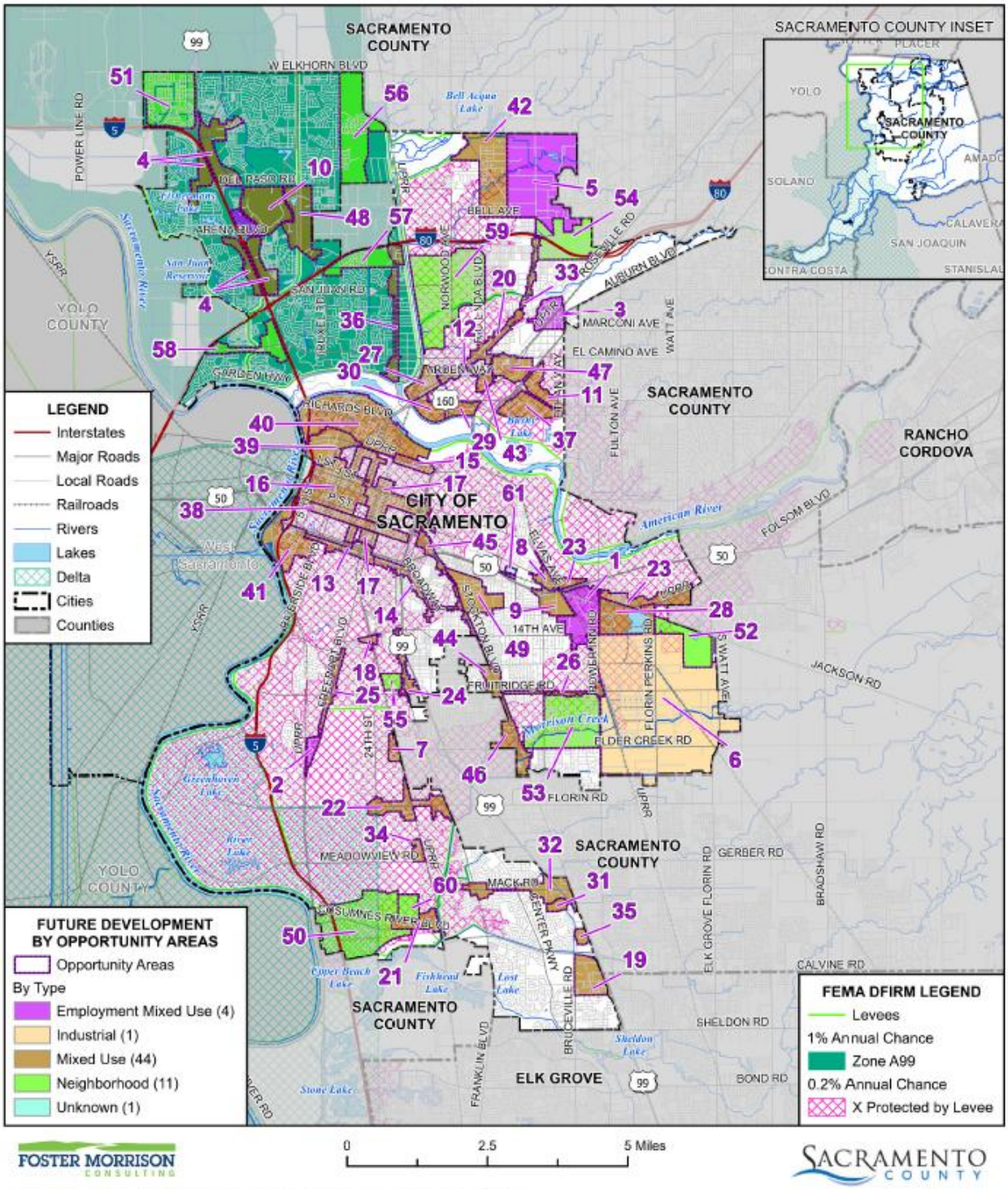
Future Development

Future development considerations should be ongoing and proactive. Future development built in the areas protected by levees is subject to being built to the standards in the City of Sacramento Floodplain Ordinance. Whether a levee is certified as providing protection from the 1% annual chance flood will also factor into development requirements. Per Sacramento City Code: A minimum 20-foot setback from the landside toe of any flood control levee is required for development less than five acres in size. A minimum 50-foot setback is required from the landside toe of any flood control levee for development five acres or greater in size. No primary or accessory structures may encroach into the levee setback. Future development in levee protected areas may be affected by this hazard, thus there will always be some level of concern.

GIS Analysis

The City provided 61 future development areas which were used as the basis for the inventory of future development for the City of Sacramento. These areas were mapped in GIS. Utilizing the future development area spatial layer, the parcel polygon data was intersected to determine the future development areas within each DFIRM flood zone. For levee failure, this includes the A99 and X Protected by Levee flood zones. Figure F-53 shows the locations of the future development area overlayed on the DFIRM flood zones. Some of these future development areas fall within the mapped flood areas as shown on Table F-61. As shown in the map and table, 9 of these future development areas sit in the A99 flood zone, while 44 sit in the X Protected by Levee flood zone.

Figure F-53 City of Sacramento – Future Development Areas in FEMA DFIRM A99 and X Protected by Levee Flood Zones



Data Source: FEMA Effective DFIRM 02/22/2024 (NFHL 10/13/2025 database), Sacramento County, Cal-Atlas; Map Date: 7/31/2026.

Table F-61 City of Sacramento – Future Development Area Acres and Parcels in FEMA DFIRM A99 and X Protected by Levee Flood Zones

Flood Zones/ Future Development Type /Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
1% Annual Chance Flood Hazard							
Zone A99							
Employment Mixed Use							
4	North Natomas EC	3	2	1	76	68	8
Employment Mixed Use Total		***3***	***2***	***1***	***76***	***68***	***8***
Mixed Use							
4	North Natomas EC	461	377	84	596	98	498
10	Arco Arena	257	236	21	345	225	119
36	Northgate	189	137	52	144	115	29
48	Truxel	325	267	58	316	196	120
Mixed Use Total		***1,232***	***1,017***	***215***	***1,401***	***634***	***766***
Neighborhood							
51	Greenbriar	2,047	1,356	691	432	178	254
56	Panhandle	460	2	458	555	128	427
57	Parkerbridge	555	524	31	251	66	185
58	Southwest Natomas	202	174	28	160	105	55
Neighborhood Total		***3,264***	***2,056***	***1,208***	***1,399***	***478***	***920***
1% Annual Chance Flood Hazard Total		**4,499**	**3,075**	**1,424**	**2,875**	**1,180**	**1,694**
0.2% Annual Chance Flood Hazard							
X Protected by Levee							
Employment Mixed Use							
1	CSUS Village	160	82	78	251	168	82
2	Freeport South	50	38	12	48	33	14
3	Marconi	37	27	10	18	12	7
5	Raley	27	16	11	86	66	20
Employment Mixed Use Total		***274***	***163***	***111***	***403***	***280***	***123***
Industrial							

Flood Zones/ Future Development Type /Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
6	Power Inn/Army Depot	350	211	139	623	476	147
Industrial Total		***350***	***211***	***139***	***623***	***476***	***147***
Mixed Use							
7	47th	69	51	18	48	30	18
9	65th South	1	0	1	2	0	2
11	Arden Fair	85	67	18	125	119	7
12	Arden/Del Paso	135	88	47	37	21	15
13	Broadway	298	251	47	79	64	15
14	Broadway East	248	198	50	54	35	19
15	C Street	123	87	36	76	15	61
16	CBD	980	607	373	304	106	198
17	Central City Corridors	2,145	1,822	323	339	272	67
18	City College	98	55	43	23	13	10
20	Del Paso	195	160	35	69	52	17
22	Florin	178	98	80	207	121	87
23	Folsom East	106	68	38	241	151	90
24	Franklin	54	38	16	37	26	10
25	Freeport North	159	147	12	79	65	14
26	Fruitridge	67	55	12	30	25	5
27	Globe LRT	209	143	66	109	65	44
28	Granite Park	52	18	34	297	52	245
29	Johnston East	55	33	22	93	71	22
30	Johnston West	33	25	8	79	48	31
32	Mack	1	1	0	2	2	0
33	Marysville	26	10	16	4	2	3
34	Meadowview	93	81	12	39	7	32
37	Point West	61	57	4	184	182	2
38	R Street Central City Housing	636	490	146	129	94	35
39	Railyards	50	23	27	15	6	9

Flood Zones/ Future Development Type /Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
40	Richards Boulevard	444	217	227	677	314	363
41	Riverfront	627	505	122	204	59	146
42	Robla	177	161	16	126	75	51
43	Royal Oaks	75	46	29	52	28	24
45	Stockton North	49	37	12	46	28	18
46	Stockton South	76	52	24	132	103	29
47	Swanston Station	88	35	53	67	46	21
Mixed Use Total		***7,693***	***5,726***	***1,967***	***4,007***	***2,295***	***1,712***
Neighborhood							
50	Delta Shores	881	195	686	550	94	456
52	Jackson	12	4	8	188	62	126
53	Lemon Hill	1,378	1,270	108	370	313	56
55	North City Farms	121	98	23	55	46	9
59	Strawberry Manor	2,639	2,320	319	743	468	275
60	102-Acre Site	1	0	1	102	0	102
Neighborhood Total		***5,032***	***3,887***	***1,145***	***2,007***	***983***	***1,024***
0.2% Annual Chance Flood Hazard Total		**13,349**	**9,987**	**3,362**	**7,040**	**4,034**	**3,006**

Source: FEMA 02/2024 DFIRM, City of Sacramento

Sea Level Rise

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

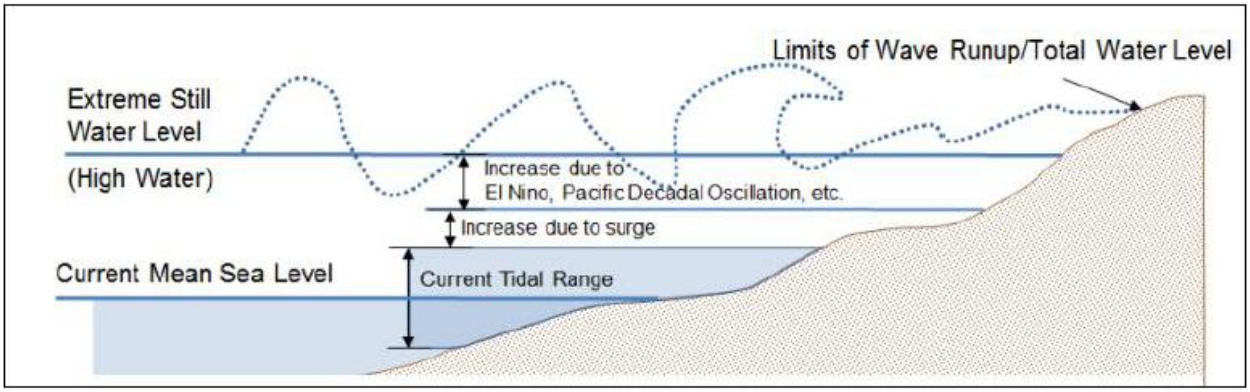
Hazard Profile

Historically, cities, towns and villages were often settled around ports and waterways along the nation's coastlines, providing individuals and families opportunities for trade, jobs and transportation, recreation and relaxation. These areas are extremely important to our nation, with great economic, historic and cultural significance. Although the coastal areas of the United States comprise only one-fifth of the land area of the contiguous 48 states, they account for more than half of the nation's population and housing supply. In 1990, over 133 million Americans lived in the 673 counties along the Atlantic and Pacific Oceans, the Gulf of Mexico and the Great Lakes. Since 1960, population in these areas have increased by 41 percent. The

continued increase in coastal population leads to increased coastal development, which places greater numbers of people and structures at risk from coastal hazards including sea level rise.

The 2023 California State Hazard Mitigation Plan noted that sea-level rise generally progressively worsens the impact of high tides and wind-driven waves associated with severe storms. Coupled with increased frequency, severity, and duration of high tide and storm events related to climate change, sea-level rise will exacerbate these extreme events along the coast. El Niño events exacerbate storms and coastal inundation that is already occurring due to sea-level rise and normal coastal weather and tidal patterns. The additive effects of high tides, storm surge, atmospheric patterns (e.g., El Niño) and sea-level rise are shown in Figure F-54.

Figure F-54 Additive Effects of Sea-Level Rise



Source: 2023 California State Hazard Mitigation Plan

King Tides may also affect sea level rise. This was discussed in detail in Section 4.3.15 of the Base Plan.

Location and Extent

The coastal areas of the Sacramento Planning Area are at risk from sea level rise (especially during periods of extreme tides). Sacramento County is located inland within the Central Valley of California. The southwestern portion of the County follows the course of the Sacramento River as it flows into the Sacramento-San Joaquin Delta. The area of Sacramento County near the Delta is vulnerable to the influences of sea-level rise. Duration of sea level rise is thought to be long. The speed of onset is slow. There is no scientific scale for sea level rise, other than the actual physical measurement of sea level and depth.

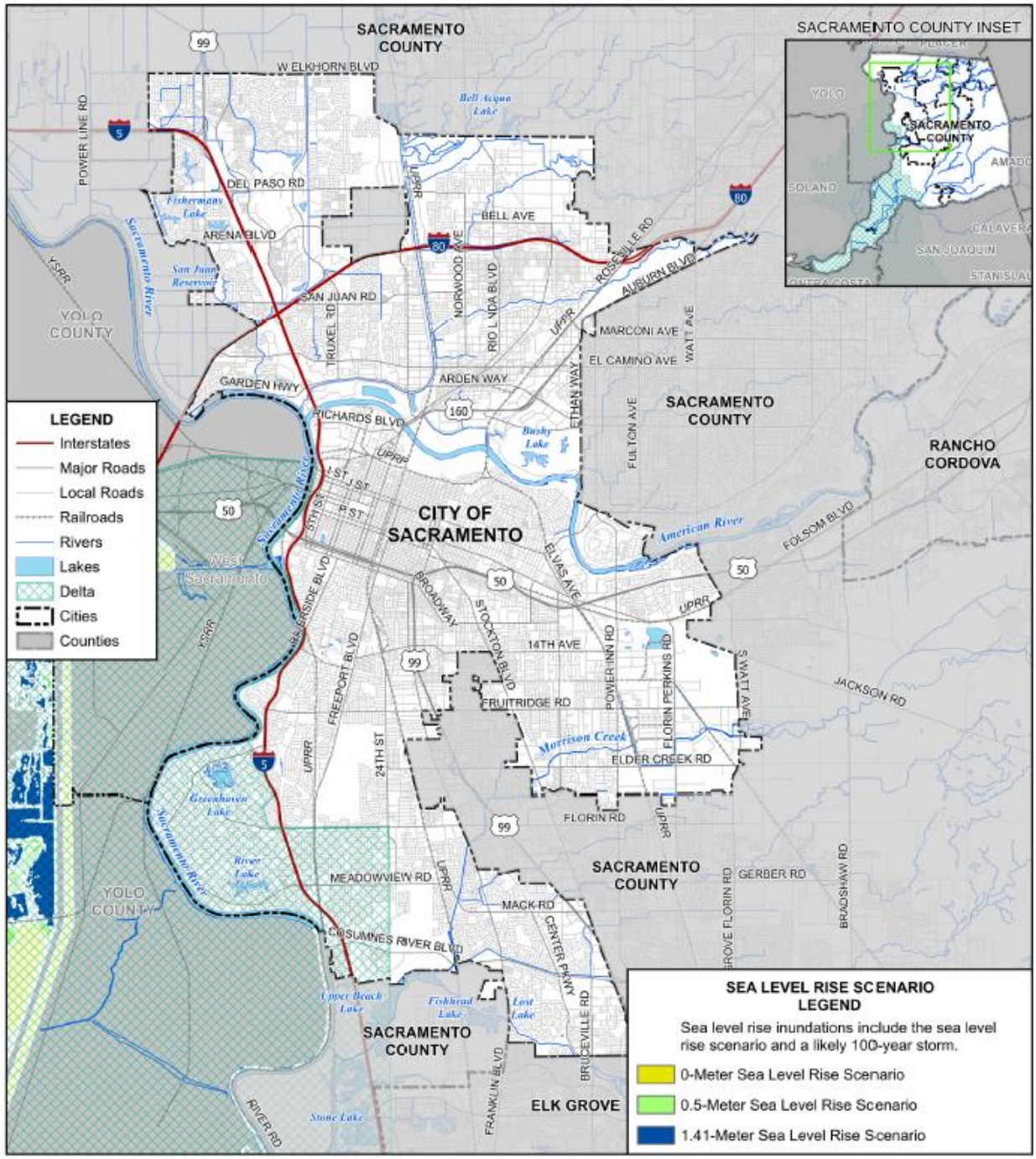
Sea level rise scenarios identified in the Sacramento County Climate Action Plan (2024) and the Sacramento County Climate Change Vulnerability Assessment (2017) based on SLR GIS mapping from Cal-Adapt, and California Coastal Inundation Depth Layer Mosaics (2016) were utilized for this assessment. Three sea level rise scenarios were selected based on guidance from the State of California Sea Level Rise Guidance 2024 Science and Policy Update providing and available Cal-Adapt SLR GIS data providing coverage for the Sacramento County area. It should be noted that the SLR scenarios include both the SLR combined with a likely 100-year storm. The scenarios are:

- 0-meter scenario – reflects existing conditions (no SLR) with a 100-year storm

- 0.5 meter scenario – with a 100-year storm is roughly equal to the median projection for 2060 (mid century) and was selected to be representative of plausible 2060 intermediate to high conditions
- 1.41 meter scenario– with a 100-year storm is roughly equal to the median projection for 2100 (end of century) and was selected to be representative of plausible 2100 intermediate to high conditions

As shown on Figure F-55, none of the three scenarios reach the borders of the City. As such, no tabular extent analysis is presented. The 1.41 meter scenario does reach to the west of the City, as seen on the Figure.

Figure F-55 City of Sacramento – Sea Level Rise Scenarios



Data Source: Sacramento County Climate Action Plan 2024,
Climate Change Vulnerability Assessment 2017.
Cal-Adapt Sea Level Rise https://cmip5.cal-adapt.org/tools/slr-calflod-3d/,
San Francisco Bay, Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016
(Datasets: Bay_[0m, 0.5m, 1.41m]slr_max_blinear_snap_float)
Sacramento County, Cal-Atlas; Map Date: 10/1/2026.

Past Occurrences

Disaster Declaration History

No disaster declarations have occurred specific to sea level rise.

NCDC Events

The NCDC does not track sea level rise.

City of Sacramento Events

The City noted that no standalone sea level flood rise events have been documented in the City. Instead, sea level rise has acted as a background amplifier during other hazards. These were discussed in Section 4.3.15 of the Base Plan.

Climate Change and Sea Level Rise

The 2023 California State Hazard Mitigation Plan noted that coastal areas may be impacted by climate change in different ways. A warmer atmosphere means storms have the potential to be more intense and occur more often. Climate change also will result in sea-level rise. Sea-level rise is driven by climate change. As the planet warms, land ice melts and flows into the ocean. Ocean temperatures rise and thermal expansion takes place.

The 2017 Sacramento County Climate Vulnerability Assessment noted that an effect of global climate change is sea-level rise. The average global sea level rose approximately seven inches during the last century. Assuming that it continues to reflect global trends, sea level along the California coastline could be 10-18 inches higher in 2050 than 2000 levels, and 31-55 inches higher than 2000 levels by the end of this century.

The 2024 City of Sacramento Climate Action and Adaptation Plan noted that climate models anticipate some degree of sea level rise in all areas that are connected to ocean bodies. While Sacramento is not a coastal city, the Sacramento and American Rivers drain into the Sacramento-San Joaquin Delta, which in turn drains into the San Francisco Bay and the Pacific Ocean. Water levels in the Delta are not much higher than coastal sea levels and therefore, Sacramento will be affected by sea level rise.

Vulnerability to Sea Level Rise

According to historical hazard data and hazard mapping, sea level rise is occurring in the Sacramento County Planning Area. The whole of the City are at some measure of vulnerability to increased flooding from sea level rise.

The 2024 Sacramento County CAP noted that while many of the potential impacts associated with sea level rise are similar to those with flooding, sea level rise presents additional potential impacts, such as saltwater intrusion, which can affect the quality of the region's water supplies, especially when coupled with increased municipal and agricultural demand for freshwater.

Sea level rise can be exacerbated during king tides. King tides are simply the very highest tides. They are naturally occurring, predictable events. King tides of today may give an idea of future normal conditions that may occur due to sea level rise. High tides may coincide with heavy rain causing increased flooding, bluff erosion, and landslides, such as were experienced during the 1998 and 2016 El Nino storms. The 2023 California State Hazard Mitigation Plan noted that coupled with increased frequency, severity, and duration of high tide and storm events related to climate change, sea level rise will exacerbate these extreme events along the coast and other affected areas. These events may expose coastal and other areas to severe flooding and erosion; damage to structures, real estate, public access, and habitat areas; and seawater intrusion into Delta areas and coastal aquifers. El Niño events exacerbate storms and sea level rise inundation above that already occurring due to sea-level rise and normal coastal weather and tidal patterns.

An assessment of a community's vulnerability to levee failure flooding begins with an understanding of local exposure to sea level rise. This is included in the Local Concerns section below followed by a discussion of the City's Assets at Risk to this hazard.

Local Concerns

The City 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.

The 2024 City of Sacramento Climate Action and Adaptation Plan noted that climate models anticipate some degree of sea level rise in all areas that are connected to ocean bodies. While Sacramento is not a coastal city, the Sacramento and American Rivers drain into the Sacramento-San Joaquin Delta, which in turn drains into the San Francisco Bay and the Pacific Ocean. Water levels in the Delta are not much higher than coastal sea levels and therefore, Sacramento will be affected by sea level rise. Further, the Delta and surrounding lands are low-lying and vulnerable to water level increases and storm surges that can compound the effects of flooding. As such, sea level rise will exacerbate flood risk in Sacramento and threaten the structural integrity of the levee system that protects the City. Depending on the nature of changes to the estuary's shorelines in coming decades (hardened seawalls and levees vs. restored wetlands) the tidal regime could become more amplified or more dissipated, with varying effects on levee stability. Sea level rise will also increase saltwater intrusion in the Sacramento-San Joaquin Delta, impacting freshwater quality, agricultural production, the wellbeing of aquatic species, and the health of aquatic ecosystems. Sea level rise is projected to progress gradually, affecting the areas immediately surrounding the Sacramento River and Sacramento River Deep Water Ship Channel. As the century progresses, the areas immediately around the American River and in agricultural areas south of Sacramento may also be affected.

Assets at Risk

Assets at risk from sea level rise include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

City residents that live in areas influenced by coastal hazards are often the most vulnerable. Though inland, the City has coastally influenced areas. As discussed above, no current sea level rise scenario shows residents in the City at risk to Sea Level Rise.

Structures

As discussed above, no current sea level rise scenario shows structures in the City at risk to Sea Level Rise.

Critical Facilities and Infrastructure

As discussed above, no current sea level rise scenario shows critical facilities or infrastructures in the City at risk to Sea Level Rise.

Natural, Historic, and Cultural Resources

According to the 2024 CAP, rising sea levels can disrupt coastal wetlands by drowning plant species, increasing salt levels in the soil and water, and outpacing wetland's migration further inland. This puts important ecosystems in danger, threatens habitats, and leaves communities exposed to dangerous storm surge. However, as discussed above, no current sea level rise scenario shows natural, historic, or cultural resources in the City at risk to Sea Level Rise.

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 City include the following:

- Climate change is likely to exacerbate future sea level rise conditions and associated impacts and vulnerability of the County. This was discussed in greater detail in the Climate Change and Sea Level Rise section of the Hazard Profile above
- Population in the City is expected to continue to grow slowly. Under current sea level rise scenarios, future conditions are not expected to affect City populations.
- Land use planning should be proactive to address future hazard conditions. Under current sea level rise scenarios, future conditions are not expected to affect City populations. Future land uses are not expected to be affected over the five year life cycle of this LHMP Update..

Future Development

The 2024 CAP noted that guiding development out of areas vulnerable to sea level rise will reduce future flooding impacts to people and property. As discussed above, no current sea level rise scenario shows any

areas in the City at risk to Sea Level Rise. The City of Sacramento noted that future development considerations may need to be made, as having more or less structures and residents in sea level rise areas affects the overall hazard vulnerability that can impact the City. Levee improvements will be needed to mitigate sea level rise for the City.

No sea level rise scenarios affect future development areas in the City; as such, no mapping or tabular analysis of future development is presented here.

Severe Weather: Extreme Cold and Freeze

Likelihood of Future Occurrence–Unlikely
Vulnerability–Medium

Hazard Profile

According to the National Weather Service (NWS) and the Western Regional Climate Center (WRCC), extreme cold often accompanies a winter storm or is left in its wake. Prolonged exposure to cold can cause frostbite or hypothermia and can be life-threatening. Infants and the elderly are most susceptible. Pipes may freeze and burst in homes or buildings that are poorly insulated or without heat. Freezing temperatures can cause significant damage to agricultural industry.

Location and Extent

Extreme cold and freeze events occur on a regional basis. Extreme cold can occur in any location of the City. All portions of the City are at risk to extreme cold. While there is no scale (i.e. Richter, Enhanced Fujita) to measure the effects of freeze, temperature data for the County from the WRCC indicates that there are 8.3 days that fall below 32°F. Freeze has a slow onset and can generally be predicted in advance for the City. Freeze events can last for hours (in a cold overnight), or for days to weeks at a time. Extreme cold can occur in any location of the City. All portions of the City and County are at risk to extreme cold and freeze.

Past Occurrences

Disaster Declaration History

The County has had no past federal or state disaster declarations for extreme cold and freeze. There have been USDA Secretarial Disaster declarations. As shown in Table 4 6, there have been 3 freeze declarations in Sacramento County since 2012. All 3 freeze declarations have occurred since 2021, as discussed in Section 4.3.2 of the Base Plan. Some of these events may have affected the City.

NCDC Events

The NCDC data shows 16 extreme cold and freeze incidents for Sacramento County since 1993, some of which likely affected the City.

City of Sacramento Events

The City could recall no events where structures were damaged (both since the 2021 LHMP and prior to 2021). It was noted that during periods of cold that the City opens warming centers. There were opened during periods of extreme cold that were discussed in Section 4.3.2 of the Base Plan.

Climate Change and Extreme Cold and Freeze

According to the 2024 CAS, freezing spells are likely to become less frequent in California as climate temperatures increase; if emissions increase, freezing events could occur only once per decade in large portion of the State by the second half of the 21st century. According to a California Natural Resources Report in 2014, it was determined that while fewer freezing spells would decrease cold related health effects, too few freezes could lead to increased incidence of disease as vectors and pathogens do not die off.

According to the 2024 CAP, which utilized Cal Adapt to model potential climate change impacts to Sacramento County, annual average low temperatures in Sacramento County of 48.4°F (from 1961-1990) would increase under the medium admissions scenario by 3.8°F to 52.2°F in the mid-century, and by 5.0°F to 53.4°F in the late century. Under the high emissions scenario, the average annual low temperature is projected to increase by 4.8°F to 53.2°F in the mid-century, and by 8.4°F to 56.8°F in the late century. This can be seen in Section 4.3.2 of the Base Plan.

The 2024 Climate Action & Adaptation Plan made no mention of climate change and extreme cold and freeze.

Vulnerability to Extreme Cold and Freeze

Extreme cold and freeze events happen in the City each year. Cold and freeze can impact both structures and populations in the Planning Area. The whole of the City and County Planning Area has some measure of vulnerability to extreme cold and freeze.

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to City. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect the City. These sections include assets at risk, impacts, and how future development and future conditions can be affected by this hazard.

Local Concerns

The City 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.

The only significant cold impact is isolated homeless exposure issues and the activation of short-term warming centers. The Fire Department noted that, in its estimation, the homeless are at greatest risk to freeze. The Sacramento Housing and Rehabilitation Agency and County Department of Human Services currently operate programs such as the Winter Shelter Program and In-Home Support Services which help

address severe weather conditions needs for vulnerable populations. Continued community outreach and potential regulatory mitigation capabilities would further address the extreme cold/freeze hazard within the community.

The Police Department noted that freezing temperatures create several operational concerns. One of the most common is an increase in auto thefts, as residents leave vehicles running unattended to warm them up, creating easy opportunities for thieves. The PD is also concerned about vulnerable populations, particularly the unhoused, who face serious risks of hypothermia or death during sub-freezing conditions. That typically results in an increase in welfare checks and coordination with social services to connect people with warming centers and available resources. Icy roadways also lead to more traffic collisions and hazardous driving conditions, which can quickly strain emergency response resources. In addition, frozen infrastructure such as burst pipes; often generates secondary calls for service that further increase the demand on police and fire personnel.

Assets at Risk

Assets at risk from extreme cold and freeze include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

All populations within the City are vulnerable to extreme cold and freeze, but this hazard generally affects vulnerable populations and those spending large amounts of time outside. Prolonged exposure to cold can cause frostbite or hypothermia and can be life-threatening. Vulnerable populations to cold and freeze include the unhoused; individuals who exercise or train outdoors; outdoor workers; individuals that lack the resources to afford heat; and the young, old, or medically fragile individuals that are more susceptible to cold related impacts. In addition to vulnerable populations, pets and livestock are at risk to freeze and cold.

Structures

Structures in the City have some measure of risk from extreme cold and freeze. Buildings can be affected directly by freeze, pipes that feed buildings can be damaged during periods of extreme cold and cause water damage and other related impacts to a structure. Structures can also be damaged by downed trees during freeze and winter storm events.

Critical Facilities and Infrastructure

Extreme cold and freeze, occasionally accompanied by high winds, can cause downed trees and power lines, power outages, accidents, and road closures. Transportation networks, communications, and utilities infrastructure are the most vulnerable physical assets in the City. Depending on the facility type and function, critical facilities and infrastructure may be affected directly by freeze. Damage to pipes that feed buildings can be damaged during periods of extreme cold. Other equipment may also be affected. Infrastructure such as roads, highways, and bridges can become slippery, causing accidents and road closures.

Natural, Historic, and Cultural Resources

Depending on how low the temperatures go and the duration of an extreme cold and freeze event, natural resources in the City may be affected. During periods of freeze, trees in the City may be damaged. This is especially true if a freeze occurs during a winter storm with winds and precipitation. Other natural resources like wildlife may be at risk during a period of freeze. While it is rare for historic buildings to be affected directly by freeze, damages to pipes that feed historic buildings can be damaged during periods of extreme cold and cause additional impacts to the structures.

Impacts from Severe Weather: Extreme Cold and Freeze

Extreme cold and freeze can affect critical facilities and infrastructure, down trees, break pipes, and can be a life safety issue. Transportation networks, communications, and utilities infrastructure are often the most vulnerable physical assets in the City. Infrastructure such as roads and utilities are at risk to freezing temperatures causing failures and hazardous road conditions. When extreme cold is coupled with high winds and freezing storms, power lines may be downed, resulting in power outages and an interruption of utilities and critical services. During periods of extremely low or prolonged cold temperatures, other impacts to the City can include interruption in business and school activities.

The elderly, the young, and those experiencing medical issues are often more vulnerable to temperature extremes, but anyone can be affected. Exposure to cold temperatures can cause hypothermia and frostbite. Those exercising or recreating outdoors, outdoor workers, and the unhoused may be at a higher risk.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City may be affected in the future by climate change (which was discussed in the Likelihood of Future Occurrence 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 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 these factors for the City include the following:

- Climate change is unlikely to exacerbate extreme cold and freeze and their associated impacts to the City. This was discussed in greater detail in the Climate Change and Extreme Cold and Freeze section of the Hazard Profile above.
- The City is expected to see slow and steady growth. Additionally, the City has 61 areas planned for development in the next five years. Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the City. Changes in populations

patterns should also be considered. Especially vulnerable individuals to this hazard include older adults, children, those below the poverty line, the unhoused, and those that work and recreate outdoors. During hazard events, existing inequities can get worse, and these groups are the most likely to be affected and may require extra assistance. Planning for population changes will help to decrease the City's overall vulnerability to this hazard. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of population growth and continued planning for future hazard conditions.

- Land use planning should be proactive to address future hazard conditions. 61 developments are expected to be built in the next five years. City building codes are in effect to reduce this risk and should be updated as necessary to continue to address future freeze and extreme cold conditions. Due to adherence to protective building codes, changes in land use and development will likely not increase the impacts and associated vulnerabilities of the City to this hazard.

Future Development

Future development built to code should be able to withstand extreme cold and freeze. Current building codes provide such provisions for new construction. New and existing critical facilities and infrastructure should also consider adding backup power systems to limit impacts associated with power outages. Older buildings and infrastructure should be evaluated to ensure that extreme cold and freeze will not cause negative impacts. Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements such as building codes are followed, and varying needs for different demographic groups that reside within the City are considered can help make for a more resilient community.

Severe Weather: Extreme Heat

Likelihood of Future Occurrence–Highly 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 last 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 an individual has been overexposed to heat or has over-exercised for their age and physical condition. Older adults, young children, those with medical conditions that make them more sensitive to heat, those without adequate in-home air conditioning, those who do not have access to housing, 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 City, there are risks to the built environment from extreme heat. While extreme heat on its own does not usually affect structures, extreme heat during times of drought can cause wildfire risk to heighten. Extreme heat can lead to interruptions in power, power outages, and when combined with high winds, to Public Safety Power Shutdown (PSPS) events, creating significant issues in the City. Additionally, extreme heat can stress pavement, traffic signal equipment, HVAC systems

for critical facilities, trees, and light rail infrastructure managed by the Sacramento Regional Transit District (which can lead to secondary impacts on City-managed transportation facilities).

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 Sacramento County Air Quality Management District (SCAQMD) and 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 and adapted by SCAQMD), 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 City. 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; however, extreme heat events can lead to substantial community impacts due to heat-related morbidity and mortality. The City 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 City.

City of Sacramento Events

These sections first show historic hazard events occurring since the 2021 LHMPs and then those occurring prior to the 2021 LHMP.

Events since 2021 LHMP

The City Planning Team noted that since extreme heat is a regional phenomenon, events that affected the County also affected the City. Those past occurrences were shown in the Base Plan in Section 4.3.3. Two particular events of note since the 2021 LHMP were noted by the City:

- **Summer 2024** – 20 days stretch of over 100-degree temperatures, cooling centers were activated.
- **September 2022 –** the hottest temperature ever recorded, multi day heat wave lasting 10 days, power grid was strained, isolated heat emergencies that impacted homeless and some seniors, cooling centers were activated.

Events prior to 2021

No specific events prior to 2021 could be recalled.

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 City.

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.

The 2024 City of Sacramento Climate Action & Adaptation Plan noted that heat waves are periods of four or more days of sustained, extreme heat. Historically, the Sacramento region experienced about one to two heatwaves per decade. By midcentury, Sacramento is projected to experience three multi-day heat waves per year, each projected to last between 7.6 to 9.1 days. It was noted in the Plan that extreme heat is not just a daytime phenomenon. Elevated nighttime temperatures limit the body's opportunity to offload excess heat acquired during the day, increase mortality risk36, and can disrupt sleep. Within the City, the effects

of warm nights may be felt most acutely in heavily built-up areas with limited vegetation. These areas can become very warm during the day and continue to radiate heat at night. Nighttime air conditioner use, while providing relief to residents, may actually exacerbate these effects by releasing waste heat into the environment.39 Additionally, should air conditioner systems fail, those who had come to rely on them may have few other options for relieving heat. Just as cool nights help the body recover from high daytime temperatures, firefighters have traditionally relied on cooler evening and nighttime temperatures to slow wildfire growth. Higher nighttime temperatures enable wildfires to blaze through the night.

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 City. In recent years, compounded by climate change conditions, summer months continue to get a bit hotter. The whole of the City 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 City's Assets at Risk to this hazard.

Local Concerns

The City 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

The City noted that heat waves and sustained high heat days are the nation's deadliest weather disaster and can cause heat-related illness such as heat exhaustion or heat stroke. Many people in the City can take refuge in cooler environments to reduce their exposure to excessive heat; however, outdoor workers, unhoused residents, and people without adequate air conditioning equipment or adequate ventilation, and people who may be unable to pay for increased energy use by using air conditioning are most vulnerable, making extreme heat a public health issue. Those who fear exposure to crime may hesitate to open windows, residents with limited transportation options may be unable to travel to cooler locations, while some may not be aware of the dangers posed by high heat or may not think of themselves as susceptible. Some individuals, including the elderly, those taking certain types of medication, and children, can also be more sensitive to the effects of heat. Extreme heat events can be compounded by high nighttime temperatures—which prevents the human body and infrastructure from cooling down and being able to withstand the next extreme heat day—as well as poor air quality—which can limit opportunities to take advantage of cooler nighttime temperatures to cool down residences.

The Police Department noted that extreme heat creates several operational concerns. The Department typically see an increase in heat-related medical calls, including dehydration and heatstroke, particularly among the elderly, children, outdoor workers, and unhoused individuals. That often drives higher call volumes for first responders and requires coordination to transport people to cooling centers and monitor public spaces. Extreme heat can also aggravate existing health issues, which may lead to more disturbances

or welfare checks. At the same time, increased power demand can lead to outages that impact traffic signals and other infrastructure, creating additional public safety challenges for officers in the field.

Urban Heat Island Concerns

In addition, the City noted the Urban Heat Island effect in the City. The 2024 City of Sacramento Climate Action & Adaptation Plan noted that heat islands are urbanized areas that experience higher temperatures than less developed outlying areas due to human activities. Structures such as buildings, roads, and other infrastructure absorb and re-emit the sun's heat more than features of the natural landscape such as forests and water bodies. Urban areas where these structures are highly concentrated and greenery is limited become "islands" of higher temperatures relative to outlying areas. Increased daytime temperatures, reduced nighttime cooling, and higher air pollution levels associated with urban heat islands can impact public health and lead to heat stroke, heat exhaustion, or even loss of life. In Sacramento, the urban heat island effect is most prevalent in or near industrial areas. Residents living near urban heat islands without access to heat relief and lacking air conditioning are most vulnerable to these health effects, and most often comprise low-income households and people of color. Over the course of the next several decades as average daily temperatures continue to increase, the urban heat island effect will become more pronounced in Sacramento. Increasing the number of trees and green space is one of the most effective ways to reduce the intensity of the urban heat island effect, but the use of high-albedo materials that lower heat absorption by buildings and roads can also help. Likewise, misters and drinking fountains can offer respite, especially in vulnerable areas. Due to the urban heat island effect, heat can fluctuate by as much as 8 degrees between different areas of the City according to canopy cover. The distribution of heat is inequitable in the community. Some North Sacramento neighborhoods can be as much as 12.68 degrees Fahrenheit warmer than outside of City limits, and neighborhoods along south Franklin Boulevard can be as high as 15.15 degrees warmer than outside city limits.

Tree Canopy Concerns

As noted above, tree canopy cover is one of the most effective tools to support extreme heat mitigation and address the urban heat island effect. The Sacramento Urban Forest Plan is the City's guiding document for the expansion, protection, and maintenance of the city's tree canopy and this plan outlines strategies and implementing actions to increase urban tree canopy from 19% as of 2016 to 35% by 2045.

Tree canopy is unevenly distributed across the city, with some neighborhoods having an existing tree canopy meeting or exceeding the 35% goal while many other neighborhoods have less than the 19% citywide average. This uneven distribution is driven by development patterns, neighborhood age, number and size of parks, presence of street trees, and socio-economic factors. Changes to street design and development standards can support tree canopy expansion efforts by requiring the inclusion of trees from the outset, and ensuring that tree wells are designed with sufficient soil volume to support healthy, mature tree growth.

Extreme heat also poses a risk to citywide tree canopy, particularly to young trees that are in the establishment phase and to trees without adequate irrigation. Heat stress on trees can threaten tree health, making the trees more susceptible to die-off, pests, diseases, and uprooting and toppling during storm events (as a result of high winds and soil saturation from prolonged rain events). While more expensive at the

outset, requiring the installation of adequate, water-efficient deep-root irrigation is essential to supporting the healthy growth and resilience of the city's tree canopy in the face of extreme heat events.

Assets at Risk

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

People and Populations

All populations within the City are vulnerable to extreme heat, but it 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; individuals that lack the resources to afford air conditioning; and the young, old, or medically fragile individuals are generally more susceptible to heat related impacts. In addition to vulnerable populations, pets and livestock are at risk to extreme heat conditions. In addition to vulnerable populations, pets and livestock are at risk to extreme heat conditions.

Structures

Extreme heat normally does not generally impact structures, 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 City noted that extreme heat has caused interruptions to power in the past and buildings with inadequate insulation and older heating, ventilation and air conditioning (HVAC) systems may not be able to keep up with cooling during high heat events. Also depending on the structure, sensitive contents such as IT equipment can be impacted, especially if a power outage occurs.

Critical Facilities and Infrastructure

Depending on their type and function, critical facilities and infrastructure can also be affected by extreme heat. Extreme heat conditions can cause interruptions in power and other operational issues that can lead to system failures. Prolonged extreme heat conditions can stress pavement and traffic signal equipment that can lead to future damage and/or failure. Schools without air conditioning may have to close or operate on a reduced schedule.

Natural, Historic, and Cultural Resources

Natural resource assets, including those located in City park and open space areas, may be vulnerable during periods of extreme heat. These include turfed areas; landscapes, City trees, wildlife and habitat areas, and wetlands and marsh lands. Recently, trees were lost in areas of the City 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 City 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 City 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 occur.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City 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 City include the following:

- Climate change is likely to exacerbate future extreme heat conditions and associated impacts and vulnerability of the City. This was discussed in greater detail in the Climate Change and Extreme Heat section of the Hazard Profile above.
- Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the City. The City is expected to see steady growth. The City has 61 areas where growth is expected over the next five years. Any additional growth in the City would place additional populations at risk to extreme heat. As such, the vulnerability to this hazard is expected to decrease. However, any future low income and the unhoused population are at risk to extreme heat which can put strain on emergency services and shelters. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the nature and intensity of future extreme heat events.
- Land use planning should be proactive to address future hazard conditions. The City has 61 areas where growth is expected over the next five years. City building codes are in effect to reduce this risk and should be updated as necessary to continue to address future extreme heat conditions. Due to adherence to protective building codes, changes in land use and development will likely not increase the impacts and associated vulnerabilities of the City to this hazard. Increasing citywide tree canopy, and protecting and maintaining existing shade trees, is critical for mitigating Sacramento's heat risk and reducing the urban heat island effect. Trees should be included and designed for as critical pieces of infrastructure,

and installation of adequate irrigation is a critical upfront cost to support long-term tree health and resilience.

Future Development

Future development of new buildings in the City will likely not be affected by extreme heat, although statewide building standards requiring minimum levels of insulation and encouraging the installation of heat pumps is an important part of creating a building stock that can efficiently maintain safe indoor temperatures during extreme heat days. Extreme heat is more likely to affect vulnerable populations. Vulnerability to extreme heat will increase as the average age of the population shifts. It is encouraged that nursing homes and elder care facilities have emergency plans or backup power to address power failure during times of extreme heat. Low-income residents and unhoused populations are also more vulnerable and should be considered in future growth plans for the City. Cooling centers for these populations should be utilized when necessary. New and existing critical facilities and infrastructure should also consider adding backup power systems to limit impacts associated with power outages. Future development of buildings and roads should include trees as an essential part of the infrastructure design, with adequate irrigation and soil volume to support healthy growth of medium- to large-canopy shade trees.

Severe Weather: Heavy Rains and Storms

Likelihood of Future Occurrence–Highly Likely
Vulnerability–High

Hazard Profile

Storms in the City occur annually and are generally characterized by heavy rain often accompanied by strong winds and sometimes lightning and hail. Approximately 10 percent of the thunderstorms that occur each year in the United States are classified as severe. A thunderstorm is classified as severe when it contains one or more of the following phenomena: hail that is three-quarters of an inch or greater, winds in excess of 50 knots (57.5 mph), or a tornado. Heavy precipitation in the City falls mainly in the fall, winter, and spring months. Wind often accompanies these storms; hail and lightning are rare in the City. In recent years, heavy rain and storms have been compounded by more frequent and higher intensity atmospheric river events. Rain on snow events occurring in the upper elevations can also be significant and contribute to greater downstream runoff and flooding during large storm events.

Location and Extent

Heavy rain events occur on a regional basis. Rains and storms can occur in any location of the City. All portions of the City are at risk to heavy rains and storms. Most of the severe rains occur during the fall, winter, and spring months in the City as discussed below (with problem flooding areas associated with heavy rains and storms shown in Table F-55 in the Flood: Localized Stormwater section). There is no scale by which heavy rains and severe storms are measured. Magnitude of storms is measured often in rainfall and damages. The speed of onset of heavy rains can be short, but accurate weather prediction mechanisms often let the public know of upcoming events. Hail and lightning are rarer in the City and Sacramento County. Duration of severe storms in the City can range from minutes to hours to days. According to the

WRCC, average annual precipitation in the County is 18.15 inches per year. Information on precipitation extremes can be found in Section 4.3.4 of the Base Plan.

Past Occurrences

Disaster Declaration History

According to historical hazard data, severe weather, including heavy rains and storms, is an annual occurrence in the City. This contributes to many of the federal disaster declarations related to flooding. Disaster declarations from flooding are shown on Table F-62, many of which likely affected the City.

Table F-62 Sacramento County – State and Federal Disaster Declarations from Flood (Heavy Rain and Storms) 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

NCDC Events

The NCDC data recorded 9 hail, 29 heavy rain, 1 lightning, and 2 winter storm weather incidents for Sacramento County since 1950. Winter weather events tend to be rain in the County.

City of Sacramento Events

The City noted that heavy rains and storms are an annual occurrence. Other events causing issues are listed in the Past Occurrences section of the Flood: 1%/0.2% Annual Chance and Flood: Localized Stormwater Flooding discussions above.

Climate Change and Heavy Rains and Storms

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

According to the 2024 CAS, 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 unlikely that hail will become more common in Sacramento County and the City of Sacramento. The amount of lightning is not projected to change.

Cal-Adapt noted that, on average, the projections show little change in total annual precipitation in California. Furthermore, among several models, precipitation projections do not show a consistent trend during the next century. Cal-Adapt modeled scenarios are shown in Section 4.3.4 of the Base Plan.

According to the 2024 CAP, 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. As shown in Section 4.3.4 of the Base Plan, 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.

The 2024 City of Sacramento Climate Action & Adaptation Plan noted that annual precipitation is expected to increase in the Sacramento region to between 20.3 and 25.7 inches per year; however, this increase will not occur at a uniform rate throughout the year. Rainfall will become more concentrated in the winter months and fall in fewer, higher-intensity events. These high intensity storms may produce higher volumes of runoff, contribute to increased flood risk, damage transportation infrastructure such as roads and bridges, and contribute to levee failure. Meanwhile, the spring and summer months are expected to see the largest reductions in rainfall compared to historical patterns. These changes could lead to drought, groundwater depletion, increased wildfire risk, changes in streamflow, decreased drinking water supply and availability, and strain to health, energy, and infrastructure systems.

Vulnerability to Heavy Rain and Storms

Heavy rain and severe storms are the most frequent type of severe weather occurrences in the City. These events can cause both significant and localized flooding. Flooding can be worse during times when the ground is already saturated. Wind often accompanies these storms and has caused damage in the past. Hail and lightning are rare in the City, but also can cause damage, with lightning occasionally igniting wildfires.

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

Local Concerns

The City 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.

The City noted that heavy rains and storms cause localized flooding in the City. The problem areas area shown on Table F-55 above. Problems associated with the primary effects of heavy rains and storms include flooding, pavement deterioration, washouts, high water crossings, and downed trees. Most of the localized flooding in the City is generally limited to flooding within the street ROW and only has limited impact to private property.

The Police Department noted heavy rain and flooding create several immediate concerns. Clogged storm drains and sudden downpours can quickly lead to flooded roadways, stranded vehicles, and a higher risk of traffic collisions, often requiring officers to manage traffic control and assist with rescues. Storm conditions

can also bring down trees and power lines, creating road blockages and serious safety hazards. These events tend to generate a surge in calls for service related to flooded streets and other dangerous conditions. In addition, officers may need to assist with evacuations in low-lying areas and coordinate with partner agencies to protect residents and limit property damage.

Assets at Risk

Assets at risk from heavy rain and storms include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

All populations (including vulnerable populations) in the City have some measure of risk to heavy rains and storms. Those populations that work or recreate outside and unhoused individuals are more vulnerable to impacts from heavy storm events. Heavy rains and storms occur every year and do not generally cause significant adverse impacts to individuals; it is the secondary hazard, flooding, which poses the biggest impact to people. Populations at risk to flooding resulting from heavy rains and storm events include those who live in floodplains (discussed in further detail in the Flood: 1%/0.2% Annual Chance and Levee Failure section above) and those who live in and near localized flooding areas (discussed in further detail in the Flood: Localized Stormwater Flooding section above).

Structures

Structures in the City have some risk to heavy rains and storms. Structures built to modern building codes are built to withstand heavy rains and storms (including high winds and lightning). During a heavy storm, localized flooding may cause water intrusion into buildings from the outside. Trees can be downed causing impacts to structures. Older homes and buildings may be at increased risk to heavy rains and storms. Power outages during severe storm events can occur, impacting the use of structures until the power is back online.

Critical Facilities and Infrastructure

Heavy rain and storms can affect critical facilities and infrastructure during large events. Power outages may occur taking facilities offline. High winds can down power lines and trees impacting facilities. Water intrusion into facilities and infrastructure, such as water and wastewater facilities, can impact operations. City roads, streets, and bridges can be impacted resulting in closures restricting traffic flow in the City. In certain areas, large storms can cause erosion and localized landslides which can impact facilities. Many critical facilities are built to modern design standards that take heavy rains and storms into account when siting and building these structures, and others may need to be retrofitted to better withstand these events.

Natural, Historic, and Cultural Resources

Large rain and storm events and associated flooding can affect natural, historic, and cultural resources. Silt and sediment can damage natural areas. Trees can be uprooted and downed by high winds. Extended periods of rainfall can erode natural banks along waterways and degrade soil stability for terrestrial species. While some natural systems can be adversely impacted during these large storms, heavy rain events can also provide benefits. Groundwater and wetland areas can be recharged and water supplies replenished.

Historic and cultural resources may also be affected. Generally, the impacts are associated with damage to structures affected by large storm events, but other cultural resources such as those associated with Native Americans and old tribal areas can also be disturbed, damaged, and lost during extreme rain and storm and events.

Impacts from Heavy Rain and Storms

Impacts from heavy rains and storms include damage to property, critical facilities and infrastructure, and the natural landscape. This includes: erosion; downed trees; damaged utility structures and infrastructure; power outages; road damage and blockages; and even lightning strikes to critical infrastructure and people. Lightning can also cause wildfires and urban fires to occur. Landsliding and erosion occur when the soil on slopes becomes oversaturated and fails. Climate change may cause these impacts to worsen.

Actual damage associated with the primary effects of severe storms and heavy rains has been somewhat limited. It is the secondary hazards caused by these severe weather events, such as floods, landslides, and erosion that would likely have the greatest impact.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City 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 City include the following:

- Climate change is likely to exacerbate future heavy rain and storm conditions and associated impacts and vulnerability of the City to flooding. This was discussed in greater detail in the Climate Change and Heavy Rains and Storms section of the Hazard Profile above.
- The City is expected to see steady growth. The City has 61 areas where growth is expected over the next five years. Certain vulnerable populations, such as the those who work or spend extended periods outdoors, could experience disproportional effects from this hazard. and should be addressed as the City continues to grow. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the nature and intensity of future storm events.
- Land use planning should be proactive to address future hazard conditions. The City has 61 areas where growth is expected over the next five years. Changes in land use in these and other future areas may also amplify the impacts of heavy rains and storms, as additional impervious surfaces can cause additional runoff and localized flooding throughout the City. However, changes in land use and future

development may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the nature and intensity of future storm events.

Future Development

Building codes in the City ensure that new development is built to current building standards, which should reduce the risk to future development in the City from heavy rains and storms. New critical facilities such should be built to withstand hail damage, lightning, and thunderstorm winds. New and existing critical facilities and infrastructure should also consider adding backup power systems to limit impacts associated with power outages. With adherence to development standards, future losses to new development should be minimal. Changes in land use may also amplify the impacts of heavy rains and storms, as additional impervious surfaces can cause additional runoff and localized flooding throughout the City.

Severe Weather: High Winds and Tornado

Likelihood of Future Occurrence–Highly Likely
Vulnerability–Medium

Hazard Profile

High winds, as defined by the NWS glossary, are sustained wind speeds of 40 mph or greater lasting for 1 hour or longer, or winds of 58 mph or greater for any duration. High winds can cause significant property damage, threaten public safety, and have adverse economic impacts from business closures and power loss. High winds, when combined with high temperatures and low humidity can also lead to PSPS events (though rare in Sacramento County). Winds can also drive fires in and near the City.

Tornadoes are rotating columns of air marked by a funnel-shaped downward extension of a cumulonimbus cloud whirling at destructive speeds of up to 300 mph, usually accompanying a thunderstorm. Tornadoes form when cool, dry air sits on top of warm, moist air. Tornadoes are the most powerful storms that exist. Tornadoes, though rare, can affect areas of the City, primarily during the rainy season in the late fall, winter, and early spring.

Location and Extent

The entire City is subject to significant, non-tornadic (straight-line), winds. Each area of the City is at risk to high winds. Magnitude of winds is measured often in speed and damages. These events are often part of a heavy rain and storm event but can occur outside of storms. The speed of onset of winds can be short, but accurate weather prediction mechanisms often let the public know of upcoming events. Duration of winds in California is often short, ranging from minutes to hours. The Beaufort scale is an empirical 12 category scale that relates wind speed to observed conditions at sea or on land. Its full name is the Beaufort Wind Force Scale. The Beaufort Scale was shown in Section 4.3.5 of the Base Plan.

Tornadoes, while rare, can occur at any location in the City. Prior to February 1, 2007, tornado intensity was measured by the Fujita (F) scale. This scale was revised and is now the Enhanced Fujita scale. Both scales are sets of wind estimates (not measurements) based on damage. The new scale (EF) provides more

damage indicators (28) and associated degrees of damage, allowing for more detailed analysis and better correlation between damage and wind speed. It is also more precise because it considers the materials affected and the construction of structures damaged by a tornado. The F Scale and EF Scale are shown in Section 4.3.5 of the Base Plan.

Past Occurrences

Disaster Declarations

There have been no federal or state disaster declarations in the County for winds and tornadoes.

NCDC Events

The NCDC data recorded 109 high wind, 7 funnel cloud, and 15 tornado incidents for Sacramento County since 1950. Many of these wind events likely affected the City.

City of Sacramento Past Occurrences

These sections first show historic hazard events occurring since the 2021 LHMPs and then those occurring prior to the 2021 LHMP.

Events since 2021 LHMP

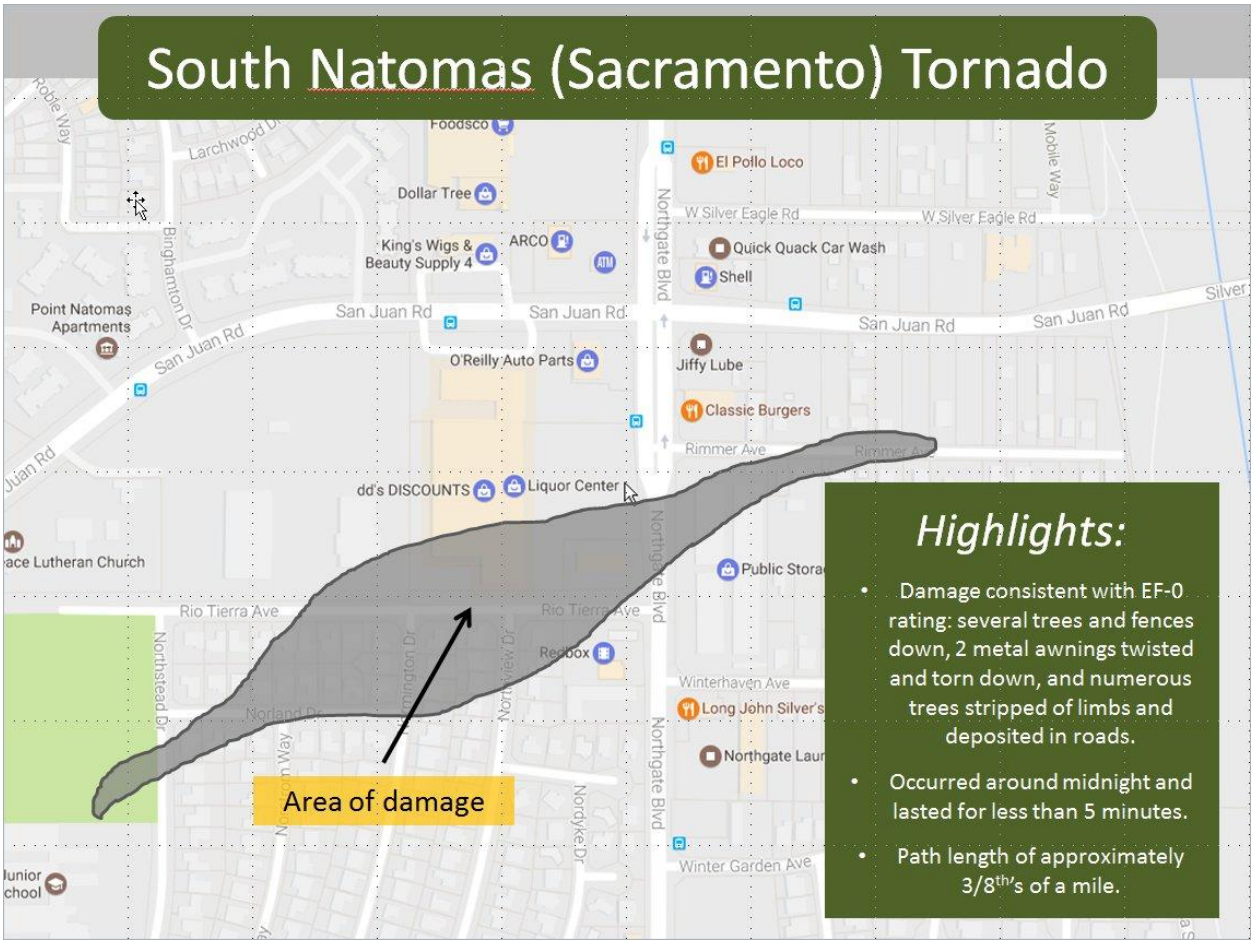
The City noted that since high winds is a regional phenomenon, events that affected the County likely also affected the City. Those past occurrences were shown in the Base Plan in Section 4.3.5. The City noted that no major tornadoes have taken place in the City since 2021.

LIST PAST EVENTS AFFECTING THE CITY, ESPECIALLY THOSE SINCE THE 2021 LHMP. INCLUDE INFORMATION ON IMPACTS AND DAMAGES AS AVAILABLE? IF NO PAST EVENTS, PLEASE STATE THAT.

Events prior to 2021

The City noted a tornado that occurred in the Natomas Area on **January 10, 2017**. The tornado was estimated as a EF0. Information on the tornado and the areas impacted can be seen on Figure F-56, while Figure F-57 shows an example of the damage that occurred in the area.

Figure F-56 City of Sacramento – 2017 Natomas Tornado Event



Source: City of Sacramento

Figure F-57 Example of Damage from 2017 Tornado



Source: City of Sacramento

January 2008: Severe winds exceeding hurricane force strength were a part of the January 2008 North American Storm Complex, a series of 3 storms that hit the California region. In California, 1.2 million residents were left without power due to the approximately 500 miles of power lines were damaged in the state. Listed below are the largest tornadoes for the Sacramento area.

January 2006: A series of storms accompanied by winds as fast as 63 MPH struck Northern California for a period of a week. Two deaths were recorded by falling trees as a result of high winds. The storm resulted in over $300 million of damage and 10 counties, including Sacramento, being classified as federal disaster areas.

Other tornadoes for the Sacramento area prior to 2021 include:

- **April 19, 1988**: Fujita 1, Width 30 yards, Length 1 mile
- **March 22, 1983**: Fujita 1, Width 50 yards, Length 2 miles
- **February 7, 1978**: Fujita 2, Width 20 yards, Length 1.9 miles

Source: Tornado History Project

Climate Change and High Winds and Tornado

According to the 2024 CAS, while average annual rainfall may increase or decrease slightly, the intensity of individual thunderstorm events is likely to increase during the 21st century. This may bring stronger thunderstorm winds. The CAS does not discuss non-thunderstorm winds or tornadoes. The 2024 City of Sacramento Climate Action & Adaptation Plan does not discuss winds or tornadoes either.

Vulnerability to Severe Weather: High Wind and Tornadoes

The City is subject to potentially destructive high winds and tornadoes. High winds are common throughout the area and can happen during most times of the entire year and outside of a severe storm event. Tornadoes are rare. High winds and tornadoes can be a significant public safety and economic concern. The whole of the City is at some measure of vulnerability to wind and tornadoes.

An assessment of a community's vulnerability to high winds begins with an understanding of local exposure to wind and tornadoes. This is included in the Local Concerns section below followed by a discussion of the City's Assets at Risk to this hazard.

Local Concerns

The City 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.

The City is concerned with downed trees during both windstorm and tornado, especially from those trees weakened by drought. These trees can fall on homes, businesses, power lines, and roadways and can cause damages.

From a policing standpoint, high winds create immediate public safety concerns. Downed trees and power lines can block roadways, damage property, cause outages, and create injury risks. These situations require a rapid response from Police Department officers to secure hazardous areas, manage traffic, and coordinate with utility crews to restore access and keep the public safe.

While tornadoes are rare in the City, any warning still requires heightened awareness. The potential for sudden structural damage and flying debris means evacuations may need to occur, impacted areas need to be secured, and weather and emergency management partners need to be coordinated with to protect vulnerable populations and critical infrastructure.

Assets at Risk

Assets at risk from winds and tornadoes include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

All populations are at some vulnerability to high winds and tornadoes. Certain vulnerable populations are at the greatest risk to the effects of high winds and tornadoes. These include:

- The unsheltered.
- Citizens who reside in mobile homes.
- Citizens in buildings with no tornado shelter or below ground floors.
- The medically fragile experiencing power outages as a result of wind events.
- Those working or caught outdoors during a wind or tornado event.

Structures

All structures in the City have some measure of risk from high wind and tornadoes. Though rare, a tornado could cause damage to virtually all facilities in the tornado touchdown path. This would affect homes, businesses, commercial property, as well as government and critical facilities. During a wind or tornado event, power lines in the City can be damaged by falling trees caused by wind. Power outages can occur during high wind events. High winds can contribute to PSPS events being declared. High winds and tornadoes could cause sparks from electric wires and other sources, which could lead to wildfire ignition. Once ignited, high winds can also cause wildfires to rapidly spread and become out of control. High wind conditions can cause wildfires to move into more urban areas destroying structures and whole subdivisions, as seen in recent wildfire events in the West.

Critical Facilities and Infrastructure

Though most critical facilities are built to withstand winds, high wind speeds can still cause damage to critical facilities and infrastructure in the City. Though rare, a tornado could cause damage to virtually all facilities in the tornado touchdown path. Winds can cause power outages affecting system operations. Winds can also contribute to PSPS events, and lead to out of control wildfires, which can damage critical facilities and impact their abilities to perform their critical roles in the community.

Natural, Historic, and Cultural Resources

Natural resources, such as trees, are vulnerable to winds. Increased levee and streambank erosion can occur during periods of high water and high winds. High wave action during significant wind events can impact marsh lands and habitat areas. Soil erosion can also occur during high winds. Most all natural, historic, or cultural resources are at risk to tornadoes. Tornadoes can tear apart habitats, causing fragmentation across ecosystems and can damage and destroy historic structures and cultural resources.

Impacts from Severe Weather: High Wind and Tornado

Wind and tornadoes can cause damage to property and loss of life. While most tornado damage is caused by violent winds, the majority of injuries and deaths generally result from flying debris. Property damage can include damage to buildings, fallen trees, and power lines. Local industries may also be damaged or destroyed. Access roads and streets may be blocked by debris, delaying necessary emergency response. Winds can push automobiles off roads, damage roofs and structures, cause power outages, and cause secondary damage due to flying debris and hazardous trees. High winds can also contribute to the spread and intensity of wildfires. High winds during periods of high water can cause impacts to levees and streambanks from accelerated erosion. Climate change may affect this hazard and cause winds to increase in velocity and more tornadoes to affect the City.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City 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 City include the following:

- Climate change is likely to exacerbate future wind conditions and associated impacts and vulnerability of the City. Climate change is not likely to affect future tornado conditions. This was discussed in greater detail in the Climate Change and Winds and Tornadoes section of the Hazard Profile above.
- Future population growth should be considered as having more or less people in a community affects the overall hazard vulnerability to the City. The City is expected to see steady growth. The City has 61 areas where growth is expected over the next five years. Vulnerable populations could experience disproportional effects from this hazard and should be planned for as development of the City continues. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. The City has 61 areas where growth is expected over the next five years. Building codes in the City ensure that new development is built to current building standards to withstand high winds, which should reduce the risk to future development in the City from high winds and tornadoes. With adherence to development standards, future losses to new development should be minimal. Changes in land use and increased development may amplify the impacts of high winds and tornadoes, as additional structures in the City increase the number of buildings at risk to high winds and tornadoes; however, given the limited development planned in the next five years, any increase in vulnerability of the City should be limited.

Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the City are considered can help make for a more resilient community. The City enforces the state building codes which includes standards for new development to minimize damage from windstorms. 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 City of Sacramento. Throughout California, communities are increasingly concerned about wildfire safety as increased development in the foothills and mountain 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 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, while rare, may result PSPS events in the City. 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 City.

Wildfire Smoke and Air Quality

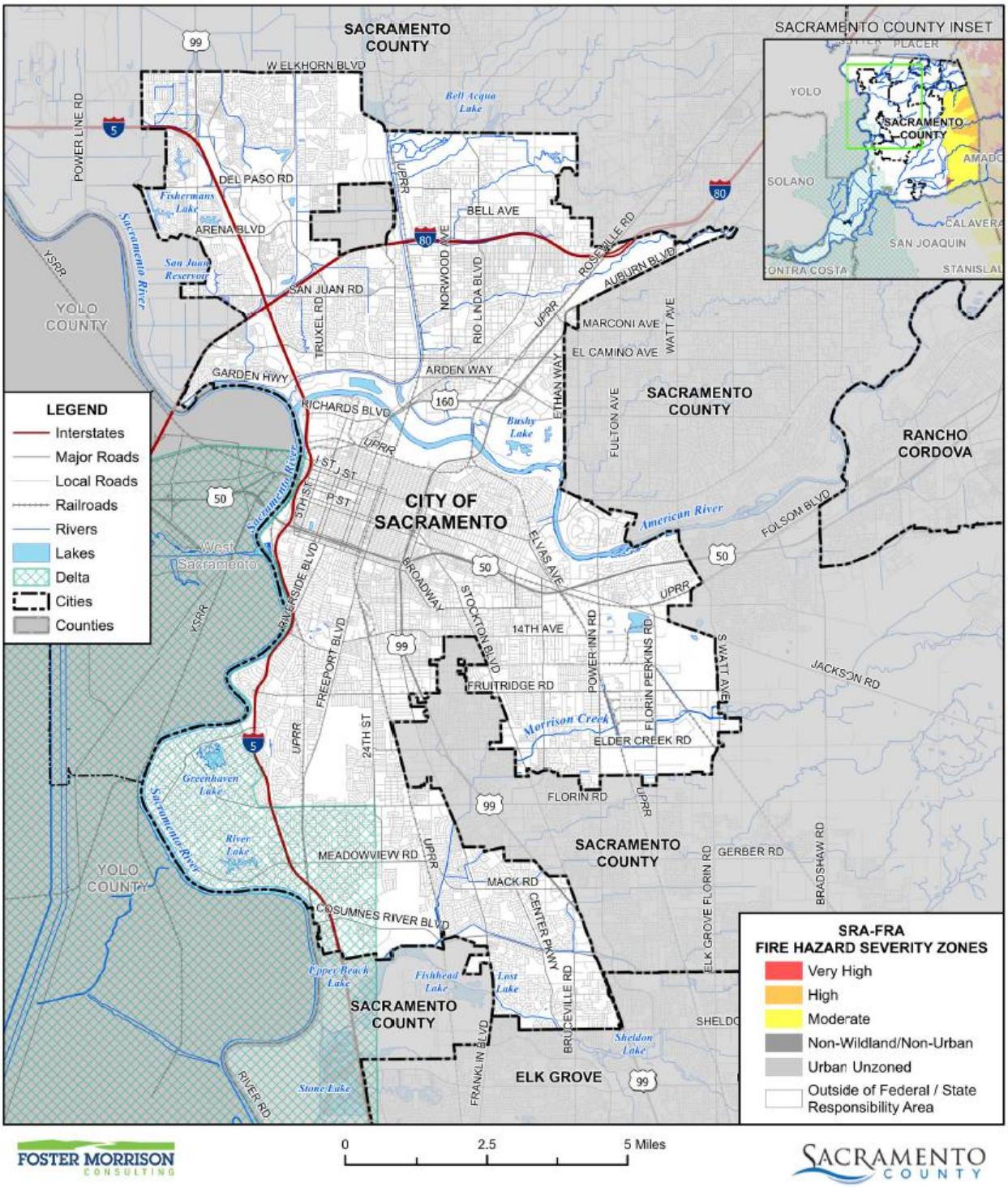
Smoke from wildfires is made up of gas and particulate matter, which can be easily observed in the air. Air quality standards have been established to protect human health with the pollutant referred to as PM2.5 which consists of particles 2.5 microns or less in diameter. These smaller sizes of particles 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

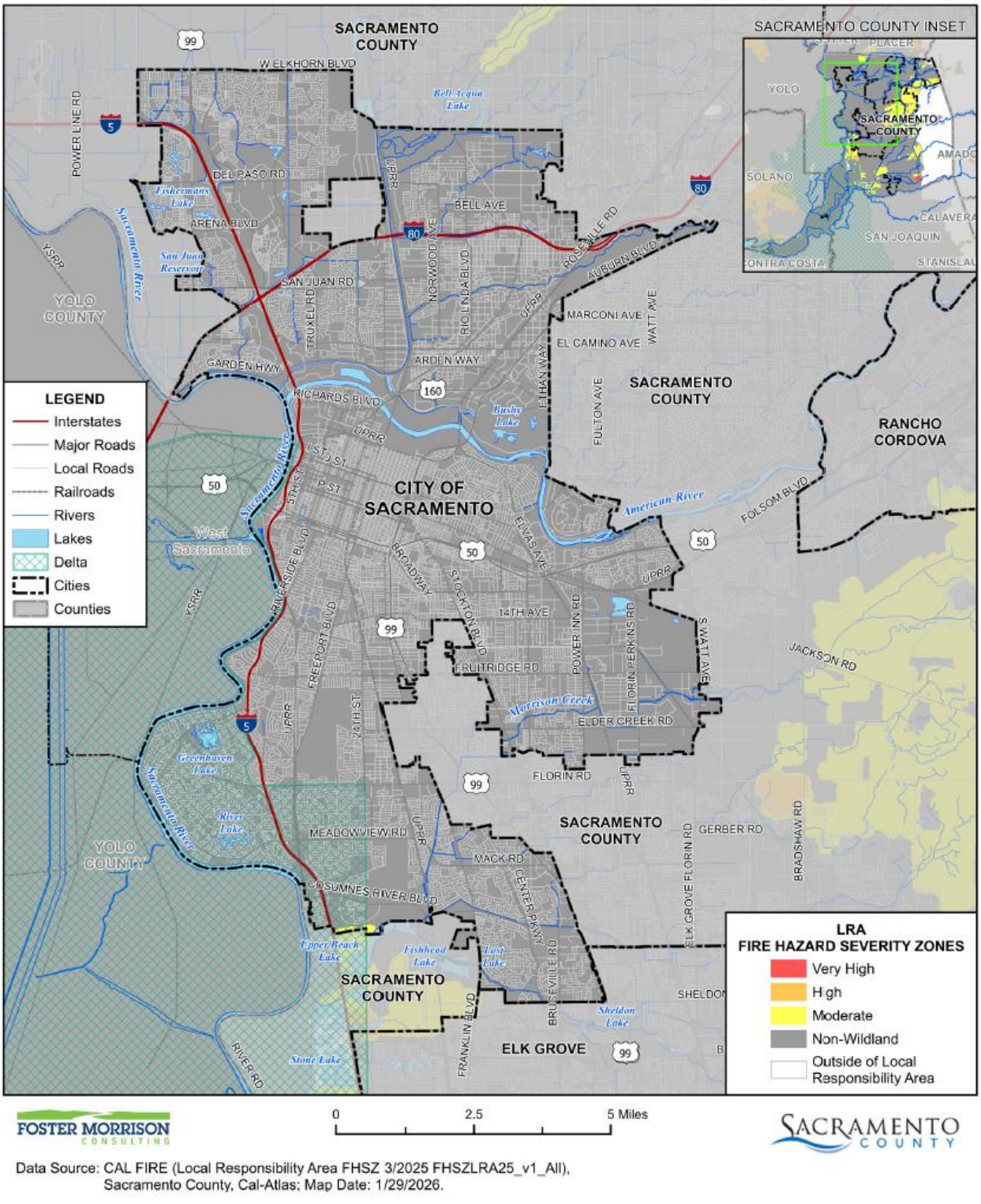
Wildfire can affect all areas of the City. CAL FIRE has estimated that the risk varies across the City and has created updated wildfire maps showing risk variance across the City and the Sacramento County Planning Area. Following the methodology described in Section 4.3.15 of the Base Plan, wildfire maps for the City of Sacramento were created. Figure F-58 shows the CAL FIRE State Responsibility Areas (SRA) and Federal Responsibility Areas (FRA) and their associated Fire Hazard Severity Zones (FHSZ) in the City. Figure F-59 shows the CAL FIRE Local Responsibility Areas (LRA) and their associated Fire Hazard Severity Zones (FHSZ) in the City. As shown on the maps, SRA/FRA FHSZs within the City fall outside of the state and federal mapped areas; all but 45 acres (classified as Moderate) in the LRA FHSZs in the City are classified as Non-Wildland.

Figure F-58 City of Sacramento – 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 c20fhszl06_1), September 2007,
Sacramento County, Cal-Atlas; Map Date: 1/29/2026.

Figure F-59 City of Sacramento – CAL FIRE LRA Fire Hazard Severity Zones



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 F-63, while extents in the LRA are shown on Table F-64. As shown, the City sits outside of the SRA/FRA and fully inside the LRA. In the LRA, the only FHSZ is the Non-Wildland zone.

Table F-63 City of Sacramento – 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
Very High	0	0%	0	0%	0	0%
High	0	0%	0	0%	0	0%
Moderate	0	0%	0	0%	0	0%
Non-Wildland/Non-Urban	0	0%	0	0%	0	0%
Urban Unzoned	0	0%	0	0%	0	0%
Outside of Federal / State Responsibility Area	52,011	100%	32,172	100%	19,839	100%
Total	**52,011**	**100%**	**32,172**	**100%**	**19,839**	**100%**

Source: CAL FIRE

Table F-64 City of Sacramento – 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
Very High	0	0%	0	0%	0	0%
High	0	0%	0	0%	0	0%
Moderate	45	0.1%	10	0.03%	36	0.2%
Non-Wildland	51,966	100%	32,162	100%	19,804	100%
Outside of Local Responsibility Area	2	0.005%	0	0%	2	0.01%
Total	**52,014**	**100%**	**32,172**	**100%**	**19,842**	**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 F-65.

Table F-65 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.

City of Sacramento Events

These sections first show historic hazard events occurring since the 2021 LHMPs and then those occurring prior to the 2021 LHMP.

Events since 2021 LHMP

The City noted no major events of wildfire in the City since the 2021 LHMP. There have been multiple air quality issues from wildfire, including wildfires that are burning far from City boundaries. This was true in the City during the River Fire in 2021. Smoke and poor air quality occurred.

Events prior to 2021

Prior to 2021, the last large fire that directly affected the City occurred on **July 4, 2014** that burned approximately 100 acres in the Bushy Lake area adjacent to the Cal Expo Fairgrounds. The fire caused the evacuation of the nearby water park, caused the cancellation of the professional soccer game, and postponed the largest pyrotechnic show in the region. Additionally, the incident drew down fire resources from the entire county and required resources from CAL FIRE Amador and El Dorado Ranger Unit to assist in mitigation.

Prior to 2021, the City was also indirectly affected by two wildfires. Neither burned property within the City, but air quality issues were felt by City residents.

- On **August 22, 2020**, the North Complex Fire caused smoke issues in the City. County Public Health issues recommendations for public to remain indoors. This impacted businesses and unhoused persons. N95 masks were distributed in the City during this event.
- The City noted that on **November 10, 2018**, wildfires in the region caused smoke issues in the City from the Camp Fire in Butte County. The Sacramento City Office of Emergency Management routed a resource request through the County to CalOES to received 260,000 N95 masks to distribute to essential workers, the public, and unhoused persons who were impacted by the unhealthy Air Quality Index. Sacramento Fire educated and distributed the masks to employees and the community.

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 City 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.

The 2024 City of Sacramento Climate Action & Adaptation Plan noted that wildfire risk and intensity will continue to increase as climate change brings increased temperatures, a reduced snowpack, and altered precipitation patterns. California has an extensive history of wildfires, with large-scale, highly -destructive fires becoming increasingly common. Within Sacramento County itself, three major wildfires, causing a total of three million dollars in property damage, occurred between 2014 and 2021. While wildfire is unlikely within City limits, the smoke caused by wildfire creates impacts on air, and wildfires within the County can regionally affect water and soil quality, cause damage to energy infrastructure and roads, and create strain on local firefighting resources as the fire department is called to respond to fires across the region and state. Projections from California's Fourth Climate Change Assessment predict that fires could burn up to 178% more acres per year by the end of the century compared to current averages.

Wildfires are projected to increase in severity across Northern California, and their impacts on health will be felt in Sacramento. Particulate matter from wildfire dissipates throughout the Central Valley and

degrades air quality for extended periods of time. During the 2018 Camp Fire, Sacramento's PM2.5 (particulate matter) concentrations were among the highest in the world (over 300 micrograms per cubic meter of air).

Vulnerability to Wildfire

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

The whole of the City 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 City 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

Areas of the city that have been identified as fairly susceptible to an urban wildfire are generally along the American River Parkway from Watt Avenue to the Sacramento River and along the Garden Highway in the Natomas area. The American River Parkway is a stretch of dense trees and brush on both sides of the American River. The property is owned by the State of California, maintained by the Sacramento County Parks Department, and protected from fire by the Sacramento City Fire Department. The area consists of natural habitat with no fire break areas. Access for fire equipment is difficult and is limited to the paved stretches of the bicycle path. Some of the potential fire areas are not accessible to vehicular traffic. Fires occurred in the area in 1985 and 1992.

The American River Parkway is identified as a State Recognized Fire Hazard. The vegetation along the parkway would be a source of fuel to any fire that could burn due to its wild interface. In addition, an invasive series of plants and weeds growing in the area would allow the fire to burn and spread rapidly.

Air Quality Concerns

Particulate matter from wildfires can dissipate throughout the Central Valley and degrade air quality for extended periods of time. Wildfires emit substantial quantities of particulate matter, carbon monoxide, nitrogen oxides, and volatile organic compounds. The effects that wildfire smoke can have on Sacramento's air quality are immense. During the 2018 Camp Fire, Sacramento's PM 2.5 (particulate matter) concentrations exceeded 300 µg/m3, among the highest in the world. Wildfire smoke can cause adverse health effects including restricted breathing; eye irritation; aggravation of respiratory and cardiovascular

diseases including asthma, chronic obstructive pulmonary disease (COPD), bronchitis, and pneumonia; and may increase cancer risk and impair immune function. Young children, older adults, pregnant women, and individuals with hypertension, diabetes, and COPD are particularly sensitive to the health effects of smoke.

Members of the community such as outdoor workers and the homeless, who may not be able to remain indoors in order to reduce smoke exposure, are also at elevated risk for health impacts. Many Sacramento residents may be required to make behavioral or lifestyle changes in order to minimize exposure to poor air quality during wildfires. These changes, such as avoiding active transportation, spending less time outdoors, or avoiding public transit if facilities are not adequately ventilated, may have ripple effects on community health, energy use, and transportation-related emissions.

Assets at Risk

Assets at risk from wildfire include people and populations; structures; 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:

- Unhoused
- Infants and children under age five and their caregivers
- Senior (65 and older)
- Individuals with disabilities
- Individuals' dependent on medical equipment
- Individuals who exercise, recreate, or work outdoors
- Individuals with impaired mobility

To further evaluate the impact to the residential population within the City, the CAL FIRE FHSZ dataset was overlayed on the parcel layer. Those residential parcels that intersect the FHSZs were counted and multiplied by the 2023 Census Bureau average household factors for the City of Sacramento – 2.59. According to this analysis, there is a total population of 0 residents of the City of Sacramento falling within the Moderate or higher SRA/FRA as well as the LRA FHSZs. This is shown in Table F-66 and Table F-67, respectively.

Table F-66 City of Sacramento – Improved Residential Parcels and Population by CAL FIRE SRA/FRA Fire Hazard Severity Zone

Jurisdiction	Very High		High		Moderate	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Sacramento	0	0	0	0	0	0

Source: CAL FIRE, 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size –City of Sacramento (2.59)

Table F-67 City of Sacramento – Improved Residential Parcels and Population by CAL FIRE LRA Fire Hazard Severity Zone

Jurisdiction	Very High		High		Moderate	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Sacramento	0	0	0	0	0	0

Source: CAL FIRE, 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size –City of Sacramento (2.59)

The City noted that the Critical Facilities and Infrastructure section below includes the facilities used by At-Risk populations that are threatened by this hazard. While this is not specific to what special populations reside in the City, it does speak to facilities that are used to serve (portions) of this population.

Structures

All structures in the City have some risk to wildfire. GIS was used to determine the possible impacts of wildfire within the City of Sacramento. The methodology described in Section 4.3.15 of the Base Plan was followed in determining structures and values at risk in both the CAL FIRE's SRA/FRA and LRA Fire Hazard Severity Zone layers. Analysis results for the SRA/FRA in the City of Sacramento are not shown since this layer doesn't intersect with the City. Analysis results for the LRA in the City of Sacramento are shown in Table F-68, which summarizes total parcel counts, improved parcel counts and their structure values by FHSZs.

Table F-68 City of Sacramento – Count and Value of Parcels and Structures by CAL FIRE LRA Fire Hazard Severity Zone

Fire Hazard Severity Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Moderate	10	3	$19,649,114	$61,592,040	$61,592,040	$142,833,194
Non-Wildland	158,979	145,959	$21,974,603,665	$59,233,787,222	$38,535,885,617	$119,744,276,504
Sacramento Total	**158,989**	**145,962**	**$21,994,252,779**	**$59,295,379,262**	**$38,597,477,657**	**$119,887,109,698**

Source: CAL FIRE, Sacramento County 2025 Parcel/Assessor Data

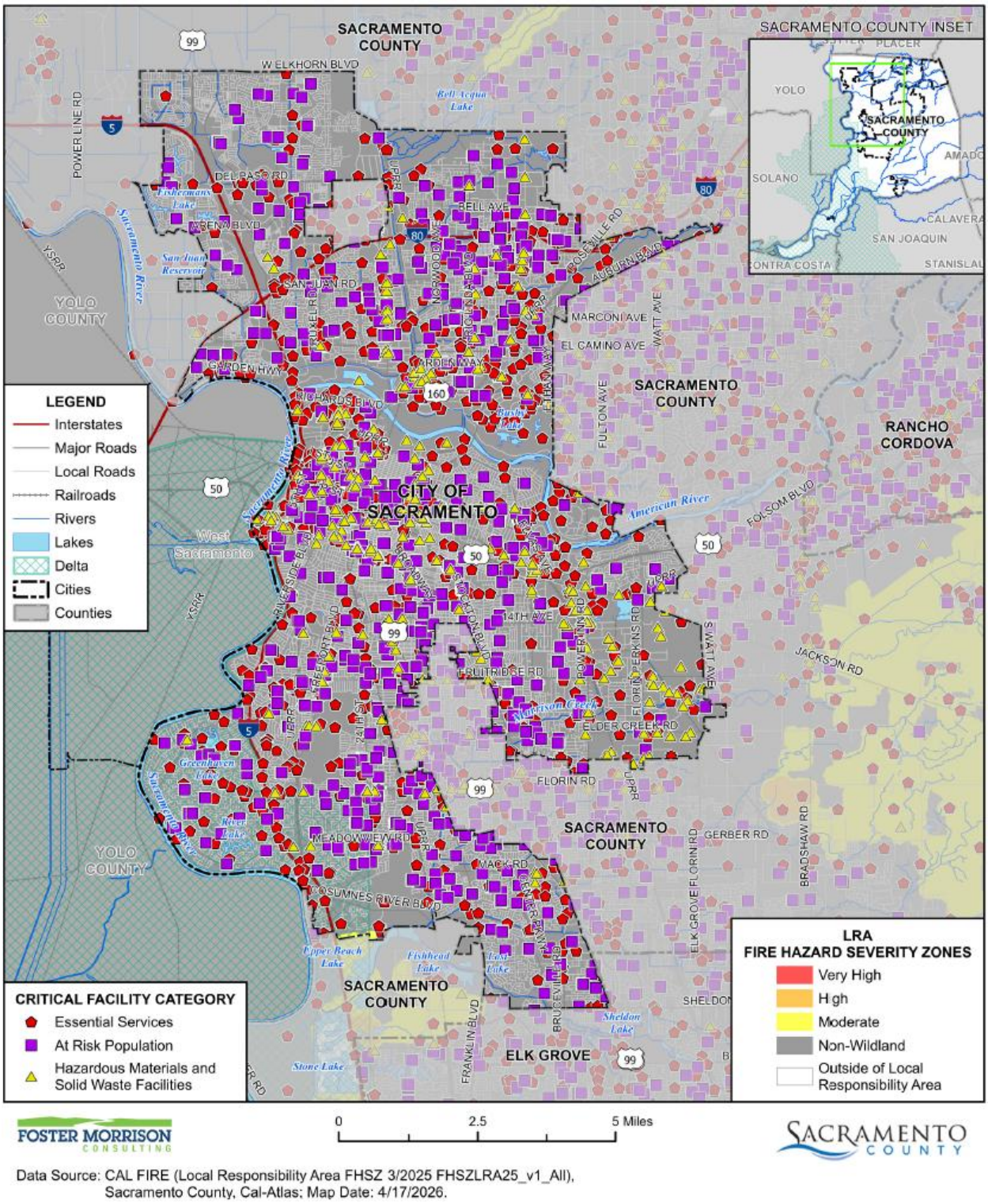
Critical Facilities and Infrastructure

Wildfire present a threat to critical facilities and infrastructure. Critical facilities and infrastructure play an immensely important role in communities. Damage to any one of these systems can threaten public safety, wreak havoc on daily life, impact properties far from the wildfire, and result in economic impacts to the City.

The following analysis discusses critical facilities and infrastructure. A separate analysis was performed on the critical facility inventory in the City to determine which critical facilities fall into each fire hazard severity zone. Using GIS, the SRA/FRA and LRA fire hazard severity zone layers were overlayed on the

critical facility GIS layer. Only LRA fire hazard severity zones intersect the City; as such no SRA/FRA analysis is presented here. Only LRA analysis is presented. This is shown on Figure F-60 for the LRA fire hazard severity zones. All fall into the Non-Wildland FHSZ; as such no tabular analysis is presented.

Figure F-60 City of Sacramento – Critical Facilities in LRA Fire Hazard Severity Zones



Data Source: CAL FIRE (Local Responsibility Area FHSZ 3/2025 FHSZLRA25_v1_All), Sacramento County, Cal-Atlas; Map Date: 4/17/2026.

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 City, 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 City. Fires can have devastating effects on watersheds through loss of vegetation and soil erosion, which may impact the City 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 City; smoke and air pollution from wildfires can be a severe health hazard. Smoke impacts may come from wildfires outside the City, 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 alters 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 City 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 City of Sacramento include the following:

- Climate change is likely to exacerbate future wildfire conditions and associated impacts and vulnerability of the City to wildfire. This was discussed in greater detail in the Climate Change and Wildfire section of the Hazard Profile above.
- The City is expected to see slow and steady growth. The City has 61 areas where growth is expected over the next five years. Additional population growth would likely bring continued diversity to the City. Vulnerable population groups could face disproportionate effects from wildfire and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the location, magnitude, and severity of future wildfire events.
- Land use planning should be proactive to address future hazard conditions. Locating new development, structures and critical facilities and infrastructure within or near areas of wildfire risk may put additional development at risk. The City has 61 areas where growth is expected over the next five years. All but one are located in the Non-Wildland FHSZ which reduces risk. Additionally, City building codes are in effect to reduce this risk and should be updated as necessary to continue to address future wildfire conditions. Specifically, with the release of the new 2025 LRA mapping for Sacramento County, wildfire building codes should be evaluated and updated as required to include enhanced measures to reduce wildfire impacts on new construction, and including the formal adoption of the new LRA maps. Changes in land use and future development may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the location, magnitude, and severity of future wildfire events.

Future Development

Additional growth and development within moderate or higher fire hazard severity zones in the City would normally place additional values at risk to wildfire. However, none of those FHSZs exist in the City. City building codes are in effect and should continue to be updated as appropriate to reduce future impacts.

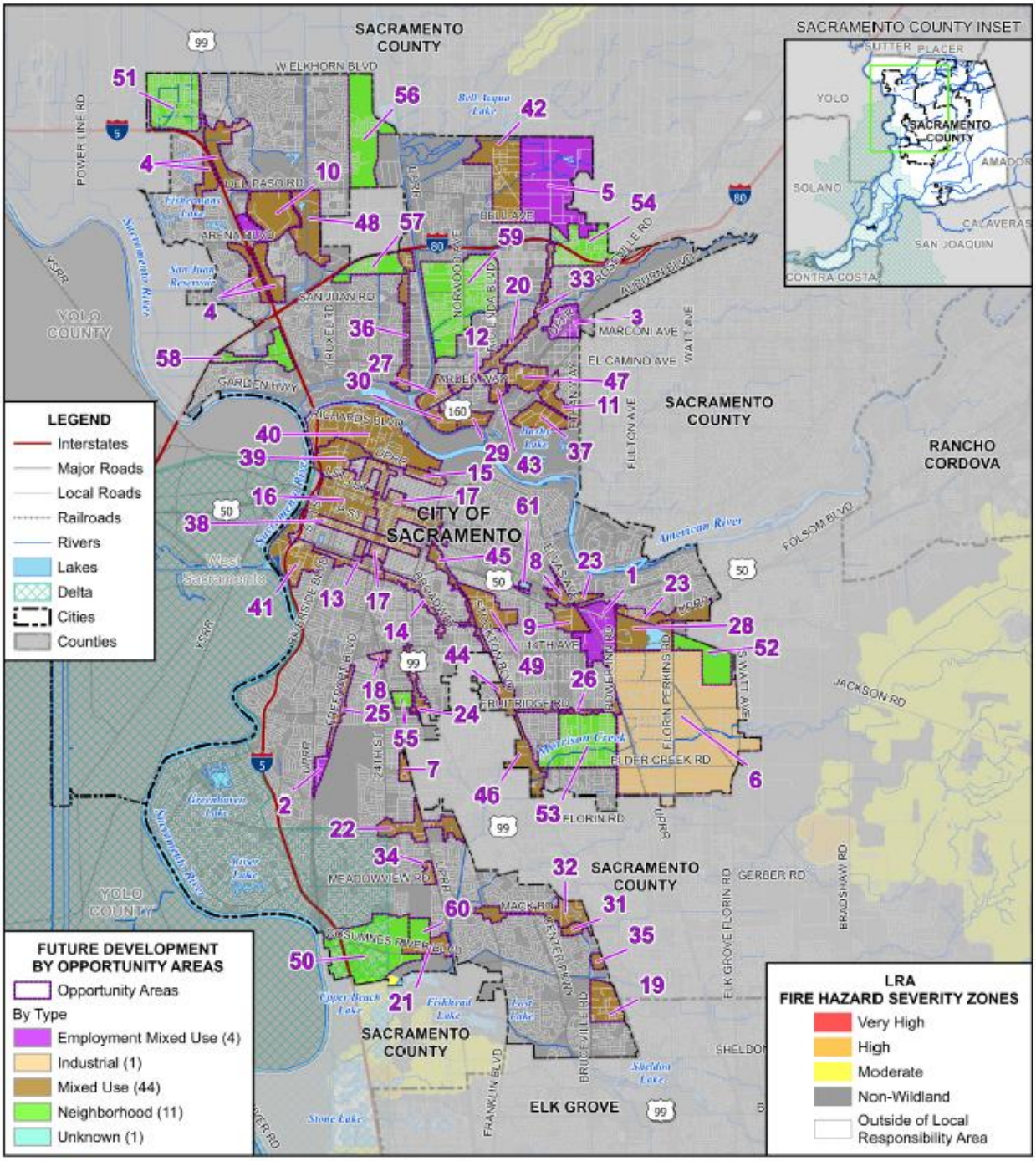
Future development areas and their vulnerability to wildfire are discussed further in the below GIS analysis.

GIS Analysis

The City provided 61 future development areas which were used as the basis for the inventory of future development for the City. These areas were mapped in GIS. Utilizing the future development area spatial layer, the parcel polygon data was intersected to determine the future development areas within each LRA fire hazard severity zone. No future developments fell in the SRA/FRA fire hazard severity zones; as such,

no maps or tabular analysis is presented for the SRA/FRA. Figure F-61 shows the locations of the future development area overlayed on the LRA fire hazard severity zones. As shown in Table F-69, only 1 future development areas fall within areas of Moderate or higher FHSZ.

Figure F-61 City of Sacramento – Future Development Areas in LRA Fire Hazard Severity Zones



Data Source: CAL FIRE (Local Responsibility Area FHSZ 3/2025 FHSZLRA25_v1_All), Sacramento County, Cal-Atlas; Map Date: 7/31/2026.

Table F-69 City of Sacramento – Future Development Parcels and Acres in LRA Fire Hazard Severity Zones

Fire Hazard Severity Zone / Future Development Type / Map ID	Opportunity Areas	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Moderate							
Neighborhood							
50	Delta Shores	7	3	4	47	23	25
Neighborhood Total		**7**	**3**	**4**	**47**	**23**	**25**
Moderate Total		**7**	**3**	**4**	**47**	**23**	**25**

Source: CAL FIRE, City of Sacramento

F.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.

F.5.1. Regulatory Mitigation Capabilities

Table F-70 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 City of Sacramento.

Table F-70 City of Sacramento'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	The 2026-20310 Capital Improvement Program (CIP) is a five-year expenditure plan which provides the City with a financial plan for the funding of infrastructure and facility projects. The program identifies projects to address the City's natural hazards. The 2026-2031 CIP was adopted in June, 2026.
Climate Action & Adaptation Plan	Y	The Climate Action & Adaptation Plan (CAAP), includes a Climate Change Vulnerability Assessment (VA) that identifies existing hazards and includes projections for increased impacts through 2100. The VA underpins the Adaptation Chapter of the CAAP, which includes a range of mitigation actions that support adaptation goals. The CAAP was adopted in February, 2024.
Community Wildfire Protection Plan	N	

Comprehensive/Master Plan	Y	The General Plan identifies hazards within the City. Identified mitigation actions can be implemented from this document. 2024
Continuity of Operations Plan	Y	Essential functions of City staff, relocation strategies, recover and reconstruction strategies have been developed in the event of a disaster. Does not identify mitigation strategies.
Economic Development Plan	N	
Land Use Plan	Y	The General Plan includes a Land Use & Placemaking Element.
Local Emergency Operations Plan	Y	This plan addresses potential hazards that face the community. Mitigation projects are not identified. 2018
Stormwater Management Plan	Y	This program regulates future and current stormwater standards to protect the City against high priority hazards, such as, flooding and severe storms.
Transportation Plan	Y	This City's transportation plan is incorporated into the 2040 General Plan Mobility Element, which includes policy direction for vehicle electrification and supporting transit and active transportation mode shifts, which mitigate greenhouse gas emissions that contribute to increased extreme weather hazards.
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		
Building code	Y	Version/Year: 2025 The Building Code is adequately enforced.
Flood insurance rate maps	Y	Flood insurance rate maps are available for the city, produced by FEMA. The maps show what areas of the city are considered Special Flood Hazard Areas and qualify for standard flood insurance. The City is modeling its internal drainage basins adjacent to levees to submit to FEMA along with our various levee certification packages as the levee improvements Surrounding the City are completed. The FEMA review process has already begun for certain areas of the City and the information submitted will be used to update the flood insurance maps for the City.
Floodplain ordinance	Y	Yes, the ordinance is an effective measure for reducing hazard impacts and is adequately administered and enforced.
Natural hazard-specific ordinance (stormwater, steep slope, wildfire)	Y	Erosion ordinance is an effective measure for reducing hazard impacts and is adequately administered and enforced.
Subdivision ordinance	Y	Yes, the ordinance is an effective measure for reducing hazard impacts and is adequately administered and enforced.
Zoning ordinance	Y	Yes, the ordinance is an effective measure for reducing hazard impacts and is adequately administered and enforced.

Other	Y	Yes, the erosion control program for the region is an effective measure for reducing hazard impacts and is adequately administered and enforced.
How can these capabilities be expanded and improved to reduce risk?		
The City continually evaluates the ordinance requirements of FEMA's CRS program. Improvements are made as needed to reduce risk to people and property. In addition, there is work in early process to update minimum tree planting requirements and other site plan requirements to mitigate extreme heat impacts within and adjacent to new development.		

Source: City of Sacramento

City of Sacramento 2040 General Plan

The City of Sacramento 2040 General Plan serves as a blueprint for future growth and development and provides comprehensive planning for the future. It encompasses what the City currently is and what it intends to be. It provides the general framework to achieve the desired future condition.

The General Plan includes a Public Health and Safety Element that focuses on safety issues to be considered in planning for the present and future development for the City. The General Plan also addresses Environmental Resources which considers climate change and severe weather hazards facing the City. Goals related to mitigation strategies are outlined.

Comprehensive Flood Management Plan (2024)

The City, like other urban areas, faces risks to life and property from many natural and man-made hazards, including fire, earthquake, terrorism, toxic spills, wind, drought, wildfire, and flood. Most notably, of all these risks, flooding poses the greatest threat to the residents of Sacramento.

Given the City's high flood risk and vulnerability, this Comprehensive Flood Management Plan (CFMP) is maintained and implemented by City government to guide the City's flood risk reduction and mitigation efforts. This CFMP, initiated by the City's Department of Utilities (DOU), will serve as the City's strategic plan to reduce flood risk over the next five years (2024-2029). The CFMP is sorted into the following chapters:

- Introduction
- Historical Perspective
- Land Use Planning and Development Guidelines
- Emergency Management
- Levee and Other Structural Improvements
- Internal Drainage Improvements
- Risk Communication
- Levee Security Plan

City of Sacramento Urban Water Management Plan (2020)

An Urban Water Management Plan (UWMP) helps water suppliers assess the availability and reliability of their water supplies and current and projected water use to help ensure reliable water service under different

conditions. This water supply planning is especially critical for California currently, as climate change is resulting in changes in rainfall and snowfall which impact water supply availability and development is occurring throughout the State resulting in increased needs for reliable water supplies. The Urban Water Management Planning Act (Act) requires larger water suppliers that provide water to urban users (whether directly or indirectly) to develop UWMPs every five years. UWMPs evaluate conditions for the next 20 years, so these regular updates ensure continued long-term planning.

Since the City of Sacramento (City) provides water service directly to more than 3,000 connections, it is required to prepare a UWMP.

City of Sacramento Sewer System Management Plan (2025)

The purpose of this document is to provide the Sacramento Area Sewer District Collection System Operations (SacSewer) with a system-wide living management plan for the operation, maintenance, expansion, repair, and replacement of SacSewer's sewer collection system. The scale and complexity of the SSMP, and specific elements, match the size, scale and complexity of the SacSewer's sanitary sewer system. This document intends to be a day-to-day working management plan that also meets Sewer System Management Plan (SSMP) – Required Elements of California's Statewide Waste Discharge Requirements (WDR) for Sanitary Sewer Systems General Order WQ 2022-0103-DWQ.

City of Sacramento Emergency Operations Plan (2025)

The City of Sacramento Emergency Operations Plan (EOP) addresses the planned response for the City of Sacramento to emergencies associated with disasters, technological incidents, or other dangerous conditions created by either man or nature. It provides an overview of operational concepts, identifies components of the City emergency management organization, and describes the overall responsibilities of local, state, and federal entities. It addresses the hazards addressed in the previous 2021 City and County of Sacramento Hazard Mitigation Plan.

Sacramento County Warning and Evacuation Procedures

The City of Sacramento in conjunction with Sacramento County and other incorporated communities have a variety of systems and procedures established to protect its residents and visitors to plan for, avoid, and respond to a hazard event including those associated with floods and other natural disasters. This includes Pre-Disaster Public Awareness and Education information which is major component in successfully reducing loss of life and property in a community when faced with a potentially catastrophic incident. Much of this information is not specific to a given hazard event and is always accessible to the public on local City and County websites, while other information is incident-specific. A general overview of specific warning and evacuation systems and procedures are summarized further below.

Monitoring for Alerts, Watches and Warnings

Emergency officials constantly monitor events and the environment to identify specific threats that may affect their jurisdiction and increase awareness levels of emergency personnel and the community when a threat is approaching or imminent.

The National Weather Service (NWS), a part of the U.S. Department of Commerce's National Oceanic and Atmospheric Administration (NOAA), is the prime agency for detecting meteorological threats, such as floods and severe weather. Severe weather warnings are transmitted through NOAA's Weather Radio System, considered by the federal government as the official source for weather information. Federal agencies can only look at the large scale, (e.g., whether conditions are appropriate for the formation of a thunderstorm.) Local emergency managers can provide more site-specific and timely recognition by sending out NWS trained spotters to watch the skies when the Weather Service issues a watch or a warning. The NWS page for Sacramento County and incorporated communities is accessible through the Sacramento County website.

A flood threat recognition system predicts the time and height of a flood crest. This can be done by measuring rainfall, soil moisture, and stream flows upstream of the community and calculating the subsequent flood levels.

On larger rivers, this measuring and calculating is performed by the NWS. Support for NOAA's efforts is provided by cooperating partners from state and local agencies. Forecasts of expected river stages are made through the Advanced Hydrologic Prediction Service (AHPS) of the NWS. Flood threat predictions are disseminated on the NOAA Weather Wire or NOAA Weather Radio.

On smaller rivers, locally established rainfall and river gauges are needed to establish a flood threat recognition system. The NWS may issue a "flash flood watch." This is issued to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area, but the occurrence is neither certain nor imminent. These events are so localized and so rapid that a "flash flood warning" may not be issued, especially if no remote threat recognition equipment is available. In the absence of a gauging system on small streams, the best threat recognition system is to have local personnel monitor rainfall and stream conditions. While specific flood crests and times will not be predicted, this approach will provide advance notice of potential local or flash flooding.

The City and County EOPs include procedures for threat identification. The City and County work closely with the NWS for issuing an Emergency Alert System (EAS). Additional threat identification mechanisms include:

California Data Exchange Center (CDEC). The CDEC provides information for flood forecasting information at http://cdec.water.ca.gov/. The CDEC installs, maintains, and operates an extensive hydrologic data collection network including automatic snow reporting gages for the Cooperative Snow Surveys Program and precipitation and river stage sensors for flood forecasting.

Automated Local Evaluation in Real Time (ALERT) System. ALERT was created by the NWS to provide continuous and automatic reports from river levels and rainfall gauges detect impending high water levels. ALERT information includes:

- Rainfall Summary
- Stage Summary
- Storm Ready
- Sandbag Information
- Detailed Forecast

- Quantitative Precipitation Forecasts (QPF)
- NWS River Forecasts

The regional ALERT system consists of 2 base stations, and 50 gaging stations. The purpose of the County's ALERT website is to provide real time monitoring information to stage and rainfall information during storm events, which assist in informing the activation of additional warning and potential evacuation of affected areas. This information which can be accessed through links from the City of Sacramento's website to the Sacramento County website includes information for: Stream Level Summaries and Maps; and Rainfall Summaries and Maps. See https://www.sacflood.org/home.php.

Dam Protocols. Should an event trigger the activation of an Emergency Action Plan (EAP) for a potential dam failure, City OEM and County OES receives this information via direct phone calls from the originating source/agency or from Sacramento County Dispatch and/or Cal OES. City OES then follows the notification and evacuation procedures called for in the EOP.

Notifications and Warning Systems

Once a disaster is imminent, action is taken to control the situation, save lives, protect property, and minimize the effects of the disaster. During this phase, warning systems are activated; resources and first responders notified and mobilized; and evacuations begin.

After a threat recognition system tells the emergency management office that a flood, severe weather or other hazard is coming, the next step is to notify the public and staff of other agencies and critical facilities. Providing adequate and timely notification to the public is the greatest challenge, especially with sudden or no-notice events. The earlier and more specific the warning, the greater the number of people that can implement protection measures.

As previously described, the NWS issues notices to the public using two levels of notification:

- **Watch.** Conditions are right for flooding, thunderstorms, or other hazard event.
- **Warning**. A flood or other event has started or been observed.

In coordination with established public safety warning protocols, the activated EOC will manage the dissemination of timely and adequate warnings to threatened populations in the most direct and effective means possible. Depending upon the threat and time availability, the City and County EOCs will initiate alerts and warnings utilizing any of the following methods:

- Activation of the Emergency Alert System (EAS)
- Activation of the Telephonic Alert and Warning
- System (Everbridge and Reverse 911)
- Activation of the Emergency Digital Information System (EDIS)
- Activation of the California Law Enforcement Mutual Aid Radio System (CLEMARS)
- Media broadcast alerts.
- Commercial or public radio or TV stations
  - ✓ Radio: KFBK 1530 am, KSTE 650, KGBY, 92.5 FM
  - ✓ TV: KCRA Channel 3, www.KCRA.com; KXTV Channel 10; KOVR Channel 13; KTXL Channel 40

- NOAA Weather Radio
- www.saccounty.net; SacramentoReady.org websites
- 211/311 Sacramento
- CalTrans 511
- Telephone trees/mass telephone notifications
- Tone activated receivers in key facilities
- Fire and Law enforcement loudspeakers
- Outdoor warning sirens
- Mobile public address sirens/systems
- Door-to-door contact
- Vulnerable population databases
- Email notifications

Multiple or redundant systems are most effective – if people do not hear one warning, they may still get the message from another part of the system. Just as important as issuing a warning is telling people what to do in case of an emergency. A warning program should have a public information aspect that details appropriate warnings and responses.

Sacramento ALERT

The City of Sacramento Police Department in partnership with all public safety agencies within Sacramento, Yolo and Placer counties, use a state-of-the-art emergency alert system known as Sacramento Alert. The system provides information to residents about emergency events quickly and through a variety of communication methods.

The alert system currently includes all listed and unlisted landline telephone numbers in Yolo, Placer, and Sacramento counties that are serviced by AT&T and Verizon.

To ensure emergency notices are received quickly both at work and home, residents are encouraged to log onto the Sacramento Alert Self- Registration Portal and provide phone numbers for both home and work, including land and cell phone numbers, email addresses, TTY device information and instant messaging information.

Residents will only receive alerts that are critical and time-sensitive, including: flooding, levee failures, severe weather, disaster events, unexpected road closures, missing persons, and evacuations of buildings or neighborhoods in specific geographic locations.

The system, which uses Everbridge Alert and Notifications System, was made possible for all three counties by a grant from CAL OES and supported by CA Department of Water Resources, Flood Operations Center.

StormReady

The NWS established the StormReady program to help local governments improve the timeliness and effectiveness of hazardous weather related warnings for the public. The City of Sacramento and Sacramento County are StormReady certified. StormReady communities are better prepared to save live from the onslaught of severe weather through advanced planning, education, and awareness. Being designated a StormReady community by the NWS is a good measure of a community's emergency warning program for weather hazards.

Evacuation and Shelter-in-Place

The principle of evacuation is to move citizens from a place of relative danger to a place of relative safety, via a route that does not pose significant danger. There are six key components to a successful evacuation:

- Adequate warning
- Adequate routes
- Proper timing to ensure the routes are clear
- Traffic control
- Knowledgeable travelers
- Care for special populations (e.g., disabled, hospital patients, school children)

Evacuation planning also considers sheltering options for those that cannot get out of harm's way. Shelters can also serve as a temporary place after the storm for those who have lost their homes.

The City maintains an Evacuation Plan that outline strategies and protocols for medium to high-level (catastrophic) evacuation events. These plans also include procedures for sheltering to provide people affected by a disaster with a safe, temporary place to be housed during or immediately after a disaster until they can either return to their homes or be relocated to other housing facilities. Highlights of these City plans are detailed below.

City of Sacramento Evacuation Plan

The Evacuation Plan is an Annex to the City of Sacramento's Emergency Operations Plan. As such its intent is to support and guide the City's Emergency Managers, Emergency Operations Center staff, and other governmental and non-governmental agencies who would be involved with an Evacuation Event in the City. The Evacuation Plan provides evacuation specific strategy and information that is intended to support but not supplant operational strategy as provided in the City's EOP and Departmental operations plans.

The primary threat that would incite the City to begin an evacuation event is a flood. As such, much of the material was written with flood as the primary concern. The overall evacuation strategy and associated plan details, however, would also serve the City in conducting an evacuation due to other hazards and as such the Plan is intended to provide an all-hazards approach.

The plan is organized such that the first five sections provide quick reference materials to support emergency workers. The plan begins with Section 1 – Triggers and Activation, which details the flood threat triggers that would initiate the opening and staffing of the City EOC, and initiate notification,

evacuation, and sheltering actions that need to take place as the imminent and substantial threat of a flood increases. Section 2 - Roles, Responsibilities, and Resources is meant to support emergency managers with deciding minimal personnel requirements to complete actions defined in the trigger section, who they should seek to fulfill certain roles, and to provide some general notion of resources likely already available for the situation. The next part, Section 3- Emergency Public Notifications, provides the emergency staff with a brief description of each of the notification systems the City has available to notify the citizenry, along with a How To Activate description. Section 4 – Area Evacuation Control by Police Beats, provides evacuation routes for every area of the City as broken out by the Sacramento Police Department Beat maps. Many critical facilities, schools and shelters in each beat are identified. This information is useful both for supporting evacuations out of an area, and supporting evacuees coming into an area. In Section 5 – Care and Sheltering, the community centers and schools that have been assessed as available and ready to support sheltering of people and their pets, and may be assessable to people with disabilities, are listed with contact information.

Evacuation maps, by police beat, are shown. Flood scenarios are also given, and evacuation routing planned for.

Rescue and Evacuation Maps

These maps show the depth of flooding with a 300-foost levee breach, 100-year storm, and running 10 days straight without mitigation. These maps also show the rescue and evacuation areas. The rescue areas show which areas would have 2' of water within an hour. These maps are available online

More information on the importance of including evacuation procedures and maps as part of a sound mitigation strategy can be found in Appendix C to this plan. In addition, Appendix C contains additional information on post mitigation policies and procedures. More information specific to the City can be found in their various other response and recovery plans.

City of Sacramento Post Disaster Mitigation Policies and Procedure

The City of Sacramento EOP, and related documents, are intended to facilitate multi-agency and multi-jurisdictional coordination during emergencies including hazard events. Through it policies and procedures it seeks to mitigate the effects of hazards, prepare for measures to be taken which will preserve life and minimize damage, enhance response during emergencies and provide necessary assistance, and establish a recovery system in order to return the community to their normal state of affairs.

The goal of the recovery phase of an emergency incident or natural disaster is to return the residents, public services and private sector in an impacted area to their pre-disaster state, and through implementation of hazard mitigation measures, seek to prevent, as much as possible, similar damage, destruction or chaos after incidents and disasters in the future. Sacramento policies include objectives, responsibilities and procedures for restoration of services and returning of the affected area to its pre-emergency condition. Mitigation is emphasized as a major component of recovery efforts.

Post-disaster recovery activities are designed to protect public health and safety and facilitate recovery. Appropriate measures include:

- Patrolling evacuated areas to prevent looting
- Providing safe drinking water
- Monitoring for diseases
- Vaccinating residents for tetanus and other diseases
- Clearing streets
- Cleaning up debris and garbage

As the initial and sustained operational priorities are met, emergency management officials consider the recovery phase needs. Short-term and long-term recovery is covered in EOP and related documents. Short-term recovery operations begin during the response phase and include rapid debris removal and cleanup and restoration of essential services to minimum operating standards. Long-term recovery operations work to restore the community to pre-disaster conditions and include hazard mitigation activities, restoration and reconstruction of public facilities, and disaster response cost recovery. Local Assistance Centers and/or Disaster Recovery Centers are opened and damages assessed. Elements of recovery include:

- Windshield survey and documentation of flood impacts
- Safety assessment
- Damage assessments
- Engineering assessments
- Post-flood building entry
- High water marks (also risk communication)
- Code enforcement/triage process
- Permitting process
- Temporary housing
- After action reporting

Regulating Reconstruction

Requiring permits for building repairs and conducting inspections are vital activities to ensure that damaged structures are safe for people to reenter and repair. The NFIP requires that local officials enforce the substantial damage regulations. These rules require that if the cost to repair a building in the mapped floodplain equals or exceeds 50% of the building's market value, the building must be retrofitted to meet the standards of a new building in the floodplain. In most cases, this means that a substantially damaged building must be elevated above the base flood elevation.

Mitigation

Mitigation measures to reduce the risk and vulnerability of a community to future disaster losses can be implemented in advance of a disaster event and also as part of post-disaster recovery efforts. Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. Effective mitigation can break the cycle of disaster damage, reconstruction, and repeated damage. Categories of mitigation measures include prevention, emergency services, property protection, natural resource protection, structural, and public information, many of which are discussed throughout this document.

Additional mitigation elements specific to the Sacramento area are discussed further below.

LHMP

The Federal Disaster Mitigation Act (DMA) of 2000 requires communities to develop an approved Local Hazard Mitigation Plan (LHMP) to remain eligible to apply for certain FEMA Hazard Mitigation Assistance (HMA) grants. Applications submitted for funding from the FEMA HMA grant programs must "be consistent with" the mitigation strategy outlined in the LHMP. Sacramento County and the City of Sacramento are in process with the update of their 2026 LHMP Update. Once complete and adopted, this LHMP update will provide continued eligibility for all participating jurisdictions for FEMA pre- and post-disaster mitigation funding.

Grant Funding

An understanding of the various funding streams and opportunities will enable the communities to match up identified flood mitigation projects with the grant programs that are most likely to fund them. Additionally, some of the funding opportunities can be utilized together. Mitigation grant funding opportunities available pre- and post- disaster include the following:

- FEMA Hazard Mitigation Assistance (HMA) Grants (Pre-disaster Mitigation (PDM), Flood Mitigation Assistance (FMA), and Hazard Mitigation Grant Program (HMGP))
- FEMA Public Assistance Section 406 Mitigation
- Community Development Block Grants
- Small Business Loans
- Increased Cost of Compliance

Climate Action Plan

The City of Sacramento's Climate Action and Adaptation Plan (CAAP) is a crucial step in the City's long-standing efforts to mitigate and adapt to climate change. The CAAP builds off the City's 2012 Climate Action Plan, the City's Climate Emergency Declaration, and incorporates recommendations from the Mayors' Commission on Climate Change. Recent events continue to emphasize the urgent need for climate action. Developed with extensive community engagement, the CAAP will position Sacramento to reduce greenhouse gas (GHG) emissions while adapting to the inevitable impacts that are already taking place.

In order to avoid the most destructive and costly impacts of climate change, the world must achieve carbon neutrality by the middle of this century. With less than 30 years remaining to reach this goal, the CAAP sets new and ambitious targets for the City and identifies key strategies and actions that form the foundation of Sacramento's goal of achieving carbon neutrality by 2045.

City of Sacramento Extreme Heat Plan/Cooling Centers

When summer temperatures rise, staying safe in the heat is critical for Sacramento residents. The City publishes information on its website on how to deal with extreme heat.

> ***It is necessary to take precautions to ensure that you, your friends and family, neighbors, and pets don't suffer the effects of extreme heat. Make sure that you stay hydrated as much as possible and try to limit your activities to indoor areas that are air conditioned to avoid possible heat–related illnesses***

The City has historically followed the County OES Severe Weather Guidance when activating cooling centers. The County criteria for opening one includes temperatures of 105 degrees or more for three consecutive days WITH night time low temperatures of 75 or above. If cooling centers are open at faith-based and other community facilities, the list is posted at 211sacramento.org or is available by calling 2-1-1. Starting Memorial Day weekend of 2021, the City began activating cooling centers when National Weather Service issues an *Excessive Heat Warning*. The County Severe Weather Guidance plan is updated from time to time. The City website contains a complete list of pools and openings.

Ordinances

The City of Sacramento has many ordinances related to mitigation. These ordinances can be primarily or secondarily focused on mitigation.

Ordinances Primarily Focused on Mitigation

Zoning and Land Use Ordinance (Title 17)

This title and its accompanying maps are known as "the comprehensive zoning plan of the City of Sacramento." It is adopted as a further refinement of the land use plan for Sacramento under the provisions of the "Conservation and Planning Law of the State of California." The purpose of these regulations is to do the following:

- Regulate the use of land, buildings, or other structures for residences, commerce, industry, and other uses required by the community;
- Regulate the location, height, and size of buildings or structures, yards, courts, and other open spaces, the amount of building coverage permitted in each zone, and population density, among other things;
- Divide the city into zones of such shape, size, and number best suited to carry out these regulations, and to provide for their enforcement;
- Ensure the provision of adequate open space for recreational, aesthetic and environmental amenities.

These zoning regulations are necessary to:

- Encourage the most appropriate use of land;
- Conserve, stabilize and improve the value of property;
- Provide adequate open space for recreational, aesthetic and environmental amenities;
- Control the distribution of population;
- Promote health, safety and the general welfare.

Subdivision Ordinance (Title 16)

This title is adopted pursuant to Article XI, Section 7 of the California Constitution, and to supplement and implement the Subdivision Map Act, Government Code Section 66410, et seq., and may be cited as the subdivision ordinance of the city. The regulations established by this title are designed to assist in the systematic implementation of the general plan, specific and community plans, the zoning ordinance, and other land use regulations, and to provide for public needs, health and safety, convenience, and general welfare.

Neither the approval nor conditional approval of the tentative map shall constitute or waive compliance with any other applicable provisions of the city code or other applicable ordinances or regulations adopted by the city, nor shall any such approval authorize or be deemed to authorize a violation or failure to comply with other applicable provisions of the city code or other applicable ordinances or regulations adopted by the city. Nothing in these regulations shall be construed to permit the premature or haphazard subdivision of lands in violation of the applicable zoning and land use regulations.

Building Code (Title 15)

The chapters of this title shall be known and referred to as the Sacramento City Building Code, and may be cited as such, and will be referred to as "this code" or "this building code." The purpose of this code is to provide minimum requirements and standards for the protection of the public safety, health, property, and welfare. This code is not intended as a design specification or an instructional manual for untrained persons. This code shall apply to all new construction and to any alterations, repairs, relocations or reconstruction of a building or any portion thereof including any electrical, mechanical, gas, or plumbing equipment installed on any property or used on or within any building.

As part of the construction permitting process, the City requires completed reports of soil conditions at the specific construction sites to identify potentially unsuitable soil conditions including liquefaction, settlement, subsidence, lateral spreading, and collapse. The City requires that these evaluations be conducted by registered soil professionals, and measures to eliminate inappropriate soil conditions must be applied, depending on the soil conditions. The design of foundation and excavation-wall support must conform to the analysis and implementation criteria described in the CBC, Chapters 16, 18, 33, and the appendix to Chapter 33. Adherence to the CBC and City policies contained in the 2035 General Plan would ensure the maximum practicable protection available for users of buildings and infrastructure and their associated trenches, slopes, and foundations.

Floodplain Management Ordinance (Chapter 15.104)

This chapter is designed to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas. This chapter regulates development which is or might be dangerous to health, safety and property by requiring at the time of initial development or substantial improvement methods of protection against flood damage in areas vulnerable to flooding in order to minimize flood damage. This chapter regulates the following developmental impacts: filling, grading or erosion, alteration of natural flood plains, stream channels or water courses, the imposition of barriers which increase flood hazards, or any other impacts that aggravate or cause flood hazards. This ordinance establishes the City's participation in the NFIP, and establishes base flood elevations at 1 foot above the FIRM flood depth for zones A, AH, and AE. In zones AO, the lowest floor will be elevated to one foot above the FIRM flood depth, or two feet above the highest adjacent grade if not depth number is specified.

Since the floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles, and erosion potential, the following provisions apply:

- Prohibit encroachments, including fill, new construction, substantial improvements, and other development unless certification by a registered professional engineer is provided demonstrating that

encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.
- If the above subsection of this section is satisfied, all new construction and substantial improvements shall comply with all other applicable flood hazard reduction provisions of this section.

The local administrator is empowered to issue a variance only for purposes consistent with the objectives of FEMA's floodplain management regulations. However, a variance could affect flood insurance rates and may result in flood insurance premium rates on structures which are beyond the means of the person receiving the variance. FEMA requires the city to make an annual report on any variance which is granted, and if FEMA determines that such variance is inconsistent with the objectives of sound floodplain management, FEMA may take action to suspend the city from the National Flood Insurance Program.

Weed and Rubbish Abatement Ordinance (Chapter 8.28)

In order to reduce wildfire potential in the City, excess weeds and rubbish must be mitigated. Weed and rubbish abatement in the city is performed pursuant to Title 4, Division 3, Part 2 of the Government Code. This ordinance places the fire chief as the code enforcement director.

Stormwater Management Ordinance (Chapter 13.16)

This chapter is known as the Stormwater Management and Discharge Control Code. The purpose of this chapter is to protect and promote the health, safety and general welfare of the citizens of the City by controlling non-stormwater discharges to the stormwater conveyance system, by eliminating discharges to the stormwater conveyance system from spills, dumping, or disposal of materials other than stormwater, and by reducing pollutants in urban stormwater discharges to the maximum extent practicable. This chapter is intended to assist in the protection and enhancement of the water quality of watercourses, water bodies, and wetlands in a manner pursuant to and consistent with the Federal Water Pollution Control Act, Porter-Cologne Water Quality Control Act, and National Pollutant Discharge Elimination System (NPDES) Permit No. CAS082597, as such permit is amended and/or renewed.

Grading and Erosion and Sediment Control (Chapter 15.88)

The City's grading ordinance is enacted for the purpose of regulating grading on property within the city to safeguard life, limb, health, property and the public welfare; to avoid pollution of watercourses with nutrients, sediments, or other materials generated or caused by surface water runoff from construction sites; to comply with the City's National Pollution Discharge Elimination System (NPDES) Permit No. CAS082597 issued by the California Regional Water Quality Control Board; and to ensure that the graded site within the city limits complies with all applicable City ordinances and regulations. The grading ordinance is intended to control all aspects of grading operations within the city.

Ordinances Secondarily Focused on Mitigation

City of Sacramento Tree Preservation Ordinance

The City of Sacramento adopted the Tree Preservation Ordinance to protect trees as they are a significant resource for the community. It is the City's policy to retain trees whenever possible regardless of their size.

When circumstances will not allow for retention, permits are required to remove heritage trees that are within the City's jurisdiction. Removal of, or construction around, trees that are protected by the tree ordinance are subject to permission and inspection by City arborists. The City of Sacramento Tree Service Division reviews project plans and works with the City of Sacramento Public Works during the construction process to minimize impacts to street trees in the City.

Historic Preservation Ordinance

The City of Sacramento's historic preservation program began in 1975 with the enactment of the City's first Historic Preservation Ordinance. The current Historic Preservation Ordinance (No. 2006-063) was enacted in October 2006. The purpose of the Historic Preservation Ordinance is to identify, protect, and encourage the preservation of significant resources; maintain an inventory and ensure the preservation of these resources; encourage maintenance and rehabilitation of the resources; encourage retention, preservation, and re-use of the resources; safeguard city resources; provide consistency with state and federal regulations; protect and enhance the city's attraction to tourists; foster civic pride in the city's resources; and encourage new development to be aesthetically compatible.

F.5.2. Administrative/Technical Mitigation Capabilities

Table F-71 identifies the City department(s) responsible for activities related to mitigation and loss prevention in the City of Sacramento.

Table F-71 City of Sacramento'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	Staff is adequate and trained. Coordination efforts between agencies.
Civil Engineer, including dam and levee safety	Y	Staff is adequate and trained. Coordination efforts between agencies.
Community Planner	Y	Staff is adequate and trained. Coordination efforts between agencies.
Emergency Manager	Y	Staff is adequate and trained. Coordination efforts between agencies.
Floodplain Administrator	Y	Staff is adequate and trained. Coordination efforts between agencies.
GIS Coordinator	Y	Staff is adequate and trained. Coordination efforts between agencies.
Planning Commission	Y	Staff is adequate and trained. Coordination efforts between agencies.
Other		

Technical	Y/N	Has capability been used to assess/mitigate risk in the past?
Grant writing	Y	Many City employees support grant writing efforts. The Department of Utilities has a grant writer on staff in the Business Services Division.
Hazard data and information	Y	Sacramento County Environmental Management runs a hazardous materials program
GIS analysis	Y	GIS tools are used to evaluate critical facility locations in relation to flood hazards as well as areas that should be reserved as open space.
Mutual aid agreements	Y	Mutual aid agreements are maintained but reside with different departments in the City.
Other		
How can these capabilities be expanded and improved to reduce risk?		
The City continually seeks out new grant opportunities to improve and generate new mitigation related activities. The Department of Utility (DOU) Floodplain staff will continue to attend informational meetings to take advantage of any grant opportunities available. DOU Floodplain staff work with a dedicated DOU grant writer.		

Source: City of Sacramento

F.5.3. Fiscal Mitigation Capabilities

Table F-72 identifies financial tools or resources that the City could potentially use to help fund mitigation activities.

Table F-72 City of Sacramento'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	Y	Capital improvement project funds have been used to upgrade and maintain the department's storm drainage, water supply, and wastewater infrastructure to ensure reliable service and mitigation action. This funding will be used annually for future mitigation and reliability projects.
Community Development Block Grant (CDBG)	Y	CDBG funds have been used to support community infrastructure improvements, including storm drainage upgrades. These funds could be used to support future mitigation and resilience activities that benefit low- and moderate-income communities.

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?
Federal funding programs (non-FEMA)	Y	US Department of Housing and Urban Development (HUD) funding, Water Infrastructure Financing Initiative Act (WIFIA), etc. These programs have supported water infrastructure upgrades, wastewater treatment improvements, and energy-efficiency projects. They can continue to be used for eligible mitigation projects that enhance system resilience and reduce long-term operational risk.
Utility rates and fees for water, sewer, storm drainage services	Y	Utility rates and other associated service fees, such as development review costs, are used and can be used in the future.
Impact fees for new development	Y	Development impact fees have and can be used in the future to fund mitigation activities that benefit new development within the City.
State funding programs	Y	Department of Water Resources (DWR) grant and loan programs, Drinking Water State Revolving Fund (DWSRF) loan, etc. State grant and loan programs have been used to support water reliability studies, groundwater sustainability improvements, and stormwater capture projects. They can be used in the future to fund mitigation projects related to drought resilience, flood reduction, and state-mandated system improvements.
Incur debt through general obligation bonds and/or special tax bonds	Y	General obligation bonds and special tax bonds have been used to finance major capital improvement projects such as water treatment upgrades, wastewater facility expansion, and system-wide pipeline replacements. These financing tools can be used in the future to fund large-scale mitigation projects that enhance system reliability, seismic resilience, and long-term infrastructure condition.
Other		
How can these capabilities be expanded and improved to reduce risk?		
Anticipated increases in the City's water and sewer rates will help address rising operational and capital costs, including the price of treatment chemicals, labor, and regulatory compliance. Additional long-term financial planning efforts—such as increasing the use of low interest state and federal loan programs, expanding bond capacity where appropriate, and pursuing regional partnerships—will strengthen the City's ability to fund critical mitigation and resiliency improvements. Enhanced grant application capacity and improved project prioritization will also help the City secure external funding and reduce vulnerability across aging infrastructure systems.		

Source: City of Sacramento

F.5.4. Mitigation Education, Outreach, and Partnerships

Table F-73 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 F-73 City of Sacramento's Mitigation Education, Outreach, and Partnerships

Program/Organization	In Place Y/N	How widespread are each of these in your community?
Community newsletters	Y	Flood preparedness information was included in the Citywide blog, which reaches 200L+ subscribers as well as the City Drop (utilities newsletter), which reaches 80K+ subscribers. Utility bill inserts were sent, which reached another 70K+ mail recipients.
Hazard awareness campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, school programs, public events)	Y	The City of Sacramento has multiple public education campaigns that promote preparedness and mitigation information. The campaigns include: Stormwater Program Flood Fight Preparedness Event – Highwater Jamboree CRS Program for Public Information (Flood) Fire Suppression Fire Safety StromReady Certification
Local news	N	
Organizations that interact with underserved and vulnerable communities	Y	American River Parkway Foundation Certified Emergency Response Teams (CERT)
Social media	Y	Several limited posts featured flood preparedness content.
How can these capabilities be expanded and improved to reduce risk?		
Work with teachers, students, and school administrators to develop a program that addresses natural hazards and preparedness. In addition, the CRS program outreach will continue and seek to be expanded, especially in public education for flooding and levee failure.		

Source: City of Sacramento

F.5.5. Other Mitigation Efforts

The City noted other mitigation efforts that it pursues. These are listed below by hazard.

Aquatic Nuisance Species

DOU uses a combination of chemical and physical control mechanisms to manage aquatic nuisance species. Animal species are managed using a contracted trapper, baiting units, or grouting machine to fill holes on the levees. Plant species may be chemically treated prior to removal or simply removed by DOU Staff.

Climate Change/Sea Level Rise

The City completed a Climate Action & Adaptation Plan (CAAP) that was adopted by City Council in February 2024. The CAAP includes a Vulnerability Assessment (VA) (Appendix G). The CAAP, VA, and supporting documents are available here: https://www.cityofsacramento.gov/community-development/planning/long-range/climate-and-sustainability-planning

Dam Failure

The Folsom Dam Raise project began construction in 2019, and as of 2026 USACE continues Folsom Dam Raise projects by initiating construction on raising the Right and Left Wing Dams, Dikes 1 through 6, and strengthening and top sealing the Main Dam gates and concrete piers. These are completed or in the final stages of completion. The remainder of project components are set to be raised 3.5 feet by 2027.

Drought and Water Shortage

As dry conditions persist throughout the State the City's Department of Utilities is proactively making changes to the way it produces drinking water and is increasing outreach to customers about water use efficiency.

- The City is shifting its drinking water productions to divert less water from the American River and more from the Sacramento River and previously stored water from its groundwater wells. Along with water conservation, this will reduce water diversions on the Lower American River (LAR) by about 30 percent from historic practice, which leaves more water in the river, keeping water levels higher and temperatures cooler to help fish populations.
- City of Sacramento customers currently use an average of 25 percent less water per person than before the drought in 2013, partially because the City has kept a two-day-per-week watering schedule since after the drought emergency ended in 2017.
- The City is asking that residents continue – and increase – their efforts to use water efficiently by following the watering schedule, avoiding water waste and taking advantage of water-efficiency rebates and programs available at SacWaterWise.com. Increased outreach campaigns include radio spots, digital and billboard ads, utility bill inserts and educational webinars.
- The City has increased water patrols that focus on educating residents about using water efficiently and adhering to watering day schedules. Fines will only be issued for egregious violations. If fines are issued, most customers are eligible to have fees waived by participating in City water conservation education and participating in rebate programs.

During the previous 2012-2016 drought the City maintained a reliable water supply, but instituted changes during and after that period to increase reliability.

- The City commissioned a study to model the correlation between river flows on the Sacramento and American River and the level of water above the diversion structures.
- The City commissioned a study to assimilate all physical information about its intakes, including sending divers into submerged areas to take physical measurements, create a three-dimension fluid dynamic model, determine the safety factor between design and likely failure point, and finally to recommend improvements to increase security.
- The City installed vortex breaker devices following those studies to improve hydraulics inside the facility, which allows select pumps to continue to operate at water levels below that seen in history.

- The City installed vibration monitoring technology on all to vortex breaker device to allow select pumps to continue to operate at water levels below diversion pumps to identify any adverse conditions.
- The City returned many groundwater wells to service, and is continuing to reinvest in future wells.

The City also coordinates with USBR so that they know how their release pattern affects our facilities on the Sacramento and American Rivers (particularly minimum release patterns), and so they can make decisions. Partly this is to ensure Reclamation is mindful of the City and its customers, but also to provide Reclamation an understanding of the City's flexibility as they endeavor to meet the myriad of needs in totality of California's water system.

For example, the City needs a minimum flow of 500 cfs on the American to operate the intake. City water rights provide a diversion limitation of 64-100 mgd during low flow conditions on the river and a total limit of 50,000 acre-feet during year when inflow into Folsom Reservoir is particularly low.

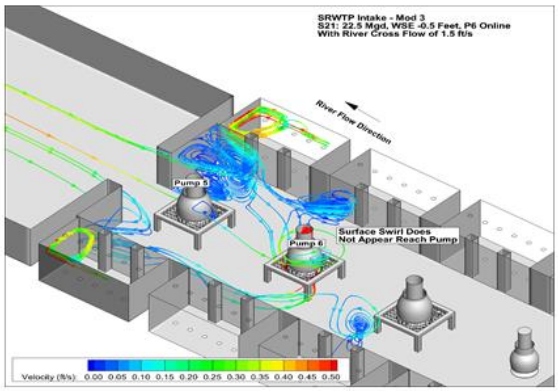
With the resiliency of the City water system, and the desire to benefit the Lower American River, the City will likely reduce its diversion requirements by half of the limiting factors stated above. The EAF Water Treatment Plant facility on the LAR will essentially be idling at a low rate to make sure the City meets level of service needs for its customers.

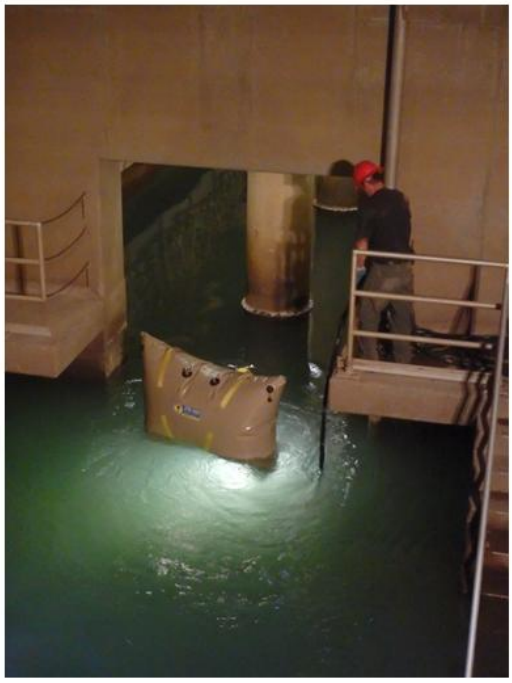
The Sacramento River is more challenging to predict given the tidal influence. In the 2012 – 2016 drought water level at I street dropped to elevation 1-ft Mean Sea Level (MSL) at an approximate river flow of 5000 cfs, which was a foot below design level of the City intake. The facility continued to perform. The facility evaluations suggest the actual point of failure (before installing improvements) is closer to 3600 CFS after removing all safety factors. With improvements (see Figure F-62) select pumps have the potential to operate down to 0.5 feet below MSL. Aside from greater reliance on stored groundwater, the Sacramento River facility is planned to be the lead plant this year. Again, the goal is to meet all the level of service needs of its customers, but utilize operation flexibility to benefit the environment and State/Federal operation of the water system.

The latest release projections by the State/Federal agencies provide for flow patterns that allow operation of City treatment facilities. The City will continue to monitor conditions.

Figure F-62 City of Sacramento – Intake Modifications







Source: City of Sacramento

Flood and Localized Flood

The City has created a Development Services Task Force that meets on a regular basis to discuss the City's floodplain development standards.

The U.S. Army Corps of Engineers (Corps) has constructed improvements to the Florin Creek Channel from Highway 99 to Franklin Boulevard. In addition, Sacramento Area Flood Control Agency (SAFCA) constructed a multi-use detention basin upstream. These improvements will increase the channel capacity and enable the conveyance of 100-year event flood flows within the channel. These public safety improvement projects will reduce the risk of flooding in the area during extreme storm events and ultimately provide financial relief to several-hundred property owners currently subject to mandatory, high-cost flood insurance.

To mitigate winter storms and the flooding associated with them, the Department of Utilities and Department of Public Works perform work year around.

- During the summer, crews assist in maintaining channels, canals and creeks by removing weeds and debris that can impede water flow during winter storms.
- Floodgates are inspected and maintained throughout the City. Also inspected and maintained are drainage inlets, pumps and generators, which are vital tools in removing water from City streets and discharging storm water into local waterways.

- Materials are stored close to floodgates or areas prone to flooding. Not only does this provide easy access to materials when needed, but also it helps City crews to open a sandbag station within two hours of being instructed to do so.
- Drills are held to rehearse floodgate closures to ensure that they can be quickly closed in an emergency.
- The City's 100,000 public trees are pruned on a 10-year cycle and crews respond promptly to calls about trees that may pose a safety hazard.
- During a storm event, extra crews are on-call after hours responding to hundreds of calls to 311.
- Flood Preparedness Week and Annual interagency community event to encourage home and family preparedness, flood protection, floodplain information, evacuation routes and tips, flood warning systems, and sandbag availability

Levee Failure

The City has prepared flood evacuation maps based on levee breach scenarios. These maps can be found online here: https://www.cityofsacramento.gov/utilities/flood-preparedness/evacuation-maps

Severe Weather (all)

The City has a hotline to report downed trees. The City also has a cooling center/warming center plan that was discussed above in Section F.5.1.

Wildfire

The City has an Air Quality Management Plan that can be found at https://www.airquality.org/Communications/Documents/Wildfire%20Emergency%20Plan%20-%20FINAL.pdf. There are also regional SOG's. They can be found at srfecc.ca.gov.

On Call Fuels Crew Program

The Sacramento Fire Department is proposing a Stand-Up for an On-Call Fuels Crew Program.

Program Overview

The Sacramento Fire Department (SFD) On-Call Fuels Crew Program will establish a trained, reliable workforce capable of supporting hazardous fuels reduction, prescribed fire, and wildland fire suppression operations within the City of Sacramento and in mutual-aid support to regional and statewide partners.

This program is designed to stand up in Fiscal Year 2027 and will build on SFD's existing wildland capabilities (Type 3 and Type 6 engines, prescribed-burn experience along the American River Parkway and other open spaces, and participation in California Master Mutual Aid). The On-Call Fuels Crew will provide an additional, scalable pool of qualified personnel who can be mobilized when fuels-reduction project demands or wildfire activity exceed available career staffing.

A core feature of the program is its intentional design as a youth career pathway. The Department will recruit participants primarily between the ages of 18 and 25 through the Diversity, Outreach and Recruitment (D.O.R.) Division, utilizing Strong Workforce Program (SWP) funding, California Opportunity Youth Apprenticeship (COYA) grants, WIOA Youth funding, EDD/workforce development resources, Sacramento City Measure U support, and other available funding mechanisms. These young

adults will gain structured, hands-on experience that develops the skills, qualifications, and professional habits needed for advancement into a career in the fire service.

An On-Call Fuels Crew is generally comprised of 12–20 personnel and includes a Crew Boss (or equivalent supervisor) and Squad Bosses (Firefighter Type 1 or equivalent). Crewmembers may serve in a variety of positions, including Firefighter Type 2 (FFT2), Firefighter Type 1 (FFT1), Sawyer, Saw Swamper, and trainee positions, depending on their qualifications and experience.

Purpose

The purpose of the Sacramento Fire Department On-Call Fuels Crew Program is to provide young adults (primarily ages 18–25) with a structured entry point into the wildland fire and fuels-management workforce while delivering federally recognized (NWCG) entry-level training and practical experience.

Recruited through the Department's Diversity, Outreach and Recruitment (D.O.R.) Division and supported by Strong Workforce Program (SWP) funds, California Opportunity Youth Apprenticeship (COYA) grants, WIOA Youth funding, EDD/workforce development resources, and Sacramento City Measure U investments, participants will develop the knowledge, skills, work ethic, and resilience necessary to advance into career positions within the fire service.

The program creates a ready pool of trained personnel who can support the Department's core missions of hazardous fuels reduction, prescribed fire, and wildland fire suppression. A primary focus will be performing fuels-reduction work in high-priority target hazard areas, including the American River Parkway and other critical open spaces and wildland-urban interface zones within and adjacent to the City of Sacramento.

In addition, the On-Call Fuels Crew will give the Department the capacity to retain and successfully complete fuels-reduction and vegetation-management contracts with PG&E, private companies, and other government agencies, expanding both service delivery and revenue-supported work opportunities.

This workforce model increases the Sacramento Fire Department's ability to protect the community through proactive fuels management while simultaneously building a diverse, disciplined pipeline of future firefighters.

F.6 Mitigation Strategy

F.6.1. Mitigation Goals and Objectives

The City of Sacramento adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

F.6.2. NFIP Mitigation Strategy

Given the flood hazard in the Planning Area, an emphasis will be placed on continued compliance with the National Flood Insurance Program (NFIP) and participation by Sacramento County and the City of

Sacramento in the Community Rating System. Other cities are encouraged to begin participating in the CRS. Detailed below is a description of the City's flood management program to ensure continued compliance with the NFIP.

City of Sacramento's Flood Management Program: Recent Activities

The City of Sacramento has participated in the Regular Phase of the NFIP since September 1978. Since then, the City has administered floodplain management regulations that meet the minimum requirements of the NFIP. Under that arrangement, residents and businesses paid the same flood insurance premium rates as most other communities in the country.

The City of Sacramento submitted applications to participate in the CRS program in December 1990 and again 1992, shortly after its 1990 launch. It is designed to recognize floodplain management activities that are above and beyond the NFIP's minimum requirements. CRS is designed to reward a community for implementing public information, mapping, regulatory, loss reduction and/or flood preparedness activities. On a scale of 10 to 1, the City is currently ranked Class 3.

The activities credited by the CRS provide direct benefits to the City of Sacramento and its residents, including:

- Enhanced public safety;
- A reduction in damage to property and public infrastructure;
- Avoidance of economic disruption and losses;
- Reduction of human suffering; and
- Protection of the environment.

The activities that City of Sacramento implements and receives CRS credits include:

- **Activity 310 Construction Certificate Management**– The Community Development Department (CDD) requires that any new construction or substantial improvement or substantial damaged buildings in the Special Flood Hazard Areas (SFHAs), as applicable. Effective July 1, 2024, new construction and substantial improvements or substantial damage in the A99 zones will require the collection of elevation or floodproofing certificates (floodproofing is only allowed for commercial properties) as specified in Chapter 3 of this Plan update. Currently, the City requires a flood risk acknowledgement agreement (hold harmless) for all developments in A99 zones. The Department of Utilities (DOU) maintains FEMA elevation certificates for new and substantially improved buildings in the SFHA. Copies of Elevation Certificates are made available upon request. The City maintains hard copies in folders at DOU (away from the permit office) and electronically in the City's building permit database.
- **Activity 320 Map Information Service** – The City will continue to provide floodplain and property-specific information to Sacramento residents, property owners, and other interested parties through the DOU office (1395 35th Avenue), as well as over the phone and by email. Telephone and email requests will be responded to within two business days. The City maintains a Floodplain Hotline at 916-808-5061 and a dedicated email address at floodinfo@cityofsacramento.org for floodplain inquiries. City staff provide information regarding FEMA flood zones, local floodplains, and other available flood hazard information for properties within the City. . The City will provide grandfather letters for residents upon request. The City publicizes its Map Information Service annually through its flood preparedness outreach activities and website.

- **Activity 330 Outreach Projects –** The City will continue to conduct annual flood preparedness outreach consistent with its Community Rating System (CRS) Program for Public Information (PPI). Outreach activities provide information on flood hazards, flood insurance, flood preparedness, and actions residents and property owners can take to reduce flood risk. Outreach is conducted through a variety of methods, including annual mailings, targeted outreach materials, outdoor billboards, City communication channels, public information displays, the City's flood preparedness website, and community events such as the annual Highwater Jamboree. The City will continue to evaluate and implement outreach activities consistent with CRS requirements and the City's PPI.
- **Activity 340 Hazard Disclosure**: The State of California requires real estate professionals to disclose certain natural hazards, including whether a property is located within a Special Flood Hazard Area (SFHA), to prospective buyers. The City will continue to provide flood hazard information to real estate professionals and the public through it Map Information Service and other flood preparedness resources.
- **Activity 350 Flood Protection Information** – DOU will continue to provide flood information and education materials to the Sacramento Central Library. The library collection contains materials on natural and beneficial functions, including the National Wetlands Inventory Maps for Sacramento and "Classification of Wetlands and Deepwater Habitats of the United States." The City also continues to provide flood protection information on the DOU website, where it is maintained and updated, and works to increase public awareness of these resources.
- **Activity 360 Flood Protection Assistance** – DOU will continue to provide technical advice and assistance to residents and property owners with individual flood protection needs, including site visits to determine cause of flooding, solutions to local flooding problems, and assistance with flood fights. DOU and CDD will continue to provide information on how to select a contractor and retrofitting structures, and the City will continue efforts to make the public aware of this resource through proper outreach.
- **Activity 410 Additional Flood Data** – The City will continue to conduct new studies that produce base flood elevations or floodways. These studies are usually conducted when flood control improvements are constructed or better data such as hydrology or topography is available that makes the floodplain contours more accurate. Some projects and studies are funded partially by local and state funds. Depending on the circumstance, the City enforces development restrictions on special flood-related hazards that are not mapped on the DFIRMs such as Magpie Creek and the CFMP Rescue and Evacuation Maps. The City signed a Cooperating Technical Partner (CTP) agreement with FEMA Region IX on February 18, 2003. California's Department of Water Resources also signed a CTP with FEMA Region IX on March 4, 2009.
- **Activity 420 Open Space Preservation –** The City's General Plan contains policy to conserve and protect natural resources and planned open space areas. The City will continue to provide open space for the preservation and conservation of natural resources, including riparian forests and grassland vegetation.. The City also protects planned open space areas that support wildlife habitat, working with the County of Sacramento to protect unique physical features. Open space for recreation will continue to be provided, and the American and Sacramento River parkways will be conserved and protected. The City has other open space areas that can also be developed to their recreational use potential. These areas, which include easements, floodways and floodplains, are either: (1) located in a floodplain and in an undeveloped, natural state; (2) have been restored to a natural state; or (3) protect natural and beneficial functions. These areas include the American River Parkway, Del Paso Park, Bannon Creek Parkway, Chorley Park, Laguna Creek, Magpie Creek, Marconi Station Park, and Reichmuth Park. The American River is considered an important resource for protecting and preserving natural and beneficial

functions, including open space, wildlife habitat, recreation, water quality, and the ecological values of the river corridor.

- **Activity 430** – **Higher Regulatory Standards**: The City requires several higher regulatory standards for new development above the minimum NFIP regulations. All new construction or substantial improvements must have the lowest floor, including the basement, elevated one foot above the BFE. Compensatory storage is required for development through the Stormwater Quality Improvement Program (SQIP) hydromodification program. The City maintains a Building Code Effectiveness Grading Schedule (BCEGS) classification of 3/2 and adopted the California State Building Codes in 2007. City Code Section 16.40 requires adequate, positive drainage for all lots. The City requires "non-conversion" agreements for crawl spaces. The City continues to employ staff members who have obtained their Certified Floodplain Manager (CFM) certificate and individuals who have attended credited training courses. The City will continue to encourage staff to obtain this CFM certification and attend more floodplain management training.
- **Activity 440 Flood Data Maintenance –** The City will continue to maintain flood hazard data through its GIS and mapping systems, including Digital Flood Insurance Rate Map (DFIRM) information. This GIS viewer helps improve access, quality, and ease of updating flood data for development and flood insurance purposes. The City maintains current copies of all FIRMs that have been issued for the community, including previous FIRMs and Flood Insurance Study Repots. The City Surveyor also maintains the City's benchmarks, so surveyors completing elevation certificates can find them and obtain accurate information.
- **Activity 450 Stormwater Management –** The City will continue efforts to improve the quality of stormwater runoff and protect receiving water bodies to the maximum extent practicable (MEP) through the City's SQIP. The City will also continue to implement the federally mandated NPDES Stormwater Discharge Permit. The SQIP identifies and measures the effectiveness of best management practices (BMPs) implementation. This program includes implementation of BMPs for construction activities in accordance with the City's Grading, Erosion and Sediment Control Ordinance and associated manual. The Stormwater Program, through low impact development standards and the hydromodification program, requires new developments to implement BMPs such as grassy swales and detention basins to reduce increases of stormwater pollution and peak flows to the MEP. The City and County have a Watershed Management Plan (WMP) that is a tool for reducing flooding caused by development on a watershed-wide basis. A list of all existing drainage master plans is documented in the WMP. This WMP is an appendix to the 2021 Local Hazard Mitigation Plan and will be updated every 5 years. The goal of the drainage master plans listed in the WMP is to provide a higher level of flood protection to the residents of Sacramento. In conjunction with improving the drainage system, the City's overall planning program encourages consideration of water quality; preservation and restoration of natural areas such as wetlands, riparian corridors, streams, and heritage oaks; and public facility enhancements in the master planning process. For example, the staff has identified several opportunities for creation of detention basins that can also serve as public parks.
- **Activity 510 Floodplain Management Planning** – DOU will continue to provide annual progress reporting on the Sacramento County Local Hazard Mitigation Plan consistent with CRS requirements. DOU will continue to map all repetitive loss areas, maintain and update the Repetitive Loss Area Analysis (RLAA), and conduct annual outreach to properties within repetitive loss areas. A spreadsheet of all repetitive loss sites and reasons for flooding is updated annually and used for applying for FEMA grants when appropriate.

- **Activity 520 Acquisition and Relocation –** The City will continue to pursue opportunities, as appropriate and as funding becomes available, to acquire or relocate flood-prone properties within SFHAs, with consideration given to repetitive loss properties.
- **Activity 530 Flood Protection** – The City will continue efforts to floodproof, elevate, or otherwise modify flood-prone buildings to protect them from flood damage.
- **Activity 540 Drainage System Maintenance** – The City, along with other local agencies, will continue to maintain all above-ground channels, basins, canals, ditches, and culverts. Maintenance work includes weeding, clearing, minor repairs, and debris removal. Drainage fees are collected to maintain the local system. The City is aware of problem sites and inspects them on a more frequent basis. Records are maintained for both inspections and regular maintenance. The City has also developed an ordinance for stormwater management and discharge control that prohibits dumping of pollutants in streams. DOU has a CIP that prioritizes/ranks drainage projects and corrects drainage problems.
- **Activity 610 Flood Warning Program –** The State of California has the California Data Exchange Center website, which contains all types of water level gages. The City has an ALERT system, which gages stream and creek levels through six monitoring stations that warn of impending floods. Water levels on the H Street and I Street Bridges are used to determine when to initiate evacuation procedures. The City has 31 sirens located throughout the jurisdiction and also broadcasts emergency notices/warnings on two radio stations. In the event of an evacuation, the City will utilize loudspeakers, reverse 911, law enforcement support and any additional resources, as necessary. These efforts will be led by the City of Sacramento Office of Emergency Management and the County's Office of Emergency Services. Citizens can report issues of flooding by calling 3-1-1 (outside unincorporated county, call: 916-875-4311). Citizens can also sign up for a web-based alert system managed through Sacramento County at Smart911. Sacramento Alert is a web-based application that enables authorized County, City and Special District public safety officials to disseminate public safety information rapidly and efficiently to the residents of Sacramento. Sacramento County is also designated as a StormReady community by NOAA.
- **Activity 620 Levees –** The City will continue to support flood protection projects developed by the SAFCA, DWR, and USACE. The City will continue to assist the DWR in performing its annual levee inspection and maintain the levees in accordance with the O&M plans. The City will continue to monitor levee conditions and open the Department Operation Center (DOC) and/or the Office of Emergency Management's Emergency Operation Center (EOC)when predicted flood levels may be reached or a levee breach may occur. The City will also continue to maintain a list of critical facilities and emergency response plans.
- **Activity 630 Dam Safety –** The City will continue to coordinate with appropriate local, state, and federal agencies on dam safety and participate in emergency planning and response activities related to potential dam failure, including dam failure emergency action plans.

City of Sacramento's Flood Management Program: 5-year Outlook

The following is a description/list of those flood management activities that will be enhanced and/or added over the next five years to show continued compliance with the NFIP

- Continuing in the CRS program, while making an effort to implement new CRS activities to benefit the City of Sacramento and residents.
- Working with more Repetitive Loss properties to mitigate flooding problems and implement the Repetitive Loss Area Analysis
- Adding more restrictions in Building Divisions on building next to a levee and compensatory storage

- Increasing the amount of public outreach by implementing a Program for Public Information
- Implementing the requirements in the State of California's Central Valley Flood Protection Plan
- Improving the City/County's emergency response system
- Implementing flood control projects to better protect property and life safety

More information about the floodplain administration in the City of Sacramento can be found in Table F-74.

Table F-74 City of Sacramento Compliance with NFIP

NFIP Topic	Comments
Staff Resources	
Who is responsible for floodplain management in your community? Provide Department/Title. Do they serve any roles other than Community Floodplain Administrator (FPA)?	Mark Lee, DOU Supervising Engineer, - also functions as DOU Development Review supervisor. Lance Abling, DOU Senior Engineer – City Floodplain Manager Daniel Smith, DOU Assistant Engineer, CFM Remi Mendoza, CDD Principal Planner, CFM – Primary role is Principal Planner in Long Range Planning. KC Channakhone, DOU Administrative Analyst
Is the Community FPA or NFIP Coordinator a Certified Floodplain Manager?	Yes
Is floodplain management an auxiliary function?	No
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	The City reviews permits, provides flood insurance information, GIS support, and many outreach/education projects
What are the barriers to running an effective NFIP program in the community, if any?	The large community size makes communication with all residents difficult. Also, changes in the status of levee certifications have cause major changes in the City's floodplains over the years.
Insurance Summary	
How many NFIP policies are in the community? What is the total premium and coverage?	26,113 policies $17,711,214 in premiums $9,097,506,000 in coverage
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	1,938 paid claims $10,413,040 43 substantial damage claims
How many structures (residential and non-residential) are exposed to flood risk within the community?	34,623 in 1% annual chance floodplain 84,744 in 0.2% annual chance floodplain
Are there Repetitive Loss (RL) and Severe Repetitive Loss Properties (SRL) structures in the community?	64 RL properties 6 SRL properties
Describe any areas of flood risk with limited NFIP policy coverage	The Natomas Basin (A99) is an area within the City that has a relatively low percentage of NFIP policies compared to the number of insurable structures. Overall, of the 34,623 improved parcels within the 1% annual chance flood zone, 17,889 of those parcels maintain flood insurance.

NFIP Topic	Comments
How does the community teach property owners or other stakeholders about the importance of flood insurance?	The City provides flood insurance education through its Flood Preparedness website, a Flood Information hotline, and informational resources available at City facilities. Outreach is also conducted through CRS Program for Public Information (PPI) activities, community events such as the Highwater Jamboree, and participation in other public events and meetings such as Town Hall meetings and Earth Day. Staff also provide flood risk and insurance information through Map Information Service requests.
What digital sources (like the FEMA Map Service Center, National Flood Hazard Layer) or non-regulatory tools does the community use?	The City Flood Preparedness website has information on preparing for a flood and flood maps.
Compliance History	
Is the community in good standing with the NFIP?	Yes
Are there any outstanding compliance issues (i.e., current violations)?	No
Who is responsible (Department, Title) for making substantial damage/improvement determinations? How does the community identify substantially damaged/improved structures? What is the process to make sure these structures are brought into compliance?	Substantial damage and substantial improvement determinations are made by City floodplain management staff during the building permit review process. Projects are identified through the City's building permit system (Accela), where applications within flood hazard areas are reviewed for compliance. Permit conditions are applied as needed to ensure floodplain requirements are met, and building permits are not issued until compliance is confirmed.
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	August 2023
Is a CAV or CAC scheduled or needed?	No. A CAV or CAC is not currently scheduled at this time.
Regulation	
When did the community enter the NFIP?	September 15, 1978
Are the FIRMs digital or paper?	Digital
Has the community adopted the NFIP minimum floodplain management criteria via local regulation? Date of current local regulation?	The City updated its floodplain ordinance compliant with the NFIP minimum management criteria on March 4, 2025.
Has the community adopted the latest effective FIRM? Date adopted?	Yes, we have various panels throughout the City with different FIRM dates. We always use the latest FEMA effective FIRM map. The most recent was in 2024.
How does the community enforce local floodplain regulations and monitor compliance?	Permit system flags permits applied for in floodplain areas. Floodplain staff review the permit and advise the owner of flood protection measures that must be done. Permit is not issued until flood projection requirements are met. Elevation certificates are required in special flood hazard areas.
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Yes, Freeboard and local floodplain requirements

NFIP Topic	Comments
How are Letters of Map Change (LOMCs) tracked and compiled?	Files are saved on our local servers in a folder named LOMC.
Provide an explanation of the permitting process.	Permit system flags permits applied for in floodplain areas. Floodplain staff review the permit and advise the owner of flood protection measures that must be done. Permit is not issued until flood projection requirements are met. Elevation certificates are required in special flood hazard areas.
Community Rating System	
Does the community participate in CRS? If so, what is the community's CRS Class Ranking?	Yes – Class 4
What categories and activities provide CRS points and how can the class be improved?	See list above this table
Does the plan include CRS planning requirements?	Yes

Source: City of Sacramento

F.6.3. Mitigation Actions

The Planning Team for the City of Sacramento 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:

- Aquatic Nuisance Species (plant/animal)
- Climate Change
- Dam Failure
- Drought & Water Shortage (w/tree mortality)
- Earthquake (w/subhazards)
- Flood: 1%/0.5%/0.2% annual chance
- Flood: Localized Stormwater
- Levee Failure
- Sea Level Rise
- Severe Weather: Extreme Cold and Freeze
- Severe Weather: Extreme Heat
- Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)
- Severe Weather: High Winds and Tornadoes
- Subsidence
- Wildfire (with smoke and air quality)

Low priority hazards for mitigation planning include:

- Landslide, Mudslide, Debris Flow

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 City has put forward the actions as shown in Table F-75. Details of the actions can be found below the table. NEED AN ACTION FOR AQUATIC NUISANCE SPECIES AS WELL AS EXTREME COLD

Table F-75 City of Sacramento Mitigation Actions

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Previous Action	X	X		Prevention
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness	Previous Action	X	X	X	Prevention Public Information
Action 3. Watershed Spill Contamination to Drinking Water Quality: Preparedness for Events and Response	Previous Action	X	X	X	Prevention Property Protection Emergency Services
Action 4. Implement the Department of Utilities Sustainability Action Plan	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 5. Evaluation and Mitigation of Critical Facilities in Identified Hazard Areas	Previous Action	X	X	X	Prevention Property Protection Structural Projects Emergency Services
Action 6. Flood Management Land Use Planning and Development	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 7. Levee and Structural Flood Management Improvements	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 8. Secondary Levee Geotechnical Evaluation	New Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 9. Magpie Creek Diversion Project (formerly titled Coordinate with Stakeholder on Proposed Flood Control Project on Magpie Creek)	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 10. Multi-Jurisdictional Modeling for Drainage Watersheds Greater than 10 Square Miles	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 11. Natomas Internal Drainage Canals/Levees	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 12. Implement the Streets for People Active Transportation Plan ("Streets for People")	New Action	X	X		Prevention Emergency Services
Action 13. Implement the Sacramento Transportation Infrastructure Adaptation Plan ("SacAdapt")	New Action	X	X	X	Prevention Property Protection Emergency Services
Action 14. Implement the Sacramento Urban Forest Plan	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 15. Purchase Drones for Use in Disaster Preparedness, Mitigation, and Response	Previous Action	X	X	X	Prevention Emergency Services
Action 16. Flood Fight Equipment	Previous Action	X	X	X	Prevention Emergency Services
Action 17. Tree Trimming / Debris Removal	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 18. Stabilization of Erosion Hazard Areas	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 19. Adopt Additional Floodplain Development Standards	Previous Action	X	X	X	Prevention Property Protection
Action 20. Develop a Disaster Housing Plan	Previous Action	X	X	X	Emergency Services

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 21. Drainage Projects for Repetitive Loss Properties	Previous Action	X	X	X	Property Protection Structural Projects
Action 22. Participation in the National Flood Insurance Program (NFIP) and Community Rating System (CRS) Program	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection Emergency Services Public Information
Action 23. Flood Recovery Planning	New Action	X	X	X	Emergency Services
Action 24. Retrofit Historical Buildings	Previous Action	X	X		Property Protection Structural Projects
Action 25. Drainage Projects from the City's Priority Drainage Project List	Previous Action	X	X	X	Property Protection Structural Projects
Action 26. St. Lucs Detention Basin (formally Florin Creek Pump at Pomegranate Avenue)	Previous Action	X	X	X	Property Protection Structural Projects
Action 27. Internal Drainage System Improvements	Previous Action	X	X	X	Property Protection Structural Projects
Action 28. Retrofit Pumping Plants with Discharge Monitoring Devices	Previous Action	X	X	X	Prevention Property Protection
Action 29. Flood Risk Communication and Public Outreach	New Action	X	X	X	Emergency Services Public Information
Action 30. Implement the Climate Action & Adaptation Plan	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection Public Information

Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan

Hazards Addressed: Multi-hazard (Aquatic Nuisance Species (plant/animal), Climate Change, Dam Failure, Drought & Water Shortage (w/tree mortality), Earthquake (w/subhazards), Flood: 1%/0.5%/0.2% annual chance, Flood: Localized Stormwater, Levee Failure, Sea Level Rise, Severe Weather: Extreme Cold and Freeze, Severe Weather: Extreme Heat, Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind), Severe Weather: High Winds and Tornadoes, Subsidence, Wildfire (with smoke and air quality))

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

Issue/Background (Problem Statement): Local jurisdictional reimbursement for mitigation projects and cost recovery after a disaster is guided by Government Code Section 8685.9 (Assembly Bill (AB) 2140). For eligible Public Assistance projects, the typical local (non-federal) cost share is 25% of the total project

cost. Th California Disaster Assistance Act (CDAA) can allow the state to pay up to 18.75% of the non-federal share that would otherwise fall to the county or city. Upon approval of the legislature, counties and cities that are AB 2140 compliant are also eligible to be considered for the remaining 6.25% local share to be funded by the state, essentially covering the entire local-share cost for eligible Public Assistance projects.

Project Description: AB 2140 compliance requires that each applicable jurisdiction (counties and cities) adopt the 2026 Sacramento County Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP) as part of the Safety Element of its General Plan in accordance with the CDAA and Cal OES AB 2140 guidance. Adoption of the LHMP into the Safety Element of the General Plan may be by reference or incorporation. The current approved LHMP must be easily accessible and available to the public viewing the Safety Element.

Other Alternatives: No action

Existing Planning Mechanisms through which Action will be Implemented: Safety Element of General Plan

Responsible Office/Partners: City of Sacramento Planning Department in coordination with Sacramento County.

Benefits (Losses Avoided): Incorporation of an adopted LHMP into the Safety Element of the General Plan will help counties and cities maximize the cost recovery potential following a disaster.

Potential Funding (Local Budgets, Grant Funds, etc. by specific Type): Local budgets

Timeline: In conjunction with and/or within 1 year of adoption of the 2026 Sacramento County Multi-Jurisdictional LHMP Update

Project Priority: High

Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness

Hazards Addressed: Multi-hazard (Aquatic Nuisance Species (plant/animal), Climate Change, Dam Failure, Drought & Water Shortage (w/tree mortality), Earthquake (w/subhazards), Flood: 1%/0.5%/0.2% annual chance, Flood: Localized Stormwater, Levee Failure, Sea Level Rise, Severe Weather: Extreme Cold and Freeze, Severe Weather: Extreme Heat, Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind), Severe Weather: High Winds and Tornadoes, Subsidence, Wildfire (with smoke and air quality))

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

Issue/Background (Problem Statement): The City and County play a key role in public outreach/education efforts to communicate the potential risk and vulnerability of their community to the effects of natural hazards. A comprehensive multi-hazard public education program will better inform the

community of natural hazards of concern and actions the public can take to be better prepared for the next natural disaster event.

Project Description: A comprehensive multi-hazard outreach program will ascertain both broad and targeted educational needs throughout the community. The City will work with the County and other agencies as appropriate to develop timely and consistent annual outreach messages in order to communicate the risk and vulnerability of natural hazards of concern to the community. This includes measures the public can take to be better prepared and to reduce the damages and other impacts from a hazard event. The public outreach effort will leverage and build upon existing mechanisms.

Other Alternatives: Continue public information activities currently in place.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Existing City and County outreach programs will be reviewed for effectiveness and leveraged and expanded upon to reach the broader region.

Responsible Office/Partners: Office of Emergency Management, City of Sacramento in partnership with the County

Benefits (Losses Avoided): Increase residents' knowledge of potential hazards and activities required to mitigate hazards and be better prepared. Protect lives and reduce damages, relatively low cost to implement.

Potential Funding (Local Budgets, Grant Funds, etc.): Local budgets (City General Fund, special revenue funds, CIP funding, staff time), CA DWR grants, Cal OES/FEMA grants (PDM, HMGP, FMA), or other funding sources.

Timeline: To be initiated within 1-2 years; Ongoing/Annual public education, outreach, and awareness campaign

Project Priority (High, Medium, Low): High

Action 3. Watershed Spill Contamination to Drinking Water Quality: Preparedness for Events and Response

Hazards Addressed: Multi-hazard (Climate Change, Dam Failure, Drought & Water shortage, Earthquake (w/subhazards), Floods: 1%/0.2% annual chance (w/levee failure), Floods: Localized Stormwater, Severe Weather: Extreme Cold and Freeze, Sea Level Rise, Severe Weather: Extreme Heat, Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind), Severe Weather: High Winds and Tornadoes, Subsidence, and Wildfire (w/smoke and air quality))

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

Issue/Background (Problem Statement): When utilizing surface water as a source of drinking water, the source water is potentially vulnerable to watershed spills that can enter the supply. Watershed spills can be caused or contributed to by natural hazards. Spills have the potential to impact source water quality and therefore water treatment plant operations. Changes in source water quality may necessitate a response

action by Water Quality Lab staff and Operations personnel at a drinking water treatment plant. Actions include implementing an increased level of treatment, alternate treatment, or avoiding diversion altogether. Both during a spill and after a watershed spill has ended, it is important to determine if there is residual contamination in the surface water and if the water treatment plant intakes and treatment facilities have been impacted. There could be a wide range of contaminants released in watershed spills, including petroleum products from fuel spills, a wide range of synthetic chemicals, and those associated with wastewater such as bacteria, viruses, and protozoa. This contamination may constitute a hazard to public health for regulated and unregulated water quality contaminants.

Project Description: Provide resources and education to support water utility preparedness and response planning for chemical and wastewater hazardous spills in the watersheds upstream of water treatment plant intakes. This includes development of information and resources to be used by Water Quality Lab staff and Operations personnel to identify the potential impacts of the spill, conduct emergency exercises, plan coordination with emergency response agencies regarding environmental mitigation and cleanup, and update information and resources for water treatment facilities and treatment recovery. Project may also include incident response readiness training and providing supplies to support spill response related to impacts to the drinking water treatment facilities.

Other Alternatives: Continue to update and develop resources to support City of Sacramento Water Treatment Plant Operations and continue to share information with other Sacramento and American River water utilities. Continue to coordinate and manage the Lower American River and Sacramento River Water Utilities Spill Notification Program.

Existing Planning Mechanism(s) through which Action Will Be Implemented: City of Sacramento Department of Utilities Source Water Protection. City of Sacramento Department of Utilities Water Quality Laboratory Water Quality Incident Response Plan development project with City of Sacramento Department of Utilities, Water Division Operations.

Responsible Office/Partners: City of Sacramento Department of Utilities, Engineering and Water Resources Division, Environmental and Regulatory Compliance Section, Water Quality Lab and Research & Development, and Water Division Operations/Other Local Drinking Water Utilities that Treat Lower American River and Sacramento River water

Project Benefits (Losses Avoided): Protection of public health, reducing cost for emergency response or other alternate water supplies.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Grant, to be determined to advance the program. Local budgets support current activities, which are funding through the City of Sacramento's water fund and a regional cost-share with other regional drinking water agencies.

Timeline: 2 to 5 years

Project Priority (High, Medium, Low): High

Action 4. Implement the Department of Utilities Sustainability Action Plan

Hazards Addressed: Climate Change (and all the hazards related to it), Sea Level Rise

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

Issue/Background (Problem Statement): Climate change, driven by anthropogenic greenhouse gas emissions, is creating multiple changes to Sacramento's climate. The climate change impacts projected for the Sacramento Valley Region will increasingly threaten Department of Utilities' infrastructure, operations, and services, as well as potential impacts to transportation corridors, city economic performance, and community safety.

Most notable among climate change impacts include:

- Precipitation changes, with more precipitation falling as rain rather than snow; reduced snowpack; more extreme precipitation events; increased flood risk; increased drought conditions; and disruptions to available water supply
- Temperature increases, which contributes to more frequent and extreme heat waves; exacerbate urban heat island effect; increase warm nights; increase source water temperatures; sea-level rise, and negatively impact air quality.
- Increased wildfire incidence regionally, with wildfire smoke negatively impacting air quality in Sacramento and contributing to soil erosion and water quality impacts upstream from Sacramento.

Project Description: The Sustainability Action Plan documents existing department efforts and provides climate change mitigation, adaptation, and resilience strategies to reduce department GHG emissions, preparing the Department of Utilities for climate-related impacts to operations and infrastructure. These efforts are vital to maintaining critical water, wastewater, and drainage services to the community and safeguard our regional water resources.

Areas of focus include increasing energy reliability and efficiency, planning for water supply and water quality impacts and reliability, advancing infrastructure resilience and sustainability, supporting and furthering water efficiency and conservation efforts, implementing green infrastructure, and fostering collaboration on regional climate resilience projects.

Other Alternatives: The alternative is non-action and an uncoordinated, retroactive response to climate change impacts.

Existing Planning Mechanism(s) through which Action Will Be Implemented: The Sustainability Action Plan incorporates many implementation projects and plans across the departments, city, and region.

- Department mechanisms, including the Urban Water Management Plan, Water+ Treatment Plants Resiliency and Improvements Project, Water Master Plan, Water Efficiency and Conservation Plan, Energy Management Plan, Comprehensive Flood Management Plan, Combine Sewer System Improvement Plan, and Drainage Master Plan.
- City mechanisms, including General Plan, Climate Action and Adaptation Plan, Sacramento Transportation Adaptation Plan, and Urban Forestry Plan.

- Regional mechanisms, including Sacramento Regional Water Authority Watersheds Resilience Plan, Sacramento Regional Water Authority Regional Water Bank Project, and RiverArc Project.

Responsible Office/Partners: Department of Utilities, in partnership with Public Work Department, Community Development Department, Office of Emergency Management, Sacramento Municipal Utilities District, Sacramento Area Sewer District, Regional Water Authority, U.S. Army Corps of Engineers, Sacramento Water Forum, Sacramento Regional Water Authority, Sacramento Groundwater Authority, Sacramento Area Flood Control Agency, Sacramento Storm Water Partnership, University of California-Sacramento-Office of Water Programs.

Project Benefits (Losses Avoided): Climate change increases the likelihood and extent of impacts from most other hazards. Therefore, implementation of the DOU Sustainability Action Plan can be expected to help avoid losses that would occur in relation to many of the hazards identified in this annex, including safety, health, and economic impacts.

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

- Local funding, including Department water, wastewater, drainage operating budgets; Sustainability operating budget and Multi-year Operating Project funding, Capital Improvement Program funding, and staff time.
- Grant funding, including FEMA's Hazard Mitigation Grant Program, Pre-Disaster Mitigation Grant Program, Building Resilient Infrastructure and Communities, and Flood Mitigation Assistance.
- State of California funding, including Storm Water Grant Program, Urban Greening Grant Program, Water Reuse and Recycling Grant Program, Distributed Energy Backup Asset Program, Greenhouse Gas Reduction Fund, and Transformative Climate Communities.

Timeline: 2-5 years and ongoing

Project Priority (High, Medium, Low): High

Action 5. Evaluation and Mitigation of Critical Facilities in Identified Hazard Areas

Hazards Addressed: Multi-Hazard: Flood, Dam Inundation, Levee Failure, Sea Level Rise, Wildfire

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

Issue/Background (Problem Statement): Based on the critical facility analysis completed for this plan, the City of Sacramento maintains more than 2,300 mapped critical facilities across essential services, at-risk populations, and hazardous materials and solid waste facilities. A significant portion of these critical facilities are located within identified flood hazard zones and dam inundation areas (some of these may be exacerbated by sea level rise). The City's updated GIS analysis shows that many critical facilities intersect the FEMA mapped Special Flood Hazard Area (SFHA) associated with the 1 percent annual chance flood, as well as the broader 0.2 percent annual chance floodplain. In addition, nearly the entire incorporated area of Sacramento lies within the dam inundation zone for Folsom Dam. Risk to critical facilities due to wildfire is less severe, however still present, and is mapped and analyzed by Fire Hazard Severity Zone and varying Fire Threat Areas.

The vulnerability assessment indicates that exposure of critical facilities to flooding and wildfire remains a substantial concern due to the potential for widespread impacts to emergency services, transportation systems, utilities infrastructure and facilities serving vulnerable populations. Although improvements in flood management, levee systems and dam safety have reduced likelihood of catastrophic failure, the overall risk for critical facilities remains high. Further evaluation is necessary to determine the vulnerability of each facility and identify opportunities for structural or operational mitigation.

Project Description: This project addresses the additional evaluation of identified critical facilities to determine options for mitigation. The initial focus will be on those facilities within the flood hazard areas, with other hazard-prone facilities to follow. The end result of this analysis will be a list of facilities within the 100- and 500-year floodplain and their mitigation recommendations and priorities.

Other Alternatives: Remove or relocate all critical facilities from hazard areas or no action.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This will be implemented through existing floodplain management programs. Protection of critical infrastructure are supported by City Ordinance 2020-0009.

Responsible Office/Partners: Department of Utilities Floodplain Management

Project Benefits (Losses Avoided): Risk reduction for critical facilities identified for mitigation.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): City of Sacramento Grant Funds

Timeline: 5 years and ongoing

Project Priority (High, Medium, Low): High

Action 6. Flood Management Land Use Planning and Development

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance, Localized Flooding, Levee Failure, Heavy Rains and Storms

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

Issue/Background (Problem Statement): Both land use planning and development guidelines are implemented using the City's zoning, building, and subdivision codes. The City is currently implementing various federal, state, and local mandates for land use planning and development.

Project Description: Implementation of the land use planning and development action items outlined in the City of Sacramento's Comprehensive Flood Management Plan, General Plan, and Climate Action & Adaptation Plan. Highlighted projects include 200-year floodplain ordinance and projection plan, development guidelines for rescue and evacuation areas, City Code update for new development adjacent to levees.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Implementation of the Comprehensive Flood Management Plan, General Plan, and Climate Action & Adaptation Plan

Responsible Office/Partners: City of Sacramento Department of Utilities and Community Development Department

Project Benefits (Losses Avoided): These actions would decrease the number of structures at risk from flooding and an increased in levee and structure protection measures.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Local funding including City of Sacramento General Fund, staff time.

Timeline: Within 5 years

Project Priority (High, Medium, Low): High

Action 7. Levee and Structural Flood Management Improvements

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance, Localized Flooding, Levee Failure, Heavy Rains and Storms

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

Issue/Background (Problem Statement): The City of Sacramento works alongside the Sacramento Area Flood Control Agency, US Army Corps of Engineers, Central Valley Flood Protection Board, Reclamation District No. 1000, Maintaining Agency 9, American River Flood Control District, and others to implement and maintain flood control projects that protect the City.

Project Description: Implementation of the levee and structural improvement action items outlined in the City of Sacramento's Comprehensive Flood Management Plan. Highlighted projects include support of local efforts to improve flood facilities, plan and implement modernization phase of levee accreditation and ULDC, and participate in the Regional Flood Management Plan.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Implementation of the Comprehensive Flood Management Plan

Responsible Office/Partners: City of Sacramento Department of Utilities, Community Development Department, SAFCA

Project Benefits (Losses Avoided): These projects would decrease the loss of life and property and decrease the number of flood insurance claims.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Local funding including Sacramento Area Flood Control Agency and City of Sacramento General Fund, Capital Improvement Program funding, staff time. Grant funding including: FEMA's Hazard Mitigation Grant Program, Pre-

Disaster Mitigation Grant Program, Building Resilient Infrastructure and Communities, and Flood Mitigation Assistance. State of California funding potentially including the Systemwide Flood Risk Reduction Program, Flood Maintenance Assistance Program, and the Urban Flood Risk Reduction Program.

Timeline: Within 1 year and ongoing

Project Priority (High, Medium, Low): High

Action 8. Secondary Levee Geotechnical Evaluation

Hazards Addressed: Flooding

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

Issue/Background (Problem Statement): The secondary embankment/levee is approximately 5.8 miles in length and currently includes twelve manual gates that can be closed to protect the city if a levee failure occurred only on the American River south levee.

Project Description: No geotechnical evaluation was part of this initial secondary levee evaluation. A geotechnical investigation is recommended to determine if the embankment would be adequate to hold floodwater.

Other Alternatives: Identify and implement improvements to increase the secondary levee's reliability, such as stabilization, armoring, seepage controls, or embankment improvements.

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

Responsible Office/Partners: City of Sacramento, Department of Utilities, Department of Public Works

Project Benefits (Losses Avoided): The project would improve understanding of the secondary levee's ability to withstand flood conditions and identify potential deficiencies related to embankment stability, seepage, and erosion. The evaluation would support informed decisions regarding future maintenance, rehabilitation, or improvements, helping reduce the potential for levee failure and associated flood damage. The project would also improve the community's ability to prioritize flood risk reduction investments and enhance the reliability of the secondary levee system.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA grants, DOU

Timeline: On-going

Project Priority (High, Medium, Low): Medium

Action 9. Magpie Creek Diversion Project (formerly titled Coordinate with Stakeholder on Proposed Flood Control Project on Magpie Creek)

Hazards Addressed: Flooding

Issue/Background (Problem Statement): Since the early 1990s, SAFCA has been working with USACE and CVFPB to improve the Magpie Creek Diversion Channel (MCDC) and levee to reduce the risk of overflow into the historic Magpie Creek floodplain downstream of the diversion channel. This effort has focused on a combination of floodplain storage and levee rehabilitation improvements that would be carried out as part of the American River Common Features General Reevaluation Report (ARCF GRR).

Project Description: The original scope of work of the project included about 1 mile of levee raise, levee extension along Magpie Creek, 80 acres of floodplain preservation, update to design standard for Magpie Creek to provide access roads, levee alignment shift of the new levee extension, channel vegetation clearing, channel widening, real estate acquisition for channel area and flowage easements, maintenance and operability provisions and hardening of levee including addition of riprap at overtopping areas.

USACE has informed non-federal sponsors that scope of work has been reduced to exclude key flood control features such as levee raises, levee extensions and channel widening due to upstream impacts. SAFCA would like USACE to continue with reduced scope of work including channel clean-out, access road construction, levee hardening and acquiring 80 designated acres for flowage easements.

This mitigation action may include alternative analysis or to identify potential mitigation of upstream impacts as a result of activities and features excluded from existing scope of work.

Other Alternatives: Allow Magpie Creek diversion channel to overtop and resultant floodplain to be mapped into Special Flood Hazard by FEMA.

Existing Planning Mechanism(s) through which Action Will Be Implemented: US Army Corps of Engineers (USACE), Sacramento District, General Reevaluation Report (GRR)

Responsible Office/Partners: Sacramento Area Flood Control Agency (SAFCA), USACE, County of Sacramento Department of Water Resources, City of Sacramento Department of Utilities

Project Benefits (Losses Avoided): Risk reduction and flood insurance relief for residents and property in historic Magpie Creek floodplain.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): SAFCA/Grants/City of Sacramento

Timeline: 5 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 10. Multi-Jurisdictional Modeling for Drainage Watersheds Greater than 10 Square Miles

Hazards Addressed: Flooding

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

Issue/Background (Problem Statement): The City of Sacramento encompasses several streams, creeks and associated watersheds. The majority of these watersheds drain into the City from the County of

Sacramento. Some of the major drainage watersheds in the City are identified as Natomas Area Stream Group, American River Stream Group, Sacramento Stream Group, and Natural Stream Groups. These groups are identified in the County of Sacramento Watershed Management Plan (2011).

Project Description: Development of a series of unified models for each watershed that extends over jurisdictional lines. The models would be maintained to reflect changes to the watershed, including development.

The Natomas Basin-wide Hydraulic model is under development and being coordinated between RD1000, County of Sacramento and City of Sacramento.

The City and County of Sacramento and SAFCA have been presented a proposal to combine and modify existing models in the Morrison Creek watershed to prepare an updated comprehensive model to evaluate future proposed system drainage improvements.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento Area Flood Control Agency Coordination Group

Responsible Office/Partners: SAFCA, Sacramento County Department of Water Resources, City of Sacramento Department of Utilities

Project Benefits (Losses Avoided): Comprehensive models to evaluate development impacts and foster greater flood control planning.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Cost share between responsible partners

Timeline: 5 years and ongoing

Project Priority (High, Medium, Low): High

Action 11. Natomas Internal Drainage Canals/Levees

Hazards Addressed: Flooding and Levee Failure

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

Issue/Background (Problem Statement): In 2006, the federal government determined that the levees on the perimeter of the Natomas Basin were no longer providing 100-year flood protection. In December 2008, FEMA remapped the Natomas Basin into AE flood zone with a 33-foot base flood elevation. This caused an in-situ building moratorium in Natomas.

In 2014, the Sacramento Area Flood Control Agency (SAFCA) and California Department of Water Resources (DWR) finished improving 18 miles of levees up to 200-year level of protection on the Natomas Cross Canal and the Sacramento River. This allowed for the City of Sacramento, Sacramento County, and

Sutter County to apply to FEMA for an A99 flood zone in Natomas. The new Flood Insurance Rate Maps (FIRMs) with an A99 flood zone became effective on June 16, 2015.

Project Description: Certify the Natomas Internal Drainage Canals/Levees to the 100-year level. City of Sacramento Department of Utilities currently has a contract with KSN to provide the evaluation and recertification package of the interior levees in the Natomas Basin. Draft results from the evaluation show limited reaches of interior levee do not meet FEMA criteria for freeboard and/or underseepage. Additional analysis may be required to identify tasks required to achieve FEMA certification for reaches that do not meet criteria.

City of Sacramento Department of Utilities, KSN and Civil Engineering Solutions to work with FEMA during review process of basinwide hydraulic model to discuss mapping of interior basin if not all reaches of interior levee may meet FEMA criteria.

Other Alternatives: No action. Map areas of Natomas Basin into the Special Flood Hazard Area.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento Area Flood Control Agency Coordination Group

Responsible Office/Partners: City of Sacramento Department of Utilities, County of Sacramento Department of Water Resources, RD1000

Project Benefits (Losses Avoided): Reduce area mapped into Special Flood Hazard Area which reduces residents' flood insurance costs.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): City of Sacramento Department of Utilities Floodplain Management MYOP, Grants, RD1000

Timeline: 1-3 years

Project Priority (High, Medium, Low): High

Action 12. Implement the Streets for People Active Transportation Plan ("Streets for People")

Hazards Addressed: Multi-Hazard: Extreme Heat, Localized Flooding, Levee Failure, Wildfire

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

Issue/Background (Problem Statement): Pedestrians and cyclists are particularly vulnerable during extreme weather events (like extreme heat and localized flooding from storms); providing a network that can adapt to extreme heat and localized flooding would allow the network to continue to be utilized during and after extreme weather events.

During extreme weather events and other emergencies – e.g., levee failure, wildfire, other extreme weather events – pedestrian and bicycle facilities serve as important evacuation routes (especially for individuals without access to a personal vehicle).

Additionally, filling gaps in the off-road, shared-use path network increases evacuation routes, provides additional access for emergency vehicles and workers, and provides access for other mitigation work such as fuel reduction.

Project Description: The Streets for People Plan includes strategies to design and construct new pedestrian and bicycle facilities, improve and maintain existing infrastructure, and integrate climate resilient features (like increasing tree canopy cover).

Other Alternatives: No action

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

- Transportation Priorities Plan
- Street design standards
- Corridor plans

Responsible Office/Partners: Lead: Public Works

Support: DOU, YPCE

Project Benefits (Losses Avoided): Increase evacuation options and year-round resilience of pedestrian and bicycle facilities

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Measure A, CIP project budgets, Operating budgets from Public Works. Grants to fund transportation planning and construction.

Timeline: Within 1 year and ongoing

Project Priority (High, Medium, Low): High

Action 13. Implement the Sacramento Transportation Infrastructure Adaptation Plan ("SacAdapt")

Hazards Addressed: Multi-Hazard: Extreme Heat, Severe Wind, Severe Rain, Localized Flooding, Levee Failure

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

Issue/Background (Problem Statement): Climate change is increasing the severity and intensity of extreme weather events, including extreme heat, severe wind, severe rain, localized flooding and the risk of levee failure. Access and continuity of the transportation system during extreme weather events is critical for maintaining community resilience and essential services.

The Sacramento Transportation Infrastructure Adaptation Plan ("SacAdapt") outlines strategies to increase resilience of the Sacramento's transportation system.

Project Description: The SacAdapt plan includes strategies to:

- Consider evacuation needs in planning
- Create built environments resilient to the impacts of extreme heat
- Create built environments that reduce exposure to extreme heat and mitigate the urban heat island effect
- Increase community resilience to prepare for climate change impacts
- Increase stormwater drainage capacity
- Invest in infrastructure maintenance
- Reduce risk of power outage
- Strengthen City government capacity for climate resilience
- Strengthen City government disaster preparedness and capacity for emergency response

The Plan includes 59 specific recommendations to integrate climate resilient design features into new and existing transportation infrastructure, increase preventative maintenance and upgrades, partner with regional agencies to advance transportation resilience strategies, and advance community extreme weather and disaster preparedness.

Other Alternatives: No action

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

- Sacramento Transportation Infrastructure Adaptation Plan
- Sacramento Urban Forest Plan
- Comprehensive Flood Management Plan
- Multi-Hazard Mitigation Plan
- Transportation Priorities Plan
- Development standards and standard design specifications
- Drainage master plans

Responsible Office/Partners:

- Lead: Public Works, DOU, Office of Emergency Management, Fire.
- Support: CDD, YPCE, DCR, PIO, Police
- Partners: SacRT, SMUD, Sac Metro Air District

Project Benefits (Losses Avoided): Enhanced transportation facility safety (e.g., roadways, bikeways, sidewalks, bridges), maintaining community mobility and essential services during extreme weather events, increased evacuation route possibilities, shorter disaster recovery timeline

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Measure A, CIP project budgets, Operating budgets from Public Works, DOU, Office of Emergency Management, Fire, Police. Grants to fund extreme weather mitigation, community and/or climate resilience, disaster preparedness outreach/education, public health.

Timeline: Within 1 year and ongoing

Project Priority (High, Medium, Low): High

Action 14. Implement the Sacramento Urban Forest Plan

Hazards Addressed: Multi-Hazard: Extreme Heat, Severe Wind, Severe Rain, Localized Flooding, Drought

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

Issue/Background (Problem Statement): Urban tree canopy is critical for extreme heat mitigation by providing shade and lowering the urban heat island effect. If urban tree canopy is not properly planted and/or maintained, other extreme weather threats like severe wind, severe rain, flooding, and drought can undermine tree health and resilience. Weakened trees are more susceptible to dropping branches and/or toppling during severe winds and storms.

Project Description: The Sacramento Urban Forest Plan outlines strategies to reach 35% citywide tree canopy by 2045. This project includes actions to grow the City's urban tree canopy to meet this 35% canopy goal (with an emphasis on under-canopied portions of the city that are more susceptible to extreme heat), maintain the existing canopy to ensure long-term health and sustainability, and engage the Sacramento community on efforts to expand and maintain private tree canopy.

This project includes year-round pruning and targeted maintenance to mitigate impacts of the City's tree canopy on other infrastructure assets.

Other Alternatives: No action

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

- Sacramento Urban Forest Plan
- Title 12 and Title 17
- Street Design Standards
- Public Works – Maintenance Services Division – Urban Forestry operating budget and staff
- YPCE – Parks Maintenance operating budget and staff
- DOU maintenance operating budget and staff

Responsible Office/Partners: City of Sacramento, Department of Public Works (lead)

Partners: YPCE, DOU, CDD, SMUD, SacRT

Project Benefits (Losses Avoided): Reduced energy usage and resident mortality/morbidity due to extreme heat. Reduced impacts from downed limbs and/or trees (e.g., power outages, road closures, blocked storm drains).

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

- Public Works – Maintenance Services Division budget
- Grant funds for tree canopy expansion, irrigation installation
- Grant funds for developing planning/guidance documents that help address conflicts between trees and other types of infrastructure.

Timeline: Initiated within 1 year and ongoing

Project Priority (High, Medium, Low): High

Action 15. Purchase Drones for Use in Disaster Preparedness, Mitigation, and Response

Hazards Addressed: Multi-Hazard (Dam Failure, Earthquake, Flood, Levee Failure, High Winds and Tornados, Wildfire)

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

Issue/Background (Problem Statement): Staff can deploy drones in emergency situations and extreme conditions

Project Description: Drone and survey platform program

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Program is implemented and active

Responsible Office/Partners: DOU Drainage

Project Benefits (Losses Avoided): Potential staff hazards avoided in dangerous situations

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Grants from Cal OES, CA DWR, or Department Budget

Timeline: Current

Project Priority (High, Medium, Low): Medium

Action 16. Flood Fight Equipment

Hazards Addressed: Flood

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

Issue/Background (Problem Statement): Safley operated vessel and excavator in an emergency flood fight

Project Description: Use of a landing craft vessel and excavator for emergency flood fight

Other Alternatives:

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

Responsible Office/Partners: DOU Drainage

Project Benefits (Losses Avoided): Putting staff in dangerous conditions

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Grant, Department budget

Timeline: Complete

Project Priority (High, Medium, Low): Medium

Action 17. Tree Trimming / Debris Removal

Hazards Addressed: Severe Weather: High Winds

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

Issue/Background (Problem Statement): Public safety is at risk from falling trees during storms.

Project Description: Have contractor on board for emergency tree work and debris removal

Other Alternatives: Respond once trees have fallen

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

Responsible Office/Partners: DOU Drainage

Project Benefits (Losses Avoided): Allow staff to continue working an emergency by having contractors on board

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Department budget

Timeline: Within 5 years.

Project Priority (High, Medium, Low): Medium

Action 18. Stabilization of Erosion Hazard Areas

Hazards Addressed: Levee erosion

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

Issue/Background (Problem Statement): Stream bank erosion protection completed on the Sacramento River; related work continues.

Project Description: Stream bank erosion protection completed on the Sacramento River; related work continues.

Other Alternatives:

Existing Planning Mechanism(s) through which Action Will Be Implemented: In house and State levee inspections

Responsible Office/Partners: DOU Drainage

Project Benefits (Losses Avoided): Levee / bank failure

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Grant, department budget

Timeline: Current

Project Priority (High, Medium, Low): Medium

Action 19. Adopt Additional Floodplain Development Standards

Hazards Addressed: Flooding

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

Issue/Background (Problem Statement): The City has created a Development Services Task Force that meets on a regular basis to discuss the City's floodplain development standards. Additional regulations may include evacuation and rescue requirements, additional freeboard, elevation of utilities, and 200-year level of protection.

Project Description: The Development Services Task Force will discuss the adoption of additional development standards related to floodplain management and best practices.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: The Development Service Task Force will implement necessary action.

Responsible Office/Partners: City of Sacramento, Department of Utilities and Community Development Department

Project Benefits (Losses Avoided): New and substantially improved structures will be better protected from flooding.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): City of Sacramento, Department of Utilities and Community Development Department

Timeline: 2027

Project Priority (High, Medium, Low): Medium

Action 20. Develop a Disaster Housing Plan

Hazards Addressed: Multi-Hazard (Dam Failure, Flood, Levee Failure, Wildfire)

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

Issue/Background (Problem Statement): Effective disaster housing is a critical step on the road to long-term recovery. A balance between providing housing assistance rapidly in the wake of a disaster and meeting the diverse needs of individuals and households within the community for a longer period of time during disaster recovery.

Project Description: Develop a Disaster Housing Plan to identify potential disaster housing partners and outline the principles, practices, and implantation phase of such a plan. Supplement with OEM Emergency Operations Plan and Pre-Disaster Recovery Plan.

Other Alternatives: No action.

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

Responsible Office/Partners: City Community Development Department, City Office of Emergency Management, Office of Innovation and Economic Development

Project Benefits (Losses Avoided): Increased community resiliency, avoid potential financial losses.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Potential grant opportunities.

Timeline: 2027

Project Priority (High, Medium, Low): High

Action 21. Drainage Projects for Repetitive Loss Properties

Hazards Addressed: Flooding

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

Issue/Background (Problem Statement): The City has established a goal of removing at least four repetitive loss (RL) properties from FEMA's Repetitive Loss List. Many of these properties have experienced repeated flooding due to inadequate capacity within the local storm drainage system.

Project Description: The City's Drainage Master Plans have identified numerous potential capital improvement projects aimed at reducing flood risk and improving the performance of the local drainage system. These projects include upsizing storm drain pipelines, constructing detention basins, installing bypass pipelines, retrofitting pump stations, and acquiring property where necessary to support drainage improvements. The projects will be prioritized based on need and benefit, and the City will actively pursue grant funding and other external funding opportunities to support their implementation.

Other Alternatives: Promote flood insurance. Purchase repetitive loss properties and convert to permanent open-space

Existing Planning Mechanism(s) through which Action Will Be Implemented: Mitigation of repetitive loss properties is a mitigation measure in the City's Corrective Action Plan approved by FEMA.

Responsible Office/Partners: City of Sacramento, Department of Utilities

Project Benefits (Losses Avoided): Eliminates future NFIP claims on repetitive loss structures, reduces risk to safety, and can ultimately remove the property from FEMA's Repetitive Loss inventory

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA grants, Corrective Action Plan funding, and DOU

Timeline: Ongoing throughout the 5 year plan

Project Priority (High, Medium, Low): Medium

Action 22. Participation in the National Flood Insurance Program (NFIP) and Community Rating System (CRS) Program

Hazards Addressed: Flooding

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

Issue/Background (Problem Statement): Flooding continues to be one of the City's most significant natural hazards. The City participates in the National Flood Insurance Program (NFIP) and Community Rating System (CRS) to help reduce flood risk through floodplain management regulations, public outreach, and higher regulatory standards. These programs also help maintain residents' access to federally backed flood insurance and Community Rating System premium discounts.

Project Description: Continue implementing the City's Floodplain Management Program by reviewing development within Special Flood Hazard Areas for compliance with local floodplain regulations, reviewing Elevation Certificates, maintaining compliance with National Flood Insurance Program requirements, participating in the Community Rating System, providing flood hazard information to the public, and conducting outreach to increase awareness of flood risks and flood insurance.

Other Alternatives: No Action. If the City discontinued participation in the National Flood Insurance Program or Community Rating System, residents and businesses could lose access to federally backed flood insurance and Community Rating System premium discounts.

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

- National Flood Insurance Program (NFIP)
- Community Rating System (CRS)
- City of Sacramento Municipal Code, Chapter 15.104 - Floodplain Management
- Comprehensive Flood Management Plan (CFMP)

Responsible Office/Partners: City of Sacramento Department of Utilities – Floodplain Management

Project Benefits (Losses Avoided): Reduces flood risk, promotes safer development, maintains flood insurance availability and CRS discounts, and increases public awareness of flood hazards.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Department of Utilities operation budget (staff time)

Timeline: Ongoing throughout the 5 year plan

Project Priority (High, Medium, Low): High

Action 23. Flood Recovery Planning

Hazards Addressed: Flooding

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

Issue/Background (Problem Statement): The City has established emergency response and recovery procedures through the 2025 All-Hazards Emergency Operations Plan and other planning documents. Enhancing flood recovery planning will improve coordination following a major flood event and support an efficient and resilient recovery process.

Project Description: Evaluate and enhance existing recovery planning documents, as needed, to strengthen flood recovery planning and improve coordination following a major flood event. This may include identifying recovery roles and responsibilities, coordinating recovery activities across City departments, and incorporating flood recovery procedures into existing emergency management plans where appropriate.

Other Alternatives: No Action. Without continued flood recovery planning, coordination following a major flood event may be less efficient, resulting in delays in recovery activities.

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

- 2025 All-Hazards Emergency Operations Plan
- Comprehensive Flood Management Plan (CFMP)
- Climate Action & Adaptation Plan (CAAP)

Responsible Office/Partners: City of Sacramento Department of Utilities – Floodplain Management

Supporting Departments: Office of Emergency Management, Public Works, Community Development Department per the Emergency Operations Plan

Project Benefits (Losses Avoided): Improves coordination of post-flood recovery activities, supports timely restoration of critical services and infrastructure, and increases the City's resilience following future flood events.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Department of Utilities operation budget (staff time)

Timeline: 1-5 years; Ongoing throughout the planning period

Project Priority (High, Medium, Low): Medium

Action 24. Retrofit Historical Buildings

Hazards Addressed: Earthquake

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

Issue/Background (Problem Statement): The City of Sacramento has many older structures that are not protected against earthquakes because they were not designed and constructed according to current building standards. These types of buildings are the single biggest contributor to seismic risk in the United States today. Seismic retrofitting of vulnerable structures is critical to reducing risk, protection of life and property, and preservation of historical points of interest.

Project Description: Evaluating older buildings and retrofitting structural and non-structural components.

Other Alternatives: Retrofit buildings when major improvement are made to the structure.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Building Permit process and code enforcement

Responsible Office/Partners: City of Sacramento Community Development Department

Project Benefits (Losses Avoided): Protection of life and assets. Increased resilience after an earthquake. Preservation of historical structures within the city.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Local funding including City of Sacramento General Fund, staff time, National Park Service grants.

Timeline: Within 5 years

Project Priority (High, Medium, Low): Medium

Action 25. Drainage Projects from the City's Priority Drainage Project List

Hazards Addressed: Local Flooding from Severe Storms

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

Issue/Background (Problem Statement): During severe storm events, the City often experiences street and property flooding, often cause by inadequate or undersized drainage infrastructure. Accordingly, the City is continually improving the local drainage system to address this issue.

Project Description: Many potential drainage projects that have been identified in the City's Drainage Master Plans and have been prioritized on a Basin Master Planning and Improvement Projects priority list. These projects include upsizing pipelines, adding detention basins, adding pipelines, retrofitting pump stations, and land acquisition. These projects are ranked by priority.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: The Department of Utilities, Drainage CIP Group

Responsible Office/Partners: City of Sacramento, Department of Utilities

Project Benefits (Losses Avoided): Eliminate structural damages and flood insurance claims, avoid economic loss from flooded streets, and life safety

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA grants and DOU CIP funds

Timeline: On-going

Project Priority (High, Medium, Low): Medium

Action 26. St. Lucs Detention Basin (formally Florin Creek Pump at Pomegranate Avenue)

Hazards Addressed: Localized Flooding from Heavy Storms (100-year storm property damage)

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

Issue/Background (Problem Statement): The U.S. Army Corps of Engineers (Corps) has constructed improvements to the Florin Creek Channel from Highway 99 to Franklin Boulevard. In addition, Sacramento Area Flood Control Agency (SAFCA) constructed a multi-use detention basin upstream. These improvements will increase the channel capacity and enable the conveyance of 100-year event flood flows within the channel. These public safety improvement projects will reduce the risk of flooding in the area during extreme storm events and ultimately provide financial relief to several hundred property owners currently subject to mandatory, high-cost flood insurance. To expand flood protection in this area, a small detention basin constructed adjacent the St. Lucs Lutheran Church is needed near Pomegranate Avenue .

Project Description: Construction of a + 1 acre detention basin adjacent to St. Lucs Lutheran Church near Pomegranate Avenue.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: SAFCA's South Sacramento County Streams Project

Responsible Office/Partners: City of Sacramento, Department of Utilities

Project Benefits (Losses Avoided): Increased flood protection to local residences on Pomegranate Avenue. Decrease in property damage and insurance claims.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): DWR grant and DOU CIP funds

Timeline: 2026 - 2027

Project Priority (High, Medium, Low): High

Action 27. Internal Drainage System Improvements

Hazards Addressed: Flooding

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

Issue/Background (Problem Statement): In addition to the risk of flooding from levee failure, a considerable flood risk exists due to aging internal drainage infrastructure. Although levee failure may result in much more catastrophic damage than flooding from internal drainage, most of the City's flood damage since 1955 has resulted from drainage deficiencies. In 1995, for instance, approximately 100 homes in four south area drainage basins incurred flood damage due to internal drainage system failure during an intense storm.

Project Description: Implementation of the internal drainage system improvements action items outlined in the City of Sacramento's Comprehensive Flood Management Plan. Highlighted projects include development of a grant program to fund drainage improvements, develop[BG34.1] an Engineering Services efficiency plan, passage of Proposition 218 drainage fee increase, and drainage master planning.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Implementation of the Comprehensive Flood Management Plan

Responsible Office/Partners: City of Sacramento, Department of Utilities

Project Benefits (Losses Avoided): These projects would decrease property damage and the number of flood insurance claims. Drainage system improvements will also increase the City's resiliency after a large-scale weather event.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Grant and DOU CIP funds

Timeline: 2026 and On-going

Project Priority (High, Medium, Low): High

Action 28. Retrofit Pumping Plants with Discharge Monitoring Devices

Hazards Addressed: Localized Stormwater Flooding and Severe Rain and Storms

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

Issue/Background (Problem Statement): Most of the DOU's drainage master plans recommend retrofit of our pumping plants with discharge measuring/monitoring devices. Based on limited previous monitoring, we've found that the average test capacity of pumps is approximately 90 percent of Rated Capacity, rather than the 75 percent previously assumed during master planning.

Project Description: Retrofit pumping plants to measure discharge and monitor devices. Identify pumps that are underperforming and raise Reliable Capacity to 90 percent service factor.

Other Alternatives: Check pumping capacity when issues arise or develop a testing schedule.

Existing Planning Mechanism(s) through which Action Will Be Implemented: City of Sacramento Department of Utilities Operations and Maintenance Procedures

Responsible Office/Partners: City of Sacramento, Department of Utilities

Project Benefits (Losses Avoided): Protection of life and property, usage of an increased pumping service factor (if warranted) for master planning, and early identification of device fatigue.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Grant and DOU CIP funds

Timeline: 2026 and On-going

Project Priority (High, Medium, Low): High

Action 29. Flood Risk Communication and Public Outreach

Hazards Addressed: Flooding

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

Issue/Background (Problem Statement): Flooding continues to be one of the City's most significant natural hazards. Providing residents, businesses, and property owners with accurate flood risk information helps them prepare for flooding, make informed decisions, and reduce potential impacts. Ongoing outreach also supports the City's National Flood Insurance Program (NFIP) and Community Rating System (CRS) activities.

Project Description: Continue implementing flood risk communication and public outreach activities through the City's Community Rating System (CRS) Program for Public Information (PPI). Activities include maintaining flood information on the Flood Ready website, providing flood hazard and flood insurance information, updating outreach materials, supporting community outreach events, and coordinating with partner agencies.

Other Alternatives: No Action. Without continued outreach, residents and businesses may be less aware of flood hazards, flood insurance, and actions they can take to reduce flood risk.

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

- Comprehensive Flood Management Plan (CFMP)
- Community Rating System (CRS)
- Program for Public Information (PPI)
- National Flood Insurance Program (NFIP)

Responsible Office/Partners: City of Sacramento Department of Utilities – Floodplain Management

Project Benefits (Losses Avoided): Improves public understanding of flood hazards, encourages residents and businesses to reduce flood risk, supports informed decision-making, and helps maintain the City's CRS public outreach activities.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Department of Utilities operation budget (staff time)

Timeline: Ongoing throughout the planning period

Project Priority (High, Medium, Low): High

Action 30. Implement the Climate Action & Adaptation Plan

Hazards Addressed: Climate Change, Multi-Hazard

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

Issue/Background (Problem Statement): Greenhouse Gas (GHG) emissions are creating multiple changes to Sacramento's climate, increasing vulnerability to a range of hazards that have historically impacted Sacramento. Most notable among climate change effects include:

- Temperature increases, which contribute to more frequent and extreme heat waves; exacerbate urban heat island effect; increase warm nights; increase source water temperatures; and negatively impact air quality
- Precipitation changes, with more precipitation falling as rain rather than snow; reduced snowpack; more extreme precipitation events; increased flood risk; increased drought conditions; and disruptions to available water supply
- Increased wildfire incidence regionally, with wildfire smoke negatively impacting air quality in Sacramento and contributing to soil erosion and water quality impacts upstream from Sacramento.

The Climate Action & Adaptation Plan outlines strategies to reduce GHG emissions and prepare Sacramento for climate-related impacts, including extreme weather.

Project Description: Implementation of adaptation measures, goals, and actions included in the Climate Action & Adaptation Plan (CAAP), notably within the Adaptation Chapter.

The CAAP encompasses a multifaceted approach to improve community-wide resilience to climate change. The CAAP includes 12 greenhouse gas emission reduction measures supported by 74 distinct actions across

five sectors (built environment, transportation, waste, water and wastewater, and carbon sequestration). The CAAP also includes six adaptation goals that are supported by 80 distinct actions.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Updates to the Planning and Development Code, Building Code, and Design Guidelines; development of a variety of implementing plans (e.g., Sacramento Urban Forest Plan, Transportation Infrastructure Adaptation Plan); capital improvement planning

Responsible Office/Partners: Community Development Department in partnership with Public Works Department, Department of Utilities, Office of Emergency Management, Sacramento Regional Transit, SMUD, Sacramento Metropolitan Air Quality Management District, SacSewer, Sacramento Area Flood Control Agency

Project Benefits (Losses Avoided): Climate change increases the likelihood and extent of impacts from most other hazards. Therefore, implementation of the Climate Action & Adaptation Plan can be expected to help avoid losses that would occur in relation to many of the hazards identified in this annex.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Local funding including General Fund, Capital Improvement Program funding, Landscape & Lighting Assessments, staff time.

Grant funding including:

- FEMA's Hazard Mitigation Grant Program, Pre-Disaster Mitigation Grant Program, Building Resilient Infrastructure and Communities, and Flood Mitigation Assistance.
- State of California funding including the Extreme Heat and Community Resilience Program, Urban Greening Program, Urban and Community Forestry Program, Water Reuse and Recycling Grant Program, Distributed Energy Backup Asset Program, Greenhouse Gas Reduction Fund, Transformative Climate Communities

Timeline: Within 1 year and ongoing

Project Priority (High, Medium, Low): High